DRAFT ENVIRONMENTAL IMPACT STATEMENT

LITTLE RIVER BAND OF OTTAWA INDIANS TRUST ACQUISITION AND CASINO PROJECT

VOLUME I - DRAFT EIS

NOVEMBER 2018

APPLICANT:

Little River Band of Ottawa Indians

LEAD AGENCY:

U.S. Department of the Interior
Bureau of Indian Affairs
5600 American Boulevard, Suite 500
Bloomington, Minnesota 55437

COOPERATING AGENCIES:

Federal Highway Administration
United States Environmental Protection Agency
Little River Band of Ottawa Indians
County of Muskegon
Township of Fruitport

Estimated Total Costs Associated with
Developing and Producing this EIS - $835,000

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5600 American Boulevard, Suite 500
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EXECUTIVE SUMMARY

LITTLE RIVER BAND OF OTTAWA INDIANS TRUST ACQUISITON AND CASINO PROJECT DRAFT ENVIRONMENTAL IMPACT STATEMENT

ES.1 INTRODUCTION

This Environmental Impact Statement (EIS) has been prepared by the Bureau of Indian Affairs (BIA) pursuant to the National Environmental Policy Act (NEPA) to assess the environmental impacts of transferring approximately 60 acres in the Fruitport Township, Muskegon County, Michigan (Proposed Fee-to-Trust Property), into federal trust status for the Little River Band of Ottawa Indians (Tribe); issuing a two-part determination under Section 20 of the Indian Gaming Regulatory Act (IGRA) (Proposed Action); and the subsequent development of the trust parcel with a variety of uses including a casino, hotel, convention center, parking, and other supporting facilities (Proposed Project).

Pursuant to 25 Code of Federal Regulations (CFR) Part 151, the BIA, as an agency under the authority of the Secretary of the Interior (Secretary), is charged with reviewing and approving tribal applications to take land into federal trust status. Since the Tribe is seeking to acquire off-reservation land in trust for gaming purposes, compliance with Section 20 of IGRA is being considered along with the BIA Part 151 Fee-to-Trust Application. In this case, the acquisition of approximately 60 acres in trust for gaming would require that the Secretary make a "two-part determination," under Section 20 (b)(1)(A), that gaming on the newly acquired lands would be 1) in the best interest of the Tribe and 2) not detrimental to the surrounding community (25 United States Code [USC] §2719 [b][1][A]). A Secretarial two-part determination may only be made after consultation with the applicant tribe and appropriate state and local officials, including officials of other nearby tribes. In addition, the BIA must seek the concurrence of the Governor of Michigan in the determination before gaming could occur on the Proposed Fee-to-Trust Property.

For the purpose of this EIS, the BIA serves as the Lead Agency for compliance with NEPA, with the Federal Highway Administration (FHWA), the United States Environmental Protection Agency (USEPA), Tribe, County of Muskegon (County), and Fruitport Township (Township) serving as Cooperating Agencies.

ES.2 PURPOSE AND NEED

The federal Proposed Action is the acquisition of the 60-acre site in trust for the Tribe pursuant to the Secretary's authority under the Indian Reorganization Act, 25 USC 5108 and issuing a two-part determination under the Indian Gaming Regulatory Act (IGRA), 25 U.S.C. § 2719 (b)(1)(A). The purpose of the Proposed Action is to facilitate tribal self-sufficiency, self-determination, and economic development, thus, satisfying both the Department's land acquisition policy as articulated in the Department's trust land regulations at 25 C.F.R. Part 151, and the principle goal of IGRA as articulated in

25 U.S.C. § 2701. The need for the Department to act on the Tribe's application is established by the Department's regulations at 25 C.F.R. §§ 151.10(h) and 151.12.

ES.3 SUMMARY OF THE PROPOSED ACTION AND ALTERNATIVES

The alternatives addressed in this EIS, including the No Action/No Development Alternative, are summarized below. The potential adverse environmental effects and applicable mitigation measures relevant to each alternative are presented in Table 1 of **Appendix Q**.

ALTERNATIVE A – PROPOSED PROJECT

Alternative A consists of the following components:

1) The transfer of the approximately 60-acre Proposed Fee-to-Trust Property (Assessor's Parcel Number [APN] 15-115-300-0026-00) from fee to trust status;
2) Issuance of a two-part determination by the Secretary of the Interior (Secretary) under Section 20 of IGRA that gaming on the 60-acre Muskegon Site would be in the best interest of the Tribe and not detrimental to the surrounding community (25 USC §2719 [b][1][A]); and
3) Development of the Muskegon Site with a variety of uses including a casino, hotel, convention center, parking, and other supporting facilities.

This alternative, which constitutes the Proposed Project, most suitably meets all aspects of the purpose and needs of the Proposed Action by promoting the Tribe's long-term economic development and self-governance capability. Construction of Alternative A is anticipated to have an estimated duration of 18 months.

ALTERNATIVE B – REDUCED INTENSITY ALTERNATIVE

Alternative B is similar to Alternative A in most aspects including the issuance of a two-part determination by the Secretary and transfer of the 60-acre Proposed Fee-to-Trust Property into trust. Alternative B also consists of a casino development similar to Alternative A, but on a substantially reduced scale. Construction of Alternative B is anticipated to have an estimated duration of 16 months.

ALTERNATIVE C – NON-GAMING ALTERNATIVE

Alternative C consists of the following components:

1) The transfer of the 60-acre Proposed Fee-to-Trust Property from fee to trust status; and
2) Development of the Muskegon Site with retail facilities (175,000 square feet [sf]), parking, and other supporting facilities.

Alternative C does not include a gaming component; therefore, the issuance of a two-part determination by the Secretary would not be necessary. Construction of Alternative C is anticipated to have an estimated duration of 16 months.

ALTERNATIVE D – CUSTER SITE ALTERNATIVE

Alternative D consists of the following components:

1) Analysis of gaming eligibility under 25 USC §2719; and
2) Development of approximately 45 acres of the existing trust property with a variety of uses including a casino, parking, and other supporting facilities.

Construction of Alternative D is anticipated to have an estimated duration of 12 months.

ALTERNATIVE E – NO ACTION/NO DEVELOPMENT ALTERNATIVE

Under the No Action/No Development Alternative, none of the four development alternatives (Alternatives A, B, C, and D) considered within this EIS would be implemented. The No Action/No Development Alternative assumes that existing uses on the alternative sites would not change in the near term and that the BIA would not take any action.

ES.4 ISSUES IDENTIFIED DURING SCOPING

The BIA published a Notice of Intent (NOI) in the *Federal Register* on September 21, 2015, describing the Proposed Action, and announcing the BIA's intent to prepare an EIS (**Appendix A**). The results of the scoping period were made available in a scoping report published by the BIA in February 2016. This report is available for review at www.littlerivereis.com, or upon request to the BIA's Midwest Region Office at 5600 West American Boulevard, Suite 500, Bloomington, MN 55437. Issues raised during scoping generally fell into the following categories.

- Alternatives and Purpose and Need
- Land Resources
- Water Resources
- Air Quality
- Noise
- Biological Resources
- Visual Resources/Aesthetics
- Cultural Resources
- Resource Use Patterns
- Traffic and Transportation
- Public Health, Environmental Hazards
- Public Services and Utilities
- Socioeconomics
- Environmental Justice

To the extent required by NEPA, this EIS has incorporated the issues and concerns identified during the scoping process.

ES.5 SUMMARY MATRIX

The potential adverse and beneficial effects, as well as mitigation measures, relevant to each alternative are presented in Table 1 of **Appendix Q**. For a detailed discussion of environmental consequences and mitigation measures see **Sections 4.0** and **5.0**.

SECTION 1.0

INTRODUCTION

SECTION 1.0
INTRODUCTION

1.1 SUMMARY OF THE PROPOSED ACTION AND EIS PROCESS

This Environmental Impact Statement (EIS) has been prepared pursuant to the National Environmental Policy Act (NEPA) to assess the environmental impacts of the Little River Band Trust Acquisition and Casino Project, which includes the following:

1. Transferring approximately 60 acres in Fruitport Township (Township), Muskegon County, Michigan (Proposed Fee-to-Trust Property), into federal trust status for the Little River Band of Ottawa Indians (Tribe) and issuing a two-part determination under Section 20 of the Indian Gaming Regulatory Act (IGRA) (Proposed Action); and
2. The subsequent development of the trust parcel and adjacent land owned by the Tribe totaling 86.5 acres (Muskegon Site) with a variety of uses including a casino, hotel, conference center, parking, and other supporting facilities (Proposed Project).

Pursuant to 25 Code of Federal Regulations (CFR) Part 151, the Bureau of Indian Affairs (BIA), as an agency under the authority of the Secretary of the Interior (Secretary), is charged with reviewing and approving tribal applications to take land into federal trust status. Since the Tribe is seeking to acquire off-reservation land into trust for gaming purposes, compliance with Section 20 of IGRA is being considered along with the BIA Part 151 Fee-to-Trust Application. In this case, acquisition of the Proposed Fee-to-Trust Property in trust for gaming would require that the Secretary make a "two-part determination," under Section 20(b)(1)(A), that gaming on the newly acquired lands would be 1) in the best interest of the Tribe and 2) not detrimental to the surrounding community (25 United States Code [USC] §2719[b][1][A]). A Secretarial two-part determination may be made after consultation with the applicant tribe and appropriate state and local officials, including officials of other nearby tribes. In addition, the Governor of Michigan must concur with the determination before gaming is able to occur on the Proposed Fee-to-Trust Property.

For the purpose of this EIS, the BIA serves as the Lead Agency for compliance with NEPA, with the Federal Highway Administration (FHWA), United States Environmental Protection Agency (USEPA), Tribe, County of Muskegon (County), and Township serving as Cooperating Agencies.

This EIS has been completed in accordance with the applicable requirements of NEPA and its implementing regulations and guidance. NEPA requires BIA and the Cooperating Agencies to review and analyze the environmental impacts associated with the Proposed Action and alternatives. This document provides a detailed description of the development alternatives and an analysis of the potential consequences associated with the proposed development that may result from the Proposed Action. The No Action/No Development Alternative is also addressed as required under NEPA. This document includes a discussion of alternatives, avoidance of effects, and mitigation measures.

1.2 PURPOSE AND NEED FOR PROPOSED ACTION

The federal Proposed Action is the acquisition of the 60-acre site in trust for the Tribe pursuant to the Secretary's authority under the Indian Reorganization Act, 25 USC 5108 and issuing a two-part determination under the Indian Gaming Regulatory Act (IGRA), 25 U.S.C. § 2719 (b)(1)(A). The purpose of the Proposed Action is to facilitate tribal self-sufficiency, self-determination, and economic development, thus, satisfying both the Department's land acquisition policy as articulated in the Department's trust land regulations at 25 C.F.R. Part 151, and the principle goal of IGRA as articulated in 25 U.S.C. § 2701. The need for the Department to act on the Tribe's application is established by the Department's regulations at 25 C.F.R. §§ 151.10(h) and 151.12.

1.3 BACKGROUND

The unmet needs of the Tribe are presented in the Tribal Business Plan and Unmet Needs Report (LRBOI, 2015a). As described therein, the Tribe is currently facing several obstacles to providing adequate services to its membership in both the short and long term. Some of these issues include stagnant or declining revenues from existing enterprises, reductions in federal financial support, lack of funding for crucial programs for Muskegon County members of the Tribe, limited access to transportation necessary for employment, the high cost of health care, reductions in affordable housing, and an ever-increasing number of elders in need of housing and social services. In general, the Proposed Action is needed so that the Tribe can:

- Support the government's infrastructure and socioeconomic and human services programs, inclusive of per capita payments to adult tribal members;
- Increase funding to governmental programs and services, including housing, educational, judicial, environmental, health, safety, and emergency programs and services;
- Hire additional staff and generally improve governmental operations;
- Provide employment opportunities for tribal members, other tribal people, as well as local non-tribal residents;
- Decrease the Tribe's and its members' dependence on federal funding; and
- Provide additional capital for other economic development and investment opportunities, allowing the Tribe to diversify its holdings over time so that it is no longer dependent upon the federal government or even upon gaming to survive and prosper.

Each of these purposes is consistent with the allowable use for gaming revenues set out in IGRA (Title 25 §2710[b][2][B]). The trust acquisition of the site and proposed gaming facility would facilitate tribal self-sufficiency, self-determination, and economic development satisfying the Department of Interior's land acquisition policy articulated in 25 CFR Part 151 and a principle goal of IGRA articulated in 25 USC § 2701.

1.4 OVERVIEW OF THE ENVIRONMENTAL REVIEW PROCESS

NEPA requires that an EIS be prepared for major federal actions that could significantly affect the quality of the human environment. This document has been completed in accordance with applicable requirements, including those set out in NEPA (42 USC §4321 *et seq*.); the Council on Environmental

Quality (CEQ) Regulations for Implementing NEPA (40 CFR §1500 – 1508); and the BIA's NEPA Guidebook (59 IAM 3-H) dated August 2012. The two primary purposes of NEPA are to assess impacts and disclose those impacts before the BIA selects an alternative.

The BIA published a Notice of Intent (NOI) in the *Federal Register* on September 21, 2015, describing the Proposed Action, and announcing the BIA's intent to prepare an EIS (**Appendix A**). A public scoping meeting was held on October 15, 2015. The NOI comment period closed on October 21, 2015. A scoping report dated February 2016 was published by the BIA as described in **Section 1.4** below. During the scoping process, the BIA identified five Cooperating Agencies: (1) FHWA, (2) USEPA, (3) the Tribe, (4) Muskegon County, and (5) Fruitport Township.

This Draft EIS will be distributed to federal, tribal, state, and local agencies, other interested parties, and the public for a 45-day review and comment period. The review and comment period begins after the Notice of Filing with the USEPA in the *Federal Register*. The Notice of Availability (NOA) published by the BIA provides the time and location of public hearing(s) to receive comments concerning this Draft EIS. Substantive comments received on the Draft EIS during the comment period, including those submitted or recorded at public hearing(s), will be addressed in the Final EIS.

1.5 SCOPING

The CEQ Regulations for Implementing NEPA require a "scoping" process to determine and narrow the range of issues to be addressed during the environmental review of a proposed action (40 CFR §1501.7). The scoping process entails a determination of the issues that will be addressed in the EIS by soliciting comments from agencies, organizations, and individuals. The issues that were raised during the NOI comment period have been summarized within the *Environmental Impact Statement Scoping Report for the Little River Band Trust Acquisition and Casino Project*. This report, dated February 2016, is available for review at www.littlerivereis.com. This EIS addresses the issues and concerns summarized in the Scoping Report. The reasonable range of development alternatives analyzed in this EIS was developed based on comments received during the scoping process as well as consultation with the Tribe.

1.6 AGREEMENTS WITH STATE AND LOCAL GOVERNMENTS

The Tribe has entered into the following agreements with local government agencies, which include provisions related to the provision of local government services that would support the Proposed Project.

1.6.1 CLASS III TRIBAL-STATE GAMING COMPACT

The Tribe entered into a Class III Tribal-State Gaming Compact (Compact) with the State of Michigan on December 3, 1998. The Compact was approved by the Secretary and a notice of approval was published in the *Federal Register* on February 18, 1999 (64 Federal Register [FR] 8111). The Compact authorizes the Tribe to engage in Class III gaming on its Indian lands, as defined under IGRA (25 USC §§2701 *et seq*.). The Compact authorizes the operation of certain Class III gaming by the Tribe on the Tribe's lands in the State of Michigan, as a means of promoting tribal economic development, self-sufficiency, and strong tribal government. The Compact outlines the terms and conditions in which Class III gaming may be conducted on the Tribe's lands; regulations for the operation and management of tribal gaming

operations; employee benefits; providers of Class III gaming equipment or supplies; procedures regarding dispute resolutions; notice to patrons; gaming outside of eligible Indian Lands; regulation and the sale of alcoholic beverages; binding effects, duration, and severability; economic incentive payments to the State; and tribal payments to local governments. With the approval of an amendment to the Compact, the proposed Class III gaming facility would be considered an authorized gaming facility subject to the terms of the 1998 Compact and subsequent amendments. Specifically, the amendment would add trust and reservation lands within Muskegon County as "Eligible Indian Lands" for gaming and allow for a total of two tribal Class III gaming facilities to be operated by the Tribe. Once amended, the Compact would apply to Alternatives A, B, and D, described in **Section 2.0**.

1.6.2 MUSKEGON COUNTY AND FRUITPORT TOWNSHIP MUNICIPAL SERVICES AGREEMENT

A Municipal Services Agreement (MSA) was executed on March 23, 2012, by and between the Township, the County of Muskegon (County), and the Tribe, collectively referred to therein as the "Parties" (**Appendix B**). The agreement includes law enforcement, fire protection, emergency response, public works, and other municipal services, which are summarized below. The Parties set forth certain terms and conditions with regard to their respective commitments in conjunction with the Proposed Action and subsequent Proposed Project. The MSA also describes the payments, both non-reoccurring and reoccurring, to be made by the Tribe to the Township and County related to the provision of municipal services and improvements, and other potential costs relating to mitigating any impacts which the project may have on the Township and County. The MSA applies to Alternatives A and B, described in **Section 2.0**.

Cooperative Law Enforcement Agreement (CLEA)

In accordance with Section 2.1 of the MSA, the Tribe will have the primary responsibility for law enforcement on the trust land with the support of the Township Police Department, located at 5825 Airline Rd, Fruitport, MI, and the County Sheriff's Department, located at 25 West Walton Ave, Muskegon, MI. The Tribe, Township, and County entered into a Cooperative Law Enforcement Agreement (CLEA), which is included as **Appendix C**. The CLEA is intended to address operational issues which the respective law enforcement agencies deem reasonable and necessary for the provision of law enforcement services to the Muskegon Site, including, without limitation, staffing and scheduling matters; cross-deputization or appointment; protocols for apprehension, detention, and transfer of detainees; and the conduct of investigations involving activities occurring on the Muskegon Site. The cost of providing law enforcement services to the site would be compensated through the non-recurring and recurring payments provided pursuant to Section 3.1(a) and 3.2(b) of the MSA. Additionally, the Township and County shall bill the Tribe for actual costs of providing any additional law enforcement services expressly requested by the Tribe for specific, non-regularly scheduled events or functions.

Fire Protection and Emergency Response Services

In accordance with Section 2.2 of the MSA, the Township, through the Fruitport Fire Department (FPFD), will provide fire protection, emergency response, and ambulance services to the Muskegon Site of the same quality and general responsiveness as are provided to commercial establishments in the

Township. The cost of providing fire protection and emergency response services to the site would be compensated through the non-recurring and recurring payments provided pursuant to Sections 3.1 and 3.2 of the MSA. Additionally, the Township shall bill the Tribe for actual costs of providing any additional fire protection services expressly requested by the Tribe for specific, non-regularly scheduled events or functions.

Sewer Services and Water Supply

In accordance with Sections 2.3 and 2.4 of the MSA, the Township will provide sewage disposal services and water supply services, respectively, for the Proposed Project through the existing infrastructure. The Tribe agrees that it will, at its expense, construct or cause to be constructed, in compliance with Township ordinances, as amended, all infrastructure or improvements necessary for the Proposed Project to connect to the Township's existing sewer and water supply systems. The Tribe also agrees that all infrastructure improvements shall be constructed pursuant to and in accordance with the Township's standards at the time of construction. The Tribe will also pay connection fees and periodic sewer and water supply service charges similar to other commercial users.

Other Utilities and Services

The Tribe will obtain gas, electric, and telephone services for the property from local area providers of such services. The infrastructure and connection improvements for these utilities will be constructed pursuant to and in accordance with all current applicable standards at the time of construction. The Tribe will pay all normal fees and costs associated with connecting the Proposed Project to the existing utility distribution systems.

1.7 REGULATORY REQUIREMENTS, PERMITS, AND APPROVALS

The Proposed Project, as described in **Section 2.0**, may require governmental approvals as described in **Table 1-1**.

TABLE 1-1
POTENTIAL PERMITS AND APPROVALS REQUIRED

Agency	Permit or Approval	Alternatives
Federal/State		
Secretary of the Interior and Bureau of Indian Affairs	Fee-to-Trust transfer of 60-acre parcel.	A, B, C
	Approval of lease agreements for commercial vendors.	C
Secretary of the Interior	Issuance of a two-part determination under Section 20 of IGRA.	A, B
	Analysis of gaming eligibility under 25 U.S.C. § 2719.	D
	Approval of Tribal-State Gaming Compact Amendments (see below)	A, B, D
USEPA	Obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges From Construction Activities as required by the Clean Water Act (CWA).	A, B, C, D
	New Source Review (NSR) Minor Permit in accordance with the federal Clean Air Act (CAA).	A, B, C, D
State of Michigan	Concurrence by Governor on two-part determination.	A, B
	Amendment of Tribal-State Gaming Compact to allow for two casinos.	A, B, D
	Amendment of Tribal-State Gaming Compact to allow for a casino in Muskegon County.	A, B
Michigan Office of Archaeology and Historic Preservation (SHPO)	Consultation under Section 106 of the National Historic Preservation Act (NHPA).	A, B, C, D
Michigan Department of Transportation (MDOT)	Approval of an Encroachment Permit for the construction of intersection and utility improvements.	A, B, C, D
Local		
Muskegon County	Permits and approvals referred to in Articles VII and IX of the MSA.	A, B
Township of Fruitport	Approval of an Encroachment Permit for intersection and traffic improvements within Township-owned right of ways.	A, B, C
	Approval of utility connections and encroachment permits for installation of utilities within Township-owned right of ways.	A, B, C
	Permits and approvals referred to in Articles VII and IX of the MSA.	A, B
	Applicable permits and approvals under the Township's Code of General Ordinances for the portion of the Proposed Project developed on fee land.	A, B, C
	Approval from the planning commission on the site plan regarding parking and entrance facilities within the fee parcel.	A, B, C

Notes:
A: Alternative A – Proposed Project
B: Alternative B – Reduced Intensity Alternative
C: Alternative C – Non-Gaming Alternative
D: Alternative D – Custer Site Alternative

SECTION 2.0

ALTERNATIVES

SECTION 2.0
ALTERNATIVES

2.1 INTRODUCTION

Consistent with Council on Environmental Quality (CEQ) guidelines (40 Code of Federal Regulations [CFR] §1502.14), this section includes a detailed discussion and comparison of the alternatives analyzed in this Environmental Impact Statement (EIS). These alternatives include four development alternatives (Alternatives A, B, C, and D) and the No Action/No Development Alternative (Alternative E). The development alternatives selected for analysis were derived from the screening and scoping process and, to varying degrees, may meet the purpose and need described in **Section 1.2**. Development alternatives are considered for two alternative site locations described in **Section 2.2**. Alternatives that were considered but are not analyzed in this EIS are also described in **Section 2.5**. A reasonable range of alternatives has been selected based on consideration of the purpose and need of the Proposed Action, the recommendations of commenters during the scoping process, and opportunities for potentially reducing environmental effects.

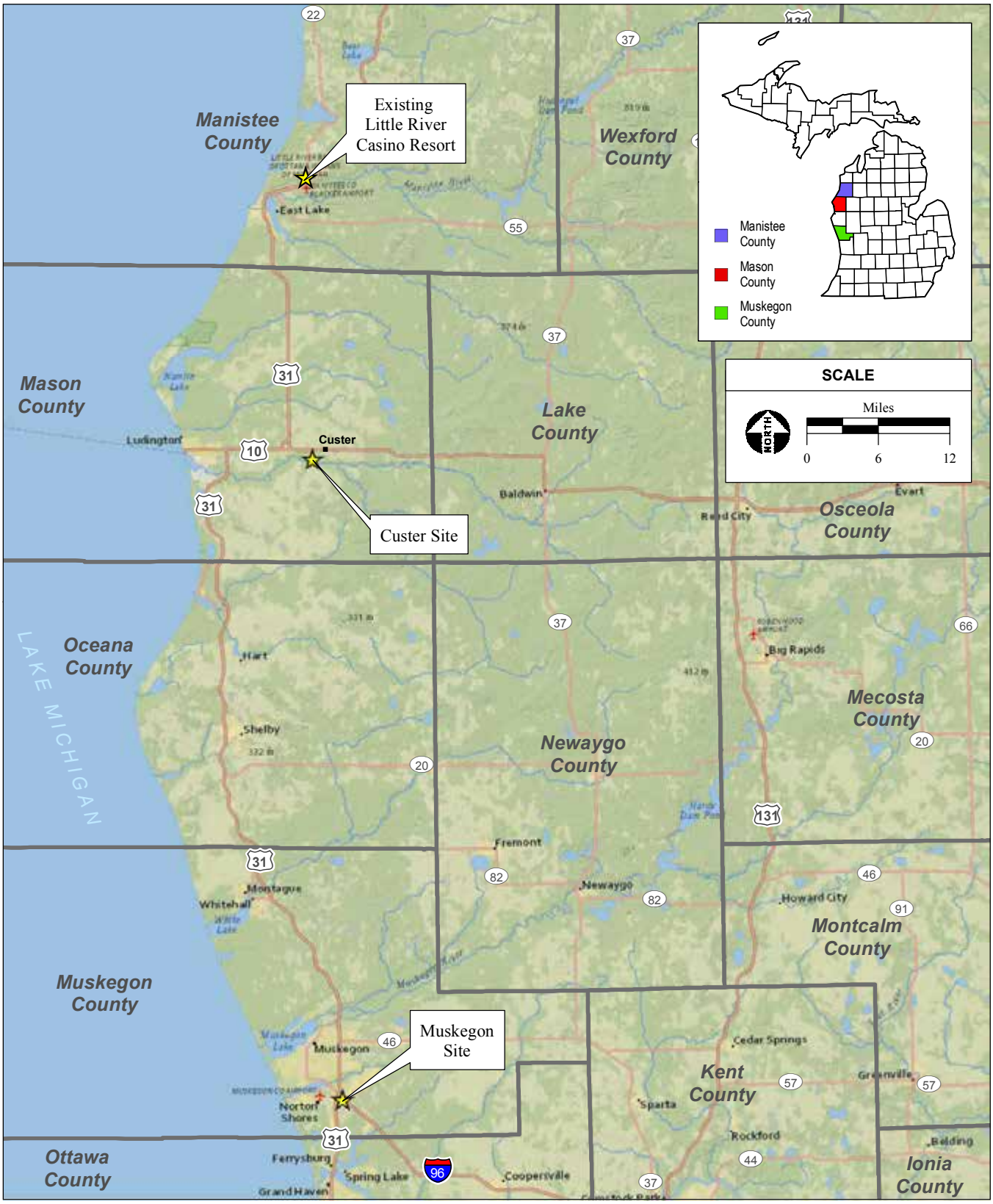
2.2 ALTERNATIVE SITE LOCATIONS

Two alternative site locations are considered for the development alternatives and are described below. Alternatives A, B, and C, if chosen, would be built on the 86.5-acre Muskegon Site, of which 60 acres would be placed into federal trust status. Alternative D would be built on the 45-acre Custer Site, which is within an area currently held in federal trust for the Little River Band of Ottawa Indians (Tribe).

2.2.1 MUSKEGON SITE – ALTERNATIVES A, B, AND C

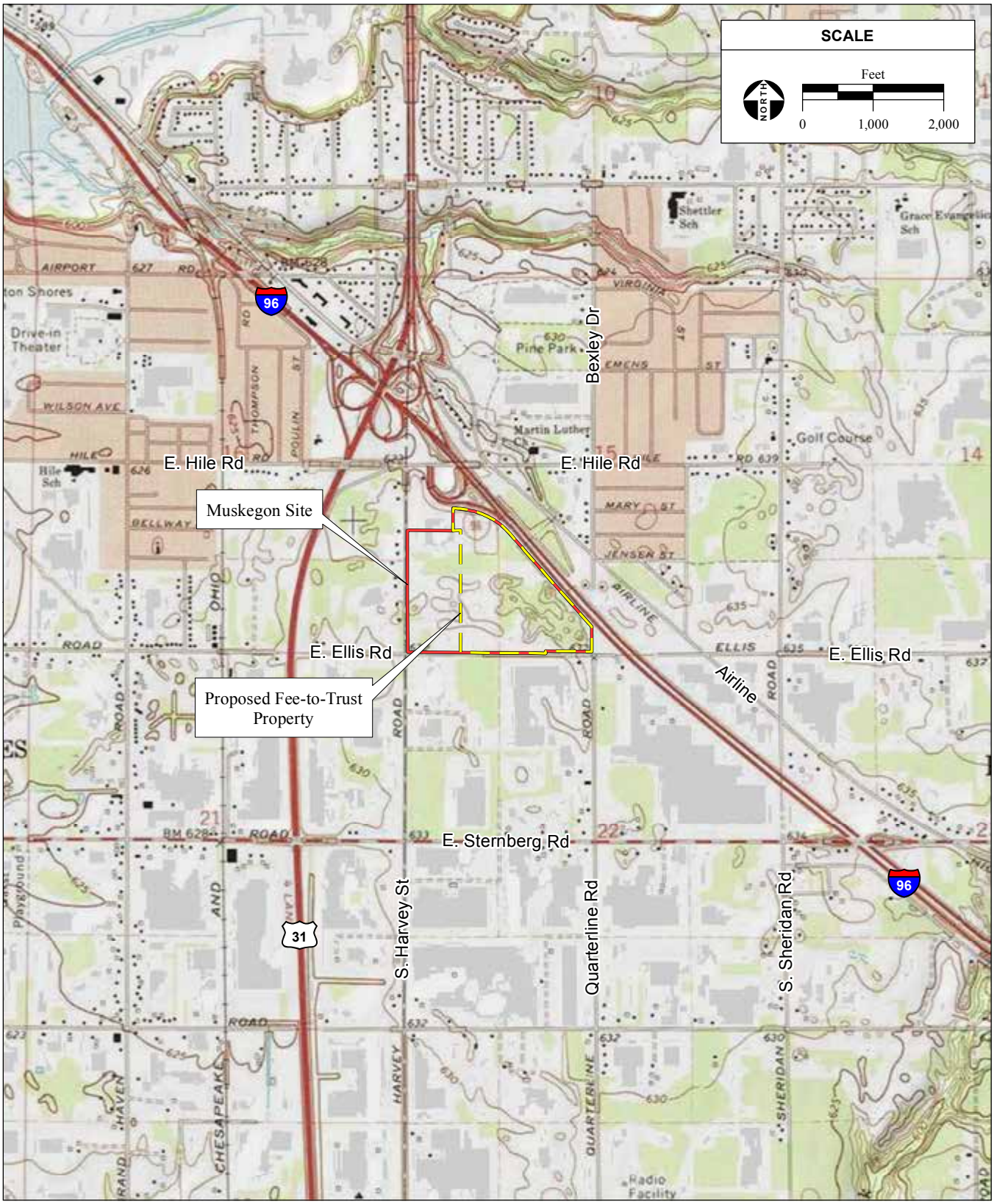
The Muskegon Site is located within the Township of Fruitport (Township), Muskegon County, Michigan, at the northeast corner of the intersection of South Harvey Street and East Ellis Road, south of the Interstate 96 (I-96) and United States Highway 31 (US-31) interchange. The site is located in the southwestern part of Muskegon County, approximately 0.55 miles east of the Muskegon County Airport. **Figures 2-1** and **2-2** show the location of the Muskegon Site. The site is approximately 86.5 acres and consists of two parcels (Assessor's Parcel Numbers [APNs] 15-115-300-0011-10 and 15-115-300-0026-00) currently owned by the Tribe. Regional Access to the Muskegon Site is provided by I-96, a four lane divided freeway bordering the site to the northeast; and US-31, a four lane divided freeway approximately 0.3 miles west of the site. An aerial photograph of the Muskegon Site is provided as **Figure 2-3**. The Muskegon Site is approximately 80 miles south of the Tribe's trust land in Manistee County, and approximately 60 miles south of its trust land near the village of Custer in Mason County.

The Muskegon Site currently consists of a former racetrack, parking lots, and open space, and is zoned as Shopping Center (SC-1). Surrounding land uses include Service and General Business (B-3, B-2, respectively; northeast, east, southeast, and south), Single Family Residential (R-1; east), and Planned Unit Development (PUD; City of Norton Shores, west).



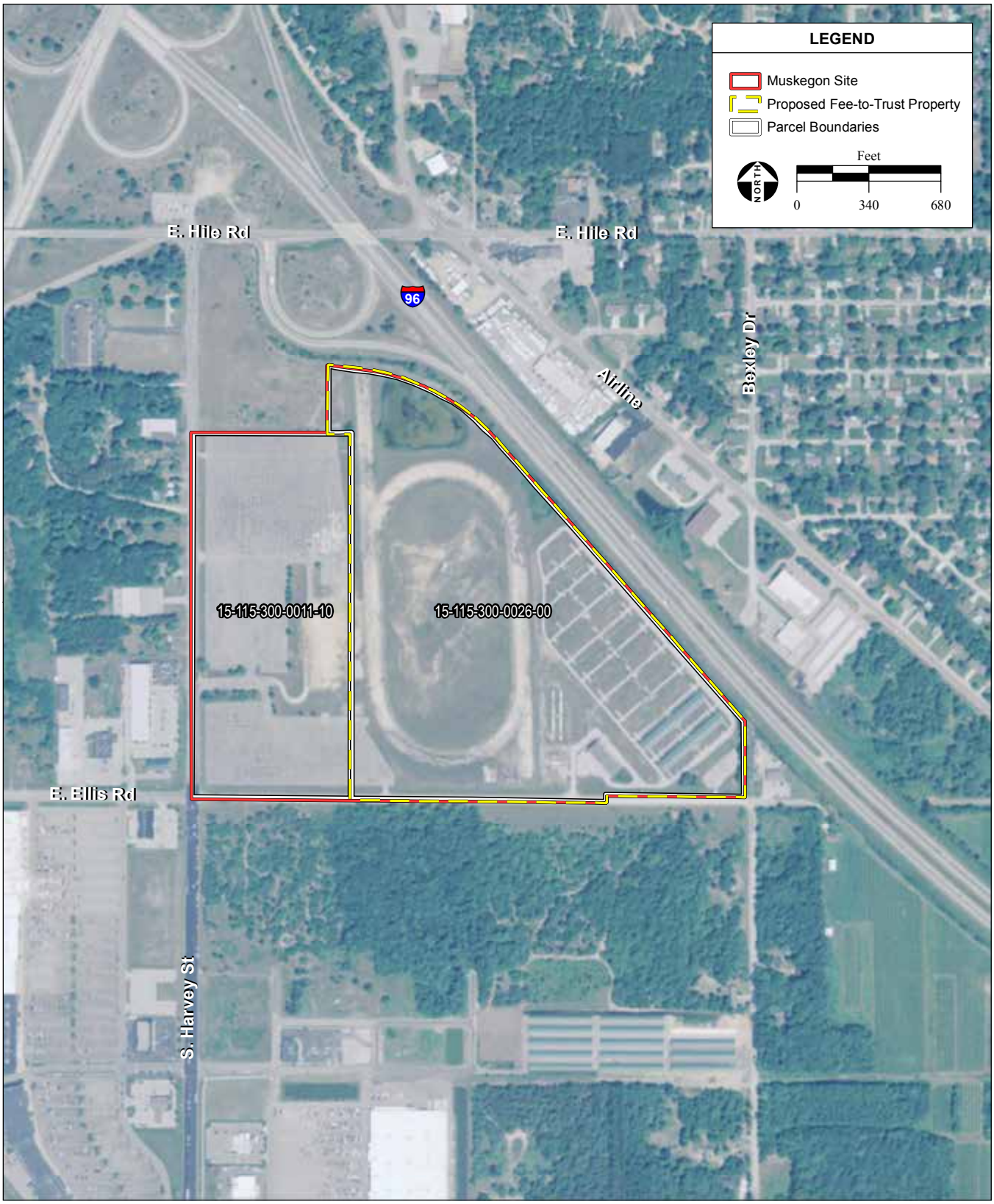
SOURCE:National Geographic, 2015; AES, 5/6/2016

Figure 2-1
Regional Location



SOURCE: "Muskegon East, MI" USGS 7.5 Minute Topographic Quadrangle, T9N, R16W, Sections 15 and 22, Michigan Baseline & Meridian; ESRI Data, 2013; AES, 6/1/2016

Figure 2-2
Site and Vicinity - Muskegon Site



SOURCE: USDA aerial photograph, 7/21/2014; Muskegon County Parcels, 2013; AES, 10/14/2016

Figure 2-3
Aerial Photograph - Muskegon Site

2.2.2 CUSTER SITE – ALTERNATIVE D

The approximately 45-acre Custer Site is located within an approximately 1,087-acre property currently held in federal trust for the Tribe. The property was taken into trust in 2007. The site is located immediately west of the Village of Custer, within Custer Township, in Mason County, Michigan. **Figures 2-1** and **2-4** show the location of the Custer Site. Regional access to the Custer Site is provided by United States Highway 10 (US-10), an east-west three-lane roadway approximately 0.5 miles north of the site. The Custer Site is approximately 20 miles south of the Tribe's trust land in Manistee County.

The Custer Site is currently undeveloped and is adjacent to rural residential and agricultural land. The site was last zoned as Recreation Residential (RR), although local zoning designations do not apply to land held in trust. Surrounding land uses consist of four lots to the north and northeast that are developed as rural residential units.

2.3 ALTERNATIVE A – PROPOSED PROJECT

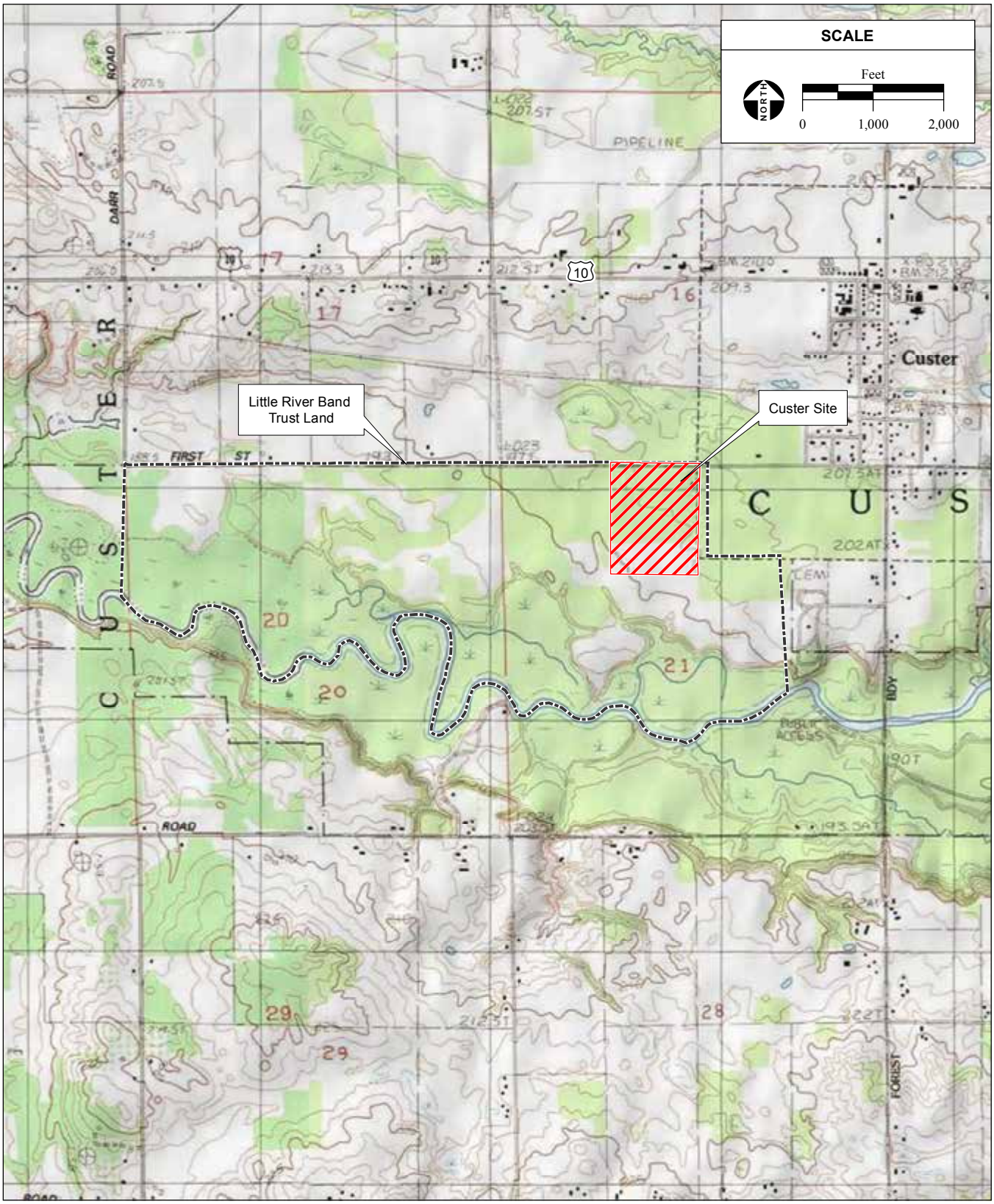
Alternative A consists of the following components:

1) The transfer of the approximately 60-acre Proposed Fee-to-Trust Property (APN 15-115-300-0026-00) from fee to trust status (**Figure 2-3**);
2) Issuance of a two-part determination by the Secretary of the Interior (Secretary) under Section 20 of the Indian Gaming Regulatory Act (IGRA) that gaming on the Muskegon Site would be in the best interest of the Tribe and not detrimental to the surrounding community (25 United States Code [USC] §2719 [b][1][A]); and
3) Development of the 86.5-acre Muskegon Site, which includes the 60-acre Proposed Fee-to-Trust Property, with a variety of uses including a casino, hotel, convention center, parking, and other supporting facilities.

Alternative A most suitably meets all aspects of the purpose and need of the Proposed Action by promoting the Tribe's long-term economic development and self-governance capability. Construction of Alternative A has an estimated duration of 18 months. Components of Alternative A are described below.

2.3.1 LAND TRUST ACTION

The Tribe has submitted an application to the Bureau of Indian Affairs (BIA) for the transfer of 60 acres of land within the Muskegon Site into federal trust for the development of a casino and related facilities. The Proposed Fee-to-Trust Property is shown in **Figure 2-3**. The BIA will make its determination regarding the proposed fee-to-trust acquisition in accordance with the procedures set forth in 25 CFR Part 151. The regulations in 25 CFR Part 151 implement Section 5 of the Indian Reorganization Act (IRA), codified at 25 USC §5108, which is the general statute that provides the Secretary with authority to acquire lands in trust status for tribes and individual Indians. Since the Tribe is seeking to acquire off-reservation land in trust for gaming purposes, compliance with Section 20 of the IGRA (25 USC §2719) is being considered along with the BIA Part 151 Fee-to Trust Application.



SOURCE: "Scottville, MI" & "Custer, MI" USGS 7.5 Minute Topographic Quadrangles, T18N, R16W, Sections 21 & 22, Michigan Baseline & Meridian; AES, 6/1/2016

Figure 2-4
Site and Vicinity - Custer Site

2.3.2 TWO-PART SECRETARIAL DETERMINATION

IGRA (25 USC §2701-2721) was enacted by Congress on October 17, 1988, to regulate the conduct of gaming on Indian lands. Under Section 20 of IGRA (25 USC §2719), gaming on lands acquired in trust by the Secretary after October 17, 1988, is prohibited with some exceptions. Under one such exception, gaming is allowed on land acquired in trust after October 17, 1988, when:

> …the Secretary, after consultation with the Indian tribe and appropriate state and local officials, including officials of other nearby Indian tribes, determines that a gaming establishment on newly acquired lands would be in the best interest of the Indian tribe and its members, and would not be detrimental to the surrounding community, but only if the Governor of the state in which the gaming activity is to be conducted concurs in the Secretary's determination. (25 USC §2719 [b][1][A])

This subsection of Section 20 is often referred to as the Secretary's "two-part determination" because the Secretary must determine that gaming on the newly acquired land would: (1) be in the best interest of the tribe and its members and (2) not be detrimental to the surrounding community. It gives states, local officials, and other tribes consultation privileges with the Secretary regarding the impacts of a gaming proposal on their communities. In addition to meeting the two-part test, the governor of the state in which the gaming activity is to be conducted must concur with the Secretary's findings before gaming may commence.

2.3.3 ALTERNATIVE A PROJECT COMPONENTS

Casino Resort

The proposed casino resort would be constructed entirely within the Proposed Fee-to-Trust Property and would include approximately 400,000 square feet (sf) of building area. At buildout, the gaming component of the facility would consist of approximately 1,700 electronic gaming devices (EGDs) and 35 table games. The main gaming area would include service bars and a player's club. Restaurant facilities include a 250-seat buffet, 24-hour café, sports bar, food court, and a specialty restaurant. The nine-story hotel would be located in the southeast portion of the development and would be comprised of 187 standard guest rooms and 33 suites; it would also include an outdoor pool and a fitness center. The hotel tower would be approximately 100 feet tall. The convention center would be located in the western portion of the development and would include a pre-function area, stage, green room, banquet kitchen, and storage within the 38,790-sf facility. A site plan for the proposed facilities is presented as **Figure 2-5** and an architectural rendering is presented as **Figure 2-6**. **Table 2-1** provides a breakdown of project components with associated square footages.

Parking Facilities

One four-story parking structure would be located in the northwestern portion of the Proposed Fee-to-Trust Property and would provide 955 parking spaces. Additionally, approximately 955 surface parking spaces would be provided (**Figure 2-5**) for a total of 1,910 parking spaces.

SOURCE: HBG, 2015; AES, 6/01/2016

Figure 2-5
Alternative A – Proposed Project Site Plan

SOURCE: HBG, 2015; AES, 4/26/2016

Figure 2-6
Alternative A - Architectural Rendering

TABLE 2-1
ALTERNATIVE A – PROPOSED PROJECT

Area	Seats/Rooms/ Parking Space	Approximate Square Footage
Casino-Hotel Facility		***396,177***
Casino		**149,069**
Casino Gaming Floor: Slots	1,700 machines	
Casino Gaming Floor: Tables	35 tables	
Restaurants and Retail		**33,231**
Buffet	250 seats	
24-Hour Café	100 seats	
Specialty Restaurant	80 seats	
Sports Bar / Lounge	150 seats	
Deli / Food Court	50 seats	
Retail (one shop)		100
Hotel	**220 rooms**	**175,087**
Standard/Balcony Rooms	187 rooms	420 each
Suites (Junior and Presidential)	33 suites	840 and 630
Convention Center/Multi-Purpose Entertainment Center		**38,790**
Parking	**1,910 spaces**	**335,000**
Parking Structure	955 spaces	
Surface Parking	955 spaces	
Source: HBG, 2015.		

Site Access

Public access to the Muskegon Site would be provided via one driveway located along Harvey Street and one driveway located along East Ellis Road. Five service driveways for employee parking and truck access would also be located along East Ellis Road. These service driveways would be clearly marked to dissuade public use. As shown on **Figure 2-5**, a portion of the main driveway off Harvey Street would be constructed within the portion of the Muskegon Site that would remain in fee. Improvements to the Harvey Street site access would be made as described in **Section 5.8**, to manage the ingress and egress of traffic at the Muskegon Site.

Signage, Lighting, and Landscaping

Exterior signage would enhance the building's architecture and the natural characteristics of the site by incorporating native materials in combination with architectural trim. Illuminated signs would be designed to blend with the light levels of the building and landscape lighting in both illumination levels and color characteristics. The exterior lighting of the project would be integrated into components of the architecture and would be strategically positioned to minimize off-site lighting and any direct sight lines to the public. The architectural design of the project would be enhanced by landscaping using plants native to the region.

Water Supply

As discussed in detail in the Water Demand and Supply Study (**Appendix D**) and **Section 4.10**, the estimated average daily water consumption for Alternative A is approximately 144,250 gallons per day (GPD). The required fire flow for the casino resort was determined using International Organization for Standardization (ISO) recommended fire flows for commercial sites. A capacity rate of 2,500 gallons per minute (GPM) for two hours would be required to supply the necessary fire flow for Alternative A (**Appendix D**). There are two options for project water supply, as described below.

Municipal Water Connection (Water Supply Option 1)

Under Water Supply Option 1, the Township's municipal public water system would serve the project in accordance with Section 2.4 of the Municipal Services Agreement (MSA) between the Tribe, Township, and County (see **Section 1.6.2**). The Muskegon Site is currently connected to an 8-inch diameter water main along East Ellis Road through two connections that are 6 inches and 8 inches in diameter. In order to serve Alternative A, the 8-inch water main in East Ellis Road would be replaced with a 12-inch water main and a new 8-inch pipeline would be installed on site. The new 8-inch on-site pipeline would be looped from the proposed 12-inch water main in East Ellis Road to the existing 12-inch water main in Harvey Road. A preliminary alignment of the new 8-inch on-site pipeline is included within Figure 4 of the Water Demand and Supply Study (**Appendix D**). Pursuant to Section 2.4 of the MSA, water infrastructure would be designed, installed, and maintained in accordance with Fruitport Water Department water infrastructure standards. As set forth in the MSA, upon connection to the Township's water system, the Tribe would pay connection charges and monthly service fees in the same manner as is usual and customary for all other users of the municipal public water system (**Appendix B**).

On-Site Supply (Water Supply Option 2)

Should the Township be unable to provide water services to the Muskegon Site due to unforeseen circumstances, water for domestic use, emergency supply, and fire protection would be provided by on-site wells. On-site water facilities would include two on-site groundwater wells (one for continuous supply and one for redundancy in case of malfunction or maintenance of the primary well), a treatment system, three booster pumps, an internal distribution system, and either a backup generator system or a 300,000-gallon storage tank to maintain adequate fire flow.

Wastewater Treatment and Disposal

As discussed in detail in the Wastewater Disposal Study (Fleis & Vandenbrink, 2016a; **Appendix E**) and **Section 4.10**, the projected average daily wastewater flow for Alternative A is approximately 143,000 GPD. Two options are available for wastewater treatment and disposal, as described below.

Municipal Treatment and Disposal (Wastewater Treatment Option 1)

Under Wastewater Treatment Option 1, wastewater service would be provided by the Township in accordance with Section 2.3 of the MSA. Wastewater would be conveyed from the Muskegon Site via two existing 8-inch diameter sewer lines connected to a 10-inch sewer line in East Ellis Road. A diagram of the on-site wastewater conveyance pipelines is included within Section 7 of the Wastewater Disposal Study (**Appendix E**). Pursuant to Section 2.3 of the MSA, wastewater infrastructure would be designed,

installed, and maintained in accordance with Fruitport Public Works infrastructure standards. As set forth in the MSA, upon connection to the Township's sewer system, the Tribe would pay connection charges and monthly service fees in the same manner as is usual and customary for all other users of the municipal public water system (**Appendix B**).

On-Site Treatment and Disposal (Wastewater Treatment Option 2)

Should the Township be unable to provide wastewater service to the Muskegon Site due to unforeseen circumstances, wastewater generated at the casino resort would be treated at a package treatment facility sized to treat the peak flow, and treated water would be disposed of via an approximately 100,000-sf leach field. Both the package treatment plant and leach field would be located within the Proposed Fee-to-Trust Property.

Grading and Drainage

Construction would involve grading and excavation for building pads, parking lots, and utilities. As discussed in the Grading and Drainage Study (Fleis & Vandenbrink, 2016b; **Appendix F**), the total earthwork estimated for Alternative A is approximately 146,000 cubic yards of cut and 130,000 cubic yards of fill. Topsoil would be imported onto the site to support the landscaping around the buildings. The excess soil from grading during construction would be stockpiled on site and landscaped along the western border of the casino resort to provide a visual barrier between Harvey Street and the back of the casino resort (**Figure 2-5**).

Pursuant to Section 2.8 of the MSA, stormwater drainage facilities would be constructed pursuant to and in accordance with the standards of the State of Michigan Drain Code, as updated and enforced by the Muskegon County Drain Commissioner. The proposed grading and drainage plan is shown in **Figure 2-7**. Stormwater retention ponds for Alternative A would be constructed on the northern portion of the Muskegon Site, along the north and south side of the main entrance drive off of Harvey Street. As shown in **Figure 2-7**, a portion of the retention ponds would be constructed within the portion of the Muskegon Site that would remain in fee. The two hydraulically connected stormwater retention ponds would total approximately 8 acres in surface area and would reduce stormwater runoff off site for up to a 100-year storm event. The ponds would empty by infiltration to the groundwater; however, the ponds would have an emergency overflow near the inlet of an existing off-site culvert which transports runoff from the west to the east side of I-96. The on-site drainage system would be designed to accommodate flows from at least a 100-year storm event. Roof downspouts from the casino resort would outlet to the ground and stormwater would be routed through rain gardens and bioswales to increase groundwater recharge and provide for improved stormwater quality. Parking lots would drain to the stormwater collection system and outlet to the stormwater retention pond south of the access road. This would allow settling of suspended solids prior to traveling to the larger northerly pond.

SOURCE: Fleis & Vandenbrink, 2015; AES, 6/01/2016

Figure 2-7

Alternative A – Grading and Drainage Plan

Best Management Practices (BMPs)

As set forth in Sections 2.2, 2.8, and 4.1 of the MSA and Tribal Ordinance #02-550-01, the Tribe has committed to developing the Proposed Project in compliance with fire codes applicable to the Township, the State Drain Code, State building codes, and the International Building Code (IBC). Therefore, the construction and operation of Alternative A would incorporate a variety of industry standard Best Management Practices (BMPs). In a letter dated October 3, 2018, the Tribe has committed to implementing the following BMPs during construction and operation of the Proposed Project (LRBOI, 2018). In many cases, BMPs are conditions of the Tribe's existing tribal ordinances that apply to trust lands. Relevant tribal ordinances are referenced below, where applicable.

Water Resources

The following BMPs will be implemented for Alternative A to minimize potential effects to water resources during operation of the project.

A. Fertilizer use shall be limited to the minimum amount necessary and shall be adjusted for the nutrient levels in the water used for irrigation. Fertilizer shall not be applied immediately prior to anticipated rain or 24 hours after a significant rain event.

B. Consistent with Tribal Ordinance #01-500-05 Article 9.02, landscape irrigation shall be adjusted based on weather conditions and shall be reduced or eliminated during the wet portion of the year in order to prevent excessive runoff.

C. If water will be supplied via on-site wells (Water Supply Option 2), a test well shall be constructed at the site. Aquifer testing and groundwater quality testing shall be conducted at the on-site test well to confirm that high quality groundwater in sufficient quantity is available.

Air Quality

The following BMPs will be implemented for Alternative A to minimize potential effects associated with construction noise consistent with Tribal Ordinance #10-400-01 Article 9.04(e)(5).

Construction

A. The following dust suppression measures shall be implemented by the Tribe to control the production of fugitive dust (particulate matter less than 10 micrometers in diameter [PM_{10}]) and prevent wind erosion of bare and stockpiled soils:

   1. Spray exposed soil with water or other suppressant at least twice a day.
   2. Minimize dust emissions during transport of fill material or soil by wetting down loads, ensuring adequate freeboard (space from the top of the material to the top of the truck bed) on trucks, and/or covering loads.
   3. Promptly clean up spills of transported material on public roads.
   4. Restrict traffic on site to reduce soil disturbance and the transport of material onto roadways.
   5. Locate construction equipment and truck staging areas away from sensitive receptors as practical and in consideration of potential effects on other resources.

6. Provide wheel washers to remove particulate matter that would otherwise be carried off site by vehicles to decrease deposition of particulate matter on area roadways.
7. Cover dirt, gravel, and debris piles as needed to reduce dust and wind-blown debris.

B. The following measures shall be implemented by the Tribe to reduce emissions of criteria pollutants , carbon dioxide equivalent (CO_2e) emissions, and diesel particulate matter (DPM) from construction of Alternatives A, B, C, and D:

1. It is recommended that the Tribe control criteria pollutants and CO_2e emissions whenever reasonable and practicable by requiring that all diesel-powered equipment be properly maintained and minimize idling time to 5 minutes when construction equipment is not in use, unless per engine manufacturer's specifications or for safety reasons more time is required. Since these emissions would be generated primarily by construction equipment, machinery engines shall be kept in good mechanical condition to minimize exhaust emissions. The Tribe shall employ periodic and unscheduled inspections to accomplish the above mitigation.
2. Require all construction equipment with a horsepower rating of greater than 50 be equipped with diesel particulate filters, which would reduce approximately 85 percent of DPM.

Operation

C. The Tribe shall reduce emissions of criteria air pollutants and CO_2e during construction and operation through the following actions, as applicable:

3. The Tribe shall use clean fuel vehicles in the vehicle fleet where practicable, which would reduce criteria pollutants and CO_2e emissions.
4. The Tribe shall provide preferential parking for vanpools and carpools, which would reduce criteria pollutants and CO_2e emissions.
5. The Tribe shall use low-flow appliances where feasible and utilize both potable and non-potable water to the extent practicable. The Tribe shall use drought resistant landscaping where practicable and provide "Save Water" signs near water faucets throughout the development.
6. The Tribe shall use energy efficient lighting, which would reduce indirect criteria pollutants and CO_2e emissions. Using energy efficient lighting would reduce the project's energy usage, thus, reducing the project's indirect CO_2e emissions.
7. The Tribe shall use energy efficient appliances where feasible.
8. It is recommended that the Tribe control criteria pollutants, CO_2e, and DPM emissions during operation whenever reasonable and practicable by requiring all diesel-powered vehicles and equipment be properly maintained and minimizing idling time to 5 minutes at loading docks when loading or unloading food, merchandise, etc. or when diesel-powered vehicles or equipment are not in use; unless per engine manufacturer's specifications or for safety reasons more time is required. The Tribe shall employ periodic and unscheduled inspections to accomplish the above mitigation.

9. The Tribe shall install recycling bins for glass, cans, and paper products. Decorative trash and recycling receptacles shall be placed strategically inside and outside to encourage people to recycle.
10. The Tribe shall plant trees and vegetation on-site or fund such plantings off-site. The addition of photosynthesizing plants would reduce atmospheric carbon dioxide (CO_2), because plants use CO_2 for elemental carbon and energy production. Trees planted near buildings would result in additional benefits by providing shade to the building; thus reducing heat absorption, reducing air conditioning needs and saving energy.

Socioeconomic Conditions

The following BMPs will be implemented for Alternative A to minimize potential effects associated with problem or pathological gambling.

A. The Tribe shall prominently display (including on any automatic teller machines [ATMs] located on site) materials describing the risk and signs of problem and pathological gambling behaviors. Materials shall also be prominently displayed (including on any ATMs located on site) that provide available programs for those seeking treatment for problem and pathological gambling disorders, including but not limited to a toll-free hotline telephone number.
B. The Tribe shall conduct annual customer surveys in an attempt to determine the number of problem and pathological gamblers and make this information available to state or federal gaming regulators upon request.
C. The Tribe shall undertake responsible gaming practices that at a minimum require that employees be educated to recognize signs of problem gamblers, that employees be trained to provide information to those seeking help, and that a system for voluntary exclusion be made available.
D. The Tribe shall follow the same responsible gaming practices in effect at the Little River Casino Resort in Manistee, which include employee awareness training, provision of responsible gaming information, and a process for working with customers who request self-restriction.

Noise

The following BMPs will be implemented for Alternative A to minimize potential effects associated with construction noise consistent with Tribal Ordinance #10-400-01 Article 9.04(e)(5).

A. Construction shall not be conducted between 11:00 pm and 7:00 am.
B. All engine-powered equipment shall be equipped with adequate mufflers. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.
C. Loud stationary construction equipment shall be located as far away from residential receptor areas as feasible.
D. All generator sets shall be provided with enclosures.

Hazardous Materials

The following BMPs will be implemented for Alternative A to minimize potential effects associated with the exposure to hazardous materials consistent with Tribal Ordinance #10-400-01 Article 9.04(e)(5).

A. Personnel shall follow BMPs for filling and servicing construction equipment and vehicles. The BMPs that are designed to reduce the potential for incidents/spills involving the hazardous materials shall include the following:

   1. To reduce the potential for accidental release, fuel, oil, and hydraulic fluids shall be transferred directly from a service truck to construction equipment.
   2. Catch-pans shall be placed under equipment to catch potential spills during servicing.
   3. Refueling shall be conducted only with approved pumps, hoses, and nozzles.
   4. All disconnected hoses shall be placed in containers to collect residual fuel from the hose.
   5. Vehicle engines shall be shut down during refueling.
   6. No smoking, open flames, or welding shall be allowed in refueling or service areas.
   7. Refueling shall be performed away from bodies of water to prevent contamination of water in the event of a leak or spill.
   8. Service trucks shall be provided with fire extinguishers and spill containment equipment, such as absorbents.
   9. Should a spill contaminate soil, the soil shall be put into containers and disposed of in accordance with local, state, and federal regulations.
   10. All containers used to store hazardous materials shall be inspected at least once per week for signs of leaking or failure.
   11. Results of inspections shall be recorded in a logbook that shall be maintained on-site.

B. Hazardous materials shall be stored in appropriate and approved containers in accordance with applicable regulatory agency protocols.

C. Potentially hazardous materials, including fuels, shall be stored away from drainages, and secondary containment shall be provided for all hazardous materials stored during construction and operation.

D. In the event that contaminated soil and/or groundwater is encountered during construction-related earth-moving activities, all work shall be halted until a professional hazardous materials specialist or other qualified individual assesses the extent of contamination. If contamination is determined to be hazardous, representatives of the Tribe shall consult with the USEPA to determine the appropriate course of action, including development of a Sampling and Remediation Plan if necessary. Any and all contaminated soils that are determined to be hazardous shall be disposed of in accordance with federal regulations.

E. The Tribe shall ensure, through the enforcement of contractual obligations, that all contractors prepare hazardous materials business plans and that they transport, store, and handle construction

and remediation-related hazardous materials in a manner consistent with applicable regulations and guidelines. Recommendations may include, but are not limited to, transporting and storing materials in appropriate and approved containers, maintaining required clearances, and handling materials in accordance with the applicable federal, state, and/or local regulatory agency protocols.

Aesthetics

The following BMPs will be implemented for Alternative A to minimize potential effects associated with lighting and glare consistent with Tribal Ordinance #05-550-02 Article IV(4.11).

A. Placement of lights on buildings shall be designed so as not to cast light or glare off site.

B. Shielding, such as with a horizontal shroud, shall be used for all outdoor lighting so as to ensure it is downcast.

C. Timers shall be utilized so as to limit lighting to necessary times.

D. All exterior glass shall be non-reflective low-glare glass.

E. Screening features and natural elements should be integrated as practical into the landscaping design of the alternatives to screen the view of the facilities from existing residences directly adjacent to the site.

Law Enforcement, Fire Protection, and Emergency Response

As described in **Section 1.6.2**, in accordance with Section 2.1 of the MSA, the Tribe would have the primary responsibility for law enforcement on the trust land with the support of the Fruitport Township Police Department (FPD) and the County Sheriff's Department. In accordance with Section 2.2 of the MSA, the Township, through the Fruitport Fire Department (FPFD), would provide fire protection and emergency response services to the Muskegon Site.

2.4 ALTERNATIVE B – REDUCED INTENSITY ALTERNATIVE

Alternative B would be located on the same site as Alternative A (**Figures 2-2** and **2-3**). Alternative B is similar to Alternative A in most aspects, including the issuance of a two-part determination by the Secretary and transfer of the 60-acre Proposed Fee-to-Trust Property into trust. Alternative B consists of a casino development similar to Alternative A, but on a reduced scale. Construction of Alternative B has an estimated duration of 16 months. Components of Alternative B are described below.

2.4.1 ALTERNATIVE B PROJECT COMPONENTS

Under Alternative B, the project components related to site access; signage, lighting, and landscaping; and law enforcement, fire protection, and emergency response are identical to those described under Alternative A (**Section 2.3**). Alternative B does not include a hotel or convention center.

Casino Facility

Alternative B consists of the construction of a casino, restaurants, retail, and parking facilities. Under Alternative B, the proposed casino facility would be approximately 120,000 sf (excluding the parking structure). At buildout, the gaming component of the facility would consist of approximately 1,122 EGDs and 23 table games. Other facilities within the casino include some retail and various restaurants including a 150-seat buffet, 24-hour café, sports bar, and a specialty restaurant. A site plan for the proposed facilities is presented as **Figure 2-8**. **Table 2-2** provides a breakdown of project components with associated square footages.

Parking Facilities

A four-story parking structure would be located on the northwestern edge of the Proposed Fee-to-Trust Property and would provide 500 parking spaces. Additionally, 800 surface parking spaces would be provided for a total of 1,300 spaces.

TABLE 2-2
ALTERNATIVE B – REDUCED INTENSITY ALTERNATIVE

Area	Seats / Rooms / Parking Space	Approximate Square Footage
Casino Facility		**121,226**
Casino		**99,558**
Casino Gaming Floor: Slots	1,122 machines	
Casino Gaming Floor: Tables	23 tables	
Restaurants		**21,668**
Buffet	150 seats	
24-Hour Café	80 seats	
Sports Bar/Lounge	50 seats	
Specialty Restaurant	50 seats	
Retail (one shop)		100
Parking	**1,300 spaces**	**181,000**
Parking Structure	500 spaces	
Surface Parking	800 spaces	
Source: HBG, 2015.		

Water Supply

As discussed in detail in the Water Demand and Supply Study (**Appendix D**) and **Section 4.10**, the estimated average daily water consumption for Alternative B is approximately 72,400 GPD. Similar to Alternative A, a fire flow of 2,500 GPM for two hours would be required. As with Alternative A,

SOURCE: HBG, 2015; AES, 6/01/2016

Figure 2-8

Alternative B – Reduced Intensity Alternative Site Plan

Alternative B would either connect to the existing water lines (Water Supply Option 1), or construct on-site water facilities (Water Supply Option 2). These options are the same as the options described above for Alternative A, with the exception of the alignment of the new 8-inch diameter on-site pipeline under Water Supply Option 1, which is adjusted to follow the proposed building footprint to the east and north. A preliminary alignment of the new 8-inch on-site pipeline under Alternative B is included within Section 7 of the Water Demand and Supply Study (**Appendix D**).

Wastewater Treatment and Disposal

The projected average daily wastewater flow for Alternative B is approximately 72,400 GPD. As with Alternative A, wastewater service for Alternative B would either be provided by the Township through connection to an existing sewer line located within the Muskegon Site (Wastewater Treatment Option 1), or by constructing on-site wastewater facilities (Wastewater Treatment Option 2). These options are the same as those described above for Alternative A

Grading and Drainage

Construction would involve grading and excavation for the stormwater basins, building pads, and parking lots. As discussed in the Grading and Drainage Study (Fleis & Vandenbrink, 2016b; **Appendix F**), the total earthwork estimated for Alternative B is approximately 139,000 cubic yards of cut and 132,000 cubic yards of fill. Topsoil would be imported onto the site to support the landscaping around the buildings. The excess soil from grading during construction would be stockpiled on site and landscaped along the western border of the casino facility to provide a visual barrier between Harvey Street and the back of the casino facility (**Figure 2-8**). As with Alternative A, stormwater retention ponds would be developed in the northern portion of the Muskegon Site. The proposed grading and drainage plan is shown in **Figure 2-9**.

Best Management Practices

As with Alternative A, construction and operation of Alternative B would incorporate a variety of industry standard BMPs. **Section 2.3.3** presents select BMPs that have been specifically incorporated to avoid or minimize potential adverse effects resulting from the development of Alternative B.

2.5 ALTERNATIVE C – NON-GAMING ALTERNATIVE

Alternative C would be located on the same site as Alternative A (**Figures 2-2** and **2-3**). Alternative C consists of the following components:

1) The transfer of the 60-acre Proposed Fee-to-Trust Property from fee to trust status; and
2) Development of the 86.5-acre Muskegon Site, which includes the 60-acre Proposed Fee-to-Trust Property, with retail facilities (175,000 sf), parking, and other supporting facilities.

Alternative C does not include a gaming component; therefore, the issuance of a two-part determination by the Secretary would not be necessary. Construction of Alternative C has an estimated duration of 16 months. Components of Alternative C are described below.

SOURCE: Fleis & Vandenbrink, 2015; AES, 6/01/2016

Figure 2-9

Alternative B – Grading and Drainage Plan

2.5.1 ALTERNATIVE C PROJECT COMPONENTS

Under Alternative C, the project components related to signage, lighting, and landscaping are similar to those described under Alternative A (**Section 2.3**).

Retail Development and Parking Facilities

Under Alternative C, the proposed retail complex would be 175,000 sf at buildout. A total of 955 surface parking spaces would be provided for the retail complex. A site plan for the proposed facilities is presented as **Figure 2-10**.

Site Access

Public access to the Muskegon Site would be provided via a driveway located along Harvey Street and a driveway located along East Ellis Road. Two service driveways for employee parking and truck access would also be located along East Ellis Road. These service driveways would be clearly marked to dissuade public use. Improvements to the Harvey Street site access would be made as described in **Section 5.8**, to manage the ingress and egress of traffic at the Muskegon Site.

Water Supply

As discussed in detail in the Water Demand and Supply Study (**Appendix D**) and **Section 4.10**, the estimated average daily water consumption for Alternative C is approximately 10,500 GPD. Similar to Alternative A, a fire flow of 2,500 GPM for two hours would be required. As with Alternative A, Alternative C would either connect to the existing water lines (Water Supply Option 1), or construct on-site water facilities (Water Supply Option 2). These options are similar to those described above for Alternative A, with the exception of the alignment of the new 8-inch on-site pipeline under Water Supply Option 1, which is adjusted to follow the proposed building footprint to the south and west. A preliminary design for the alignment of the new 8-inch on-site pipeline under Alternative C is included within Section 7 of the Water Demand and Supply Study (**Appendix D**).

Wastewater Treatment and Disposal

The projected average daily wastewater flow for Alternative C is approximately 8,750 GPD. As with Alternative A, wastewater service for Alternative C would either be provided by the Township through connection to an existing sewer line located within the Muskegon Site (Wastewater Treatment Option 1), or by constructing on-site wastewater facilities (Wastewater Treatment Option 2). These options are similar to those described above for Alternative A.

Grading and Drainage

Construction would involve grading and excavation for the stormwater basins, building pads, and parking lots. As discussed in the Grading and Drainage Study (Fleis & Vandenbrink, 2016b; **Appendix F**), the total earthwork estimated for Alternative C is approximately 142,000 cubic yards of cut and 132,400 cubic yards of fill. Topsoil would be imported onto the site to support the landscaping around the buildings. The excess soil from grading during construction would be stockpiled on site and landscaped

SOURCE: HBG, 2015; AES, 6/01/2016

Figure 2-10
Alternative C – Non-Gaming Site Plan

along the western border of the Proposed Fee-to-Trust Property to provide a visual barrier between Harvey Street and the back of the retail facility. As with Alternative A, stormwater retention ponds would be developed in the northern portion of the Muskegon Site. The proposed grading and drainage plan is shown on **Figure 2-11**.

Best Management Practices

As with Alternative A, construction and operation of Alternative C would incorporate a variety of industry standard BMPs. **Section 2.3.3** presents select BMPs that have been specifically incorporated to avoid or minimize potential adverse effects resulting from the development of Alternative C.

Law Enforcement, Fire Protection, and Emergency Response

An agreement with the Township to provide law enforcement and fire services to the site under Alternative C is not currently in place; however, it is assumed that an agreement similar to the MSA provided in **Appendix B** would be executed prior to construction of Alternative C.

2.6 ALTERNATIVE D – CUSTER SITE ALTERNATIVE

Alternative D consists of the following components:

1) This site would require an analysis of gaming eligibility under 25 U.S.C. § 2719; and
2) Development of approximately 45 acres of the existing trust property with a variety of uses including a casino, parking, and other supporting facilities.

Construction of Alternative D has an estimated duration of 12 months. Components of Alternative D are described below.

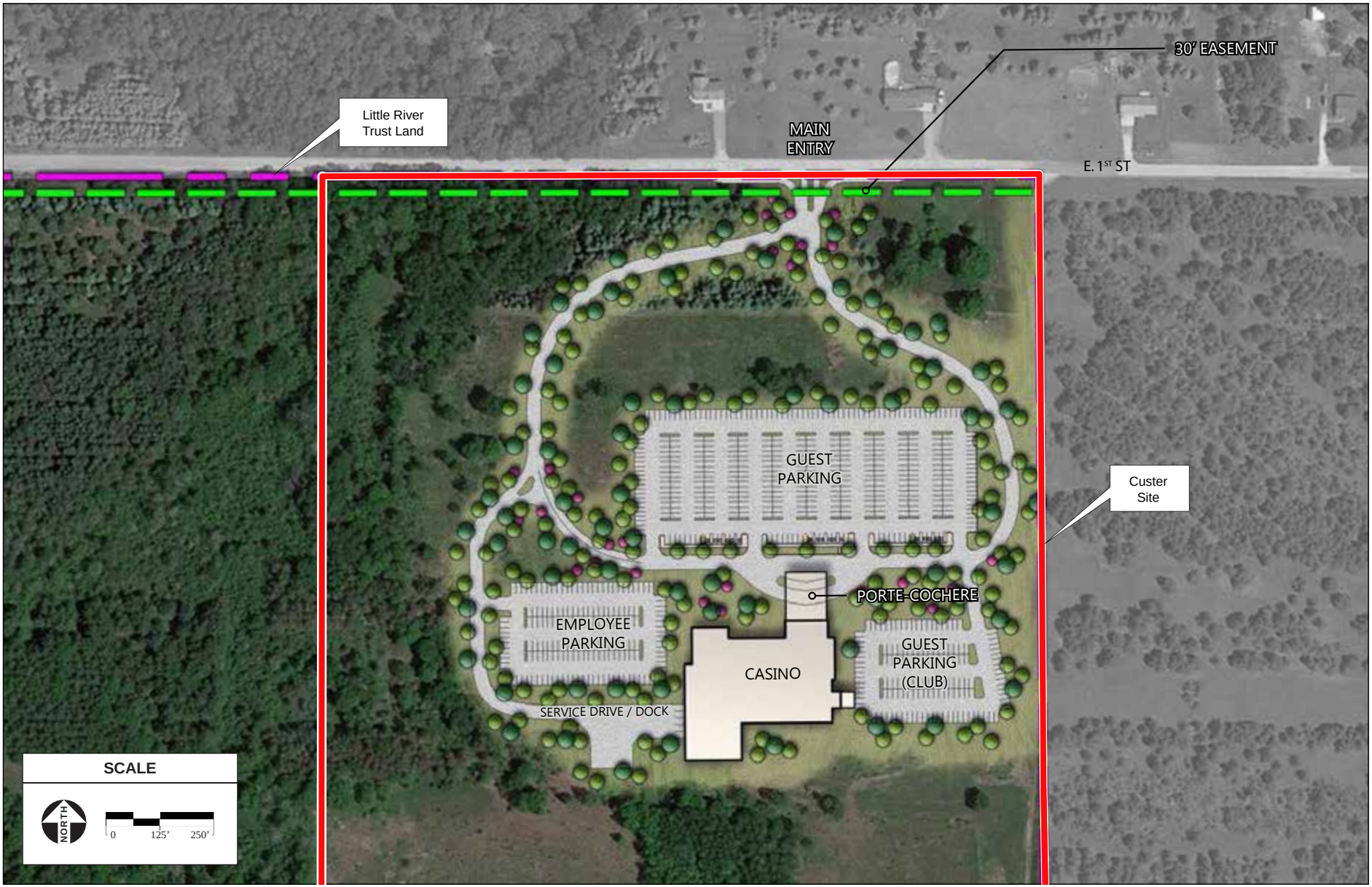
2.6.1 ALTERNATIVE D PROJECT COMPONENTS

Casino Facility

Under Alternative D, the proposed casino facility would be approximately 83,600 sf at buildout. At buildout the gaming component of the facility would consist of approximately 500 EGDs and 10 table games. Other facilities within the casino include a snack bar/café, service bar, player's club, and retail. A site plan for the proposed facilities is presented as **Figure 2-12**. **Table 2-3** provides a breakdown of project components with associated square footages.

SOURCE: Fleis & Vandenbrink, 2015; AES, 6/01/2016

Figure 2-11
Alternative C – Grading and Drainage Plan



SOURCE: HBG, 2015; AES, 4/26/2016

Figure 2-12
Alternative D – Custer Site Site Plan

TABLE 2-3
ALTERNATIVE D – CUSTER SITE ALTERNATIVE

Area	Seats/Rooms/ Parking Space	Approximate Square Footage
Casino Facility		**83,601**
Casino		**77,810**
Casino Gaming Floor: Slots	500 machines	
Casino Gaming Floor: Tables	10 tables	
Center Bar	20 seats	
Restaurants		**5,791**
Snack Bar/Café	90 seats	
Retail (one shop)		600
Parking	**630 spaces**	
Surface Parking	630 spaces	
Source: HBG, 2015.		

Water Supply

As discussed in detail in the Water Demand and Supply Study (**Appendix D**) and **Section 4.10**, the estimated average daily water consumption for Alternative D is approximately 37,500 GPD. Similar to Alternative A, a fire flow of 2,500 GPM for two hours would be required.

Municipal Water Connection (Water Supply Option 1)

Under Water Supply Option 1, potable water would be provided by the City of Scottville. Extension of the City of Scottville's facilities would consist of installing approximately 3 miles of water main from the City of Scottville east along US-10, south along Tuttle Road, and east along East First Street to the Custer Site. A preliminary alignment of the water supply pipeline is included within Section 7 of the Water Demand and Supply Study (**Appendix D**). The new water main would be at least 8 inches in diameter. Two 50-GPM booster pumps (one for continuous use and one for redundancy in case of malfunction or maintenance of the primary pump) would be installed to pressurize the distribution system and provide normal domestic water volume. Additionally, a 300,000-gallon water tank would be constructed on site to satisfy the fire flow requirement. If chosen as the preferred alternative, the Tribe would seek to enter into an agreement similar to the MSA to compensate the City of Scottville for providing water service, including system upgrades to connect the Custer Site to existing infrastructure.

On-Site Supply (Water Supply Option 2)

Under Water Supply Option 2, water for domestic use, emergency supply, and fire protection would be provided by on-site wells. On-site water facilities would include two on-site groundwater wells (one for continuous supply and one for redundancy in case of malfunction or maintenance of the primary well), a treatment system, two booster pumps, an internal distribution system, and a 300,000-gallon storage tank to maintain adequate fire flow.

Wastewater Treatment and Disposal

As discussed in detail in the Wastewater Disposal Study (Fleis & Vandenbrink, 2016a; **Appendix E**) and **Section 4.10**, the projected average daily wastewater flow for Alternative D is approximately 37,500 GPD.

Municipal Treatment and Disposal (Wastewater Treatment Option 1)

Under Wastewater Treatment Option 1, wastewater conveyance would be provided by the City of Scottville and treatment would be provided at the Ludington Wastewater Treatment Plant (LWWTP). Extension of the City of Scottville's facilities would consist of installing approximately 3 miles of sewer lines from the City of Scottville east along US-10, south along Tuttle Road, and east along East First Street to the Custer Site. Additionally, sanitary lift stations would be constructed near the intersections of South Darr Street and US-10, and Tuttle Road and East First Street. A preliminary alignment of the wastewater conveyance pipelines is included within Section 7 of the Wastewater Disposal Study (**Appendix E**). If chosen as the preferred alternative, the Tribe would seek to enter into an agreement similar to the MSA to compensate the City of Scottville and City of Ludington for providing wastewater conveyance and treatment services, respectively, including system upgrades to connect the Custer Site to existing infrastructure.

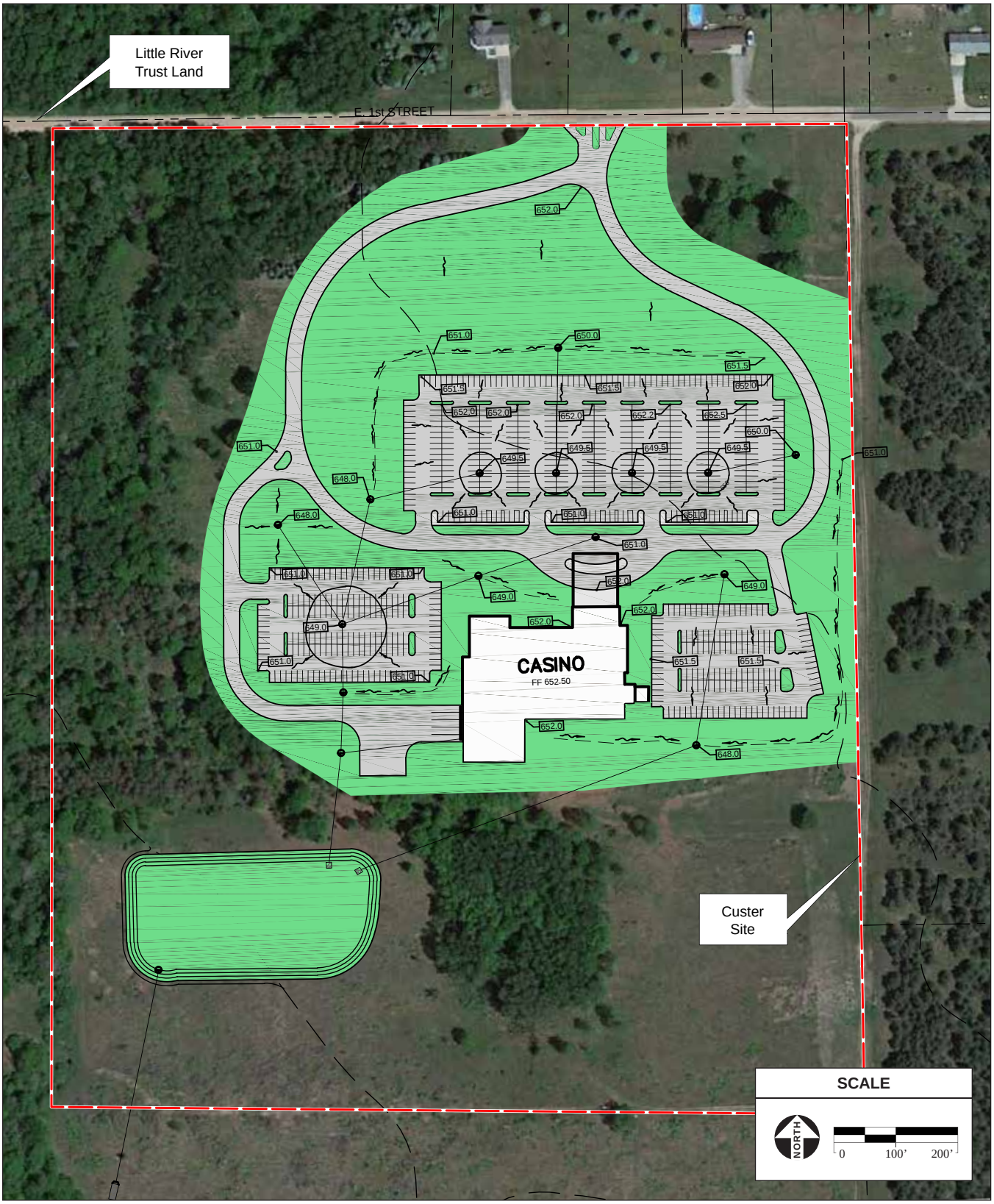
On-Site Treatment and Disposal (Wastewater Treatment Option 2)

Under Wastewater Treatment Option 2, wastewater generated at the casino facility would be treated at a package treatment facility sized to treat the peak flow and treated water would be disposed of via an approximately 25,000-sf leach field. Both the package treatment facility and leach field would be located within the Tribe's existing trust land.

Grading and Drainage

Construction would involve grading and excavation for building pads, parking lots, and utilities. As discussed in the Grading and Drainage Study (Fleis & Vandenbrink, 2016b; **Appendix F**), the total amount of earthwork estimated for Alternative D is 45,500 cubic yards of cut and 40,000 cubic yards of fill. The excess soil from grading during construction would be aesthetically placed on-site and landscaped.

The proposed grading and drainage plan is shown on **Figure 2-13**. An approximately 217,000-cubic-foot stormwater detention pond would be located within the Custer Site to provide optimum site drainage as shown on **Figure 2-13** and detailed in the Grading and Drainage Study (Fleis & Vandenbrink, 2016b; **Appendix F**). During a 100-year event, up to 175,000 cubic feet would be stored in the detention pond. Drainage would continue to flow to the Pere Marquette River, after being held in the proposed detention basin. The drainage plan also incorporates bioswales and rain gardens into the Custer Site where possible. Roof drains would be directed to these features to increase stormwater quality.



SOURCE: Fleis & Fandenbrink, 2015; AES, 4/26/2016

Figure 2-13
Alternative D - Grading and Drainage Plan

Best Management Practices

As with Alternative A, construction and operation of Alternative D would incorporate a variety of industry standard BMPs. **Section 2.3.3** presents select BMPs that have been specifically incorporated to avoid or minimize potential adverse effects resulting from the development of Alternative D.

Law Enforcement, Fire Protection, and Emergency Response

No agreement with local municipalities has been made at this time to provide law enforcement and fire services to the site under Alternative D; however, it is assumed that an agreement similar to the MSA provided in **Appendix B** would be executed prior to construction of Alternative D.

2.7 ALTERNATIVE E – NO ACTION/NO DEVELOPMENT ALTERNATIVE

Under the No Action/No Development Alternative, none of the four development alternatives (Alternatives A, B, C, and D) considered within this EIS would be implemented. The No Action/No Development Alternative assumes that existing uses on the alternative sites would not change in the near term. Under this alternative, the BIA would not take any action.

2.8 ALTERNATIVES ELIMINATED FROM CONSIDERATION

The intent of the analysis of alternatives in the EIS is to present to decision-makers and the public a reasonable range of alternatives that are both feasible and sufficiently different from each other in critical aspects. Section 1502.14(a) of the CEQ's Regulations for implementing NEPA requires a discussion of alternatives that were eliminated from further study, and the reasons for their having been eliminated. The alternatives discussed herein were considered and rejected from full EIS analysis because these alternatives were determined either to be infeasible or to not fulfill the stated purpose and need of the Proposed Action. No additional alternatives beyond those considered within this EIS were submitted for consideration during the scoping period (see **Section 1.5**).

2.8.1 EXPANSION OF EXISTING CASINO

The Tribe currently owns and operates the Little River Casino Resort (LRCR) on restored lands that are now part of the Tribe's reservation in Manistee County, Michigan. Since its opening in 1999, the Tribe has used the income from LRCR to fund, at least in part, numerous important programs for tribal members, and to provide some employment opportunities for those members residing near the Tribe's Manistee reservation. The LRCR was recently expanded and remodeled to include additional restaurants, a new pool area, a full service spa, and other public areas. Consequently, the LRCR is currently optimally sized for the regional market and an additional expansion would not increase the revenues to the Tribe to the extent that they would fulfill the purpose and need of the Proposed Action. Therefore, this alternative was determined to be infeasible and was eliminated from further consideration.

2.9 COMPARISON OF ALTERNATIVES

Section 1502.14 of the CEQ's Regulations for Implementing NEPA states that an EIS should present environmental impacts of proposed alternatives in a comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public. Alternatives considered must include those that offer substantial environmental advantages over the Proposed Project and which may be feasibly accomplished in a successful manner considering economic, environmental, social, technological, and legal factors. A summary comparison of each of the proposed alternatives, including the No Action/No Development Alternative, is provided below.

2.9.1 SUMMARY OF ALTERNATIVES

Alternatives A and B have the following similar components: (1) transfer of the Proposed Fee-to-Trust Property into trust; (2) issuance of a two-part determination by the Secretary; and (3) development of a casino facility, parking, and supporting facilities. Alternative A consists of the development of a casino, hotel, parking, and other supporting facilities, with related amenities that include several restaurants and bars, a swimming pool, a fitness center, and a multi-purpose convention center.

Under Alternative B, there would be no hotel, pool, fitness center, or multi-purpose convention center, and the components of the casino complex would be smaller than those in Alternative A. This alternative would therefore have reduced construction and development costs as well as lesser environmental impacts compared to Alternative A. While the revenue would be less than Alternative A, it would represent an increase over the Tribe's current economic condition.

Alternative C, the Non-Gaming Alternative, would develop the site with a retail development, parking, and other supporting facilities. The revenue generated by this alternative would be far less than the revenues generated from Alternatives A or B and would limit the number of programs and services the Tribal Government could offer tribal members. Under Alternative C, federal discretionary approvals would potentially include approval of lease agreements by the BIA for commercial vendors.

Alternative D, the Custer Site Alternative, would develop a casino, restaurants, retail, and parking facilities on an approximately 45-acre area of land located within an approximately 1,087-acre property currently held in federal trust for the Tribe immediately west of the Village of Custer in Mason County, Michigan. The revenue would be far less than under Alternative A, as the development would be of a significantly smaller scale, and its location would result in market overlap with the Tribe's existing facility. Additionally, as the Custer Site is not currently served by water or wastewater services, extensive development would be required to serve the proposed casino facility.

Alternative E, the No Action/No Development Alternative, would require no federal discretionary approvals. Under Alternative E, no land would be taken into trust on behalf of the Tribe, a two-part determination would not be issued, and it is assumed that no development would take place on the alternative sites in the near term.

2.9.2 COMPARISON OF ENVIRONMENTAL AND ECONOMIC CONSEQUENCES

In accordance with CEQ Regulations, the alternatives considered in this document include those which could accomplish most of the purpose and need for the project, and that could avoid or substantially lessen one or more of the significant effects of the project. A summary comparison of environmental impacts is provided below:

- As discussed in more detail in **Section 4.0** of this EIS, the environmental effects associated with Alternative A that would result from increased employment and economic growth would include an increase in demand for goods, services, and public utilities. Additionally, project-related traffic associated with Alternative A would generate a significant increase in traffic congestion that may increase air emissions and noise effects, both during construction and operation. Implementation of BMPs in **Section 2.3.3** and mitigation identified in **Section 5.0** would reduce these potential adverse effects.

- The environmental effects associated with Alternative B that would result from increased employment and economic growth would also include an increase in demand for goods, services, and public utilities, but to a lesser extent than under Alternative A. Additionally, Alternative B would generate less traffic than Alternative A and therefore would have fewer impacts associated with traffic congestion, mobile air emissions, and traffic-related noise effects. During construction, traffic impacts would also be less than under Alternative A as the footprint would be smaller, requiring fewer trips to deliver materials, less equipment, and fewer trips to dispose of fill. Implementation of BMPs in **Section 2.3.3** and mitigation identified in **Section 5.0** would reduce these potential adverse effects.

- The environmental consequences of Alternative C include fewer employment opportunities and less economic growth for both the Tribe and neighboring communities than would occur from Alternatives A or B. Alternative C would have reduced impacts compared to Alternative A relating to traffic, air quality, noise, and public utilities during both construction and operation. Implementation of BMPs in **Section 2.3.3** and mitigation identified in **Section 5.0** would reduce these potential adverse effects.

- As Alternative D would be developed near the Village of Custer, rather than the Township of Fruitport, all environmental impacts that would have occurred in Fruitport would be transferred to Custer and nearby towns. The overall environmental consequences of Alternative D would be lesser than those of Alternative A, but could potentially have a greater relative effect on the project area due to the more remote location of the Custer Site. Implementation of BMPs in **Section 2.3.3** and mitigation identified in **Section 5.0** would reduce most potential adverse effects.

- Alternative E, the No Action/No Development Alternative, would avoid all environmental effects associated with the development of Alternatives A, B, C, and D. However, this alternative would not meet the purpose and need for the Proposed Action.

Based on the considerations discussed above, Alternative A is the alternative that best meets the purpose and need as described in **Section 1.2**. Additionally, Alternative A would enable the Tribe to establish and maintain a long-term, sustainable revenue stream. Revenue and employment opportunities generated by Alternative A would allow the Tribe to be fully self-reliant, to provide employment opportunities for tribal members, and to strengthen the tribal government. For a detailed, quantitative discussion of potential environmental consequences associated with each of the alternatives, refer to **Section 4.0**. Measures to avoid, minimize, or mitigate adverse effects are provided in **Sections 2.3.3** and **5.0**.

SECTION 3.0

AFFECTED ENVIRONMENT

SECTION 3.0
AFFECTED ENVIRONMENT

3.1 INTRODUCTION

As required by the Council on Environmental Quality's (CEQ's) regulation, 40 Code of Federal Regulations (CFR) §1502.15, this section describes the existing environment of the area affected by the project alternatives. Resource areas or issues that are described in this section include:

Section	Resource Area/Issue
3.2	Geology and Soils
3.3	Water Resources
3.4	Air Quality
3.5	Biological Resources
3.6	Cultural and Paleontological Resources
3.7	Socioeconomic Conditions
3.8	Transportation/Circulation
3.9	Land Use
3.10	Public Services
3.11	Noise
3.12	Hazardous Materials
3.13	Aesthetics

3.2 GEOLOGY AND SOILS

This section describes the existing environmental conditions related to geology and soils on the two alternative sites described in **Section 2.2**: the Muskegon Site (Alternatives A, B, and C) and the Custer Site (Alternative D). The general and site-specific description of geology and soils contained herein provides the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Section 4.0**.

3.2.1 ENVIRONMENTAL SETTING

Geology

The State of Michigan is situated in the interior of the continental plate and, as a result, is far from the more seismically active locations adjacent to boundaries between tectonic plates. State geology is dominated by the Michigan Basin, an elliptical basin that is adjacent to the Canadian Shield in the north and includes all of the Lower Peninsula as well as the eastern half of the Upper Peninsula. The basin is composed of Paleozoic sedimentary rocks up to 16,000 feet thick with various formations forming concentric rings moving from youngest at the center of the basin to oldest at the margins. The Michigan Basin is largely filled with thick deposits of late Precambrian coastal and marine deposits topped by Pleistocene glacial sands, gravels, and clays. The Great Lakes were formed through scour from lobes of the Laurentide ice sheet from 65,000 to 80,000 years ago; the retreating glaciers exposed present-day Great Lakes boundaries beginning approximately 13,000 years ago (Gillespie et al., 2008).

Muskegon Site (Alternatives A, B, and C)

The Muskegon Site is located within the Chicago Lake Plain Physiographic Province and is underlain by Mississippian-age Marshal Formation sandstone. Marshall Sandstone consists of a lower Marshall and Napoleon layers. The upper layer is recognizable only in exposures in the southern part of the basin. The Marshall layer overlies the Coldwater Shale. The total thickness of the Marshall layer varies between 40 and 110 meters. Generally, the Marshall layer contains fossils, is sometimes cross-bedded and rippled (inclined layers that form on a sloping surface such as ripple marks or dunes), and contains very fine- to coarse-grained sandstone of buff, tan, or gray coloring. The Napoleon layer is predominantly a medium-grained sandstone with some coarse sand intervals. It is non-fossiliferous and commonly cross-bedded and rippled (USGS, 2016a).

Custer Site (Alternative D)

The Custer Site is located within the Northern Lower Peninsula High Hills Physiographic Province and is underlain by Mississippian-age Coldwater Shale. Although the Coldwater Shale has the largest outcrop area of any Mississippian formation, it is inaccessible at most localities. Fossils in the uppermost portion of the Coldwater Shale in the western part of the basin are Osagean in age (348 to 340 million years ago [MYA]), but the rest of the formation is Kinderhookian (359.2 to 348 MYA). The maximum thickness of the basin is about 168 meters in the western third of the basin. The unit consists predominantly of gray to bluish-gray shale. Its clay minerals are chiefly illite and kaolinite with minor chlorite. Other lithologies occur in the Coldwater and their distributions divide the formation into distinct eastern and western facies. In the western half of the basin, the Coldwater shales are more calcareous and beds of glauconitic,

fossiliferous limestone, and dolostone occur frequently especially in the middle and upper portions of the formation (USGS, 2016b).

Topography

Receding glaciers modified the landscape in recent geologic time, by leveling off crests and filling valleys with till and outwash and resulting in a gently rolling landscape with deposits of deep, fertile silt in the portion of west-central Michigan that includes both alternative sites (Gillespie et al, 2008).

Muskegon Site (Alternatives A, B, and C)

The Muskegon Site generally slopes from west to east and is located within an area of flat, well-drained sandy soils at an elevation of approximately 632 feet above mean sea level (amsl). Portions of the site have a thin cap of imported soft sand, particularly the racetrack itself.

Custer Site (Alternative D)

The Custer Site slopes in a southwesterly direction to a bluff that edges a terrace of the Pere Marquette River; the elevation is approximately 650 feet amsl.

Soils

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey maps soil units and provides a summary of physical characteristics for each unit, including suitability for various land uses, through an online database. The NRCS includes a variety of land use planning characteristics that can be used to determine the suitability of the soils for uses other than farming. NRCS farmland categories are explained in further detail in **Section 3.9**, **Land Use**.

Muskegon Site (Alternatives A, B, and C)

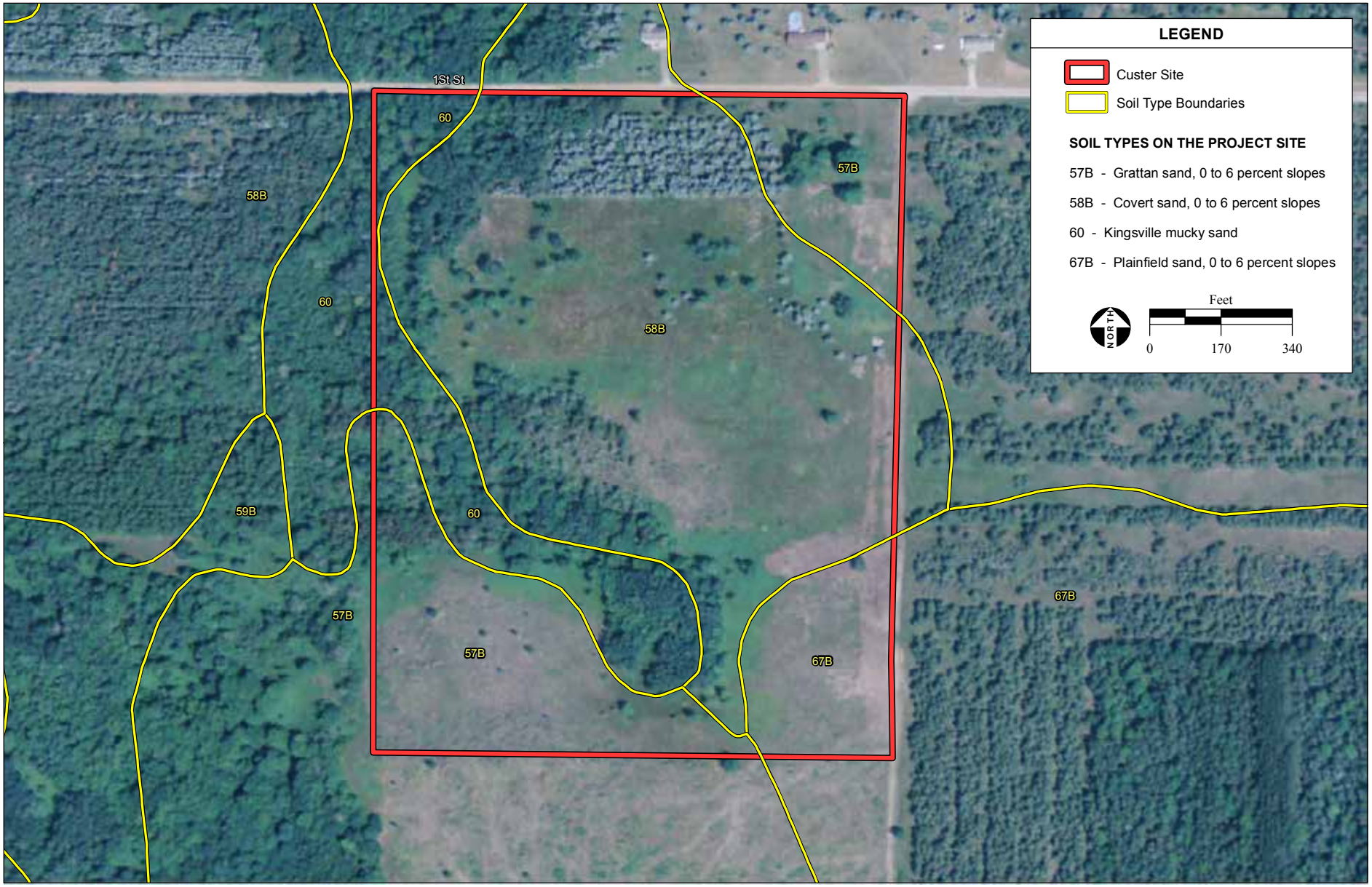
Soils on the Muskegon Site are relatively thick, with more than 80 inches in depth prior to bedrock or other restrictive features. NRCS has surveyed and mapped the Muskegon Site soils, as depicted in **Figure 3.2-1**. Most of the Muskegon Site soils are Covert-Pipestone sands, Plainfield sands, and Pipestone-Covert-Saugatuck sands, which are highly corrosive to concrete; whereas Roscommon and Au Gres sands are only moderately corrosive to concrete. Covert-Pipestone sands, Pipestone-Covert-Saugatuck sands, and Roscommon and Au Gres sands have a high risk of steel corrosivity. Plainfield sand has a moderate risk of steel corrosivity. (NRCS, 2016a)

Custer Site (Alternative D)

Soils on the Custer Site are relatively thick, with more than 80 inches in depth prior to bedrock or other restrictive features. NRCS has surveyed and mapped the Custer Site soils, as depicted in **Figure 3.2-2**. Most of the Custer Site soils are Grattan sands and Covert sands, which are moderately corrosive to concrete; whereas Kingsville and Plainfield sands are highly corrosive to concrete. The Grattan sands, Covert sands, and Plainfield sands have a low corrosivity to steel; whereas Kingsville sand is highly corrosive. (NRCS, 2016b)

SOURCE: Microsoft aerial photograph, 3/13/2012; Muskegon County Parcels, 2013; AES, 5/11/2016

Figure 3.2-1
Soil Types - Muskegon Site



SOURCE: USDA NRCS SSURGO Soil Survey of Mason County, Michigan, 2015; USDA NAIP Aerial Photograph, 7/21/2014; AES, 5/11/2016

Figure 3.2-2
Soil Types - Custer Site

Seismicity

Earthquakes have been noted in Michigan since the 1600s and have mostly been associated with faults elsewhere such as the New Madrid Seismic Zone, located in New Madrid, Missouri, several hundred miles south of the alternative sites. There were only 34 recorded earthquakes with epicenters in Michigan from 1872 to 1967. Four of these were related to mining activities, and of the 30 fault slippage events in over 100 years, none were in Muskegon or Mason Counties. According to a seismic probability map prepared by the U.S. Coast and Geodetic Survey, the potential for earthquakes in Michigan in the next 50 years is almost non-existent (Bricker, 1977). Recent seismic activity in Michigan (since 1976) has not been recorded in Muskegon or Mason Counties (USGS, 2016c).

Liquefaction

Liquefaction is the temporary transformation of saturated, non-cohesive material from a relatively stable, solid condition to a liquefied state as a result of increased soil pore water pressure. Soil pore water pressure is the water pressure between soil particles. Liquefaction occurs most often in non-marine soils if three factors are present: seismic activity, loose sand or silty soil, and shallow ground water. Soils within both the Muskegon Site and the Custer Site have low to moderate potentials for liquefaction.

Mineral Resources

The geology of the region consists of three major groups of deposits: Precambrian sedimentary/volcanic deposits, Paleozoic sedimentary rocks from consolidated marine sediments, and Pleistocene glacial moraine deposits of unsorted rock fragments. The mineralogical profile supports mineral resources of both metallic and non-metallic materials. The Precambrian deposits include banded layers of concentrated iron minerals and copper. Evaporative minerals such as salts were deposited during the Upper Silurian Epoch in the central Michigan Basin. Non-metallic industrial materials such as sand and gravel, oil, gas, and coal are also found in Michigan.

In Muskegon County, the Muskegon Oil Field was discovered in the 1920s; oil wells also follow the western rim of Mason County (Gillespie et al., 2008). There are no mineral leases within 1 mile of the Muskegon Site, though Muskegon County includes leases for gas, metallic minerals, and nonmetallic minerals (MDNR, 2016a).

There are mineral and surface claims within Mason County, but not within the vicinity of the Custer Site. The closest active mining location is approximately 6.7 miles northeast, the Ludington Pit, which produces sand, gravel, and construction materials. Several mining operations are located near the City of Ludington, located approximately 10 miles west of the Custer Site (USGS, 2015).

3.2.2 REGULATORY SETTING

Federal Clean Water Act

Sediment discharge into navigable (surface) Waters of the U.S. is regulated by the federal Clean Water Act (CWA; 1972, with modifications in 1977, 1981, and 1987), which establishes water quality goals for sediment control and erosion prevention. One of the mechanisms for achieving the goals of the CWA is

the National Pollutant Discharge Elimination System (NPDES) permitting program, administered by the United States Environmental Protection Agency (USEPA). As part of the NPDES General Construction Permit, a Stormwater Pollution Prevention Plan (SWPPP) must be prepared and implemented. The SWPPP must make provisions for erosion prevention and sediment control and control of other potential pollutants.

Fruitport Township Ordinances

The following local rules and regulations currently apply to the Muskegon Site. The western 26.5 acres of the Muskegon Site will remain in fee, and will continue to be subject to these local ordinances. The Proposed Fee-to-Trust Property is currently subject to local ordinances, but local rules and regulations will not apply once it is taken into trust.

Section 42-631: Site development or plot plan

(1) The planning commission shall ascertain that the proposed development is arranged:

(a) To provide convenient and safe automobile circulation and parking in relation to streets, pedestrian walkways, and adjoining properties of parking areas.
(e) To comply with all provisions of this chapter.

(2) To these ends the planning commission is empowered hereby to designated entryways and exits, the direction of traffic flow on off-street parking areas and drives, to limit the number of drives onto a public street, to designated their location of intersection with a public street and where feasibly to require the use of existing drives on adjacent properties to decrease traffic conflicts on the public streets.

Section 42-635: General design standards

(3) In B [business] and SC [shopping center] districts, driveway access shall be provided to parking areas or potential parking areas on adjacent property in a manner to provide for safe and harmonious traffic circulation between parking areas without entering on the public streets.

(4) One-way driveway openings onto the street shall be at least 12 feet in width and not more than 18 feet in width. No such driveway opening shall be closer than 40 feet to another driveway.

(5) Two-way driveway openings onto the street shall be at least 20 feet in width and not more than 30 feet in width. No such driveway opening shall be closer than 80 feet to another two-way driveway or a one-way entrance driveway.

(6) A one-way exit driveway shall be at least 20 feet from any intersection street rights-of-way.

(7) A one-way entrance driveway or a two-way driveway shall be located at least 65 feet from the intersection rights-of-way of two major streets designated on the land use plan.

3.3 WATER RESOURCES

This section describes the existing regulatory and environmental conditions related to water resources for the two alternative sites described in **Section 2.2**: the Muskegon Site (Alternatives A, B, and C) and the Custer Site (Alternative D). Water resources designated as Waters of the U.S. are discussed in **Section 3.5**, **Biological Resources**. **Section 3.10**, **Public Services**, describes existing water supply facilities and regulatory requirements for wastewater treatment and disposal. The general and site-specific description of water resources contained herein provide the environmental baseline by which direct, indirect, and cumulative environmental effects of the proposed alternatives are identified and measured in **Section 4.0**.

3.3.1 REGULATORY SETTING

Water Rights

The Michigan Department of Environmental Quality (MDEQ; and subsequently MDEQ's Water Resource Division) is the primary agency for water issues and includes divisions that address water management such as Land and Water Management Division, the Office of the Great Lakes, and the Water Bureau. The Aquifer Protection and Dispute Resolution Act (PA No. 177) empowers the MDEQ to investigate whether high-capacity wells are depleting groundwater supplies and, if so, to order remedies.

Surface Water

Floodplain

Executive Order (EO) 11988 pertaining to floodplain management states that each federal agency shall "provide leadership and shall take action to reduce the risk of flood loss." In order for the Bureau of Indian Affairs (BIA) to carry out its responsibility, the order requires determination whether a project is located within a floodplain and consideration of alternative project locations within a floodplain. If the project must reside on a floodplain, the agency must minimize any potential impacts. The Federal Emergency Management Agency (FEMA) is responsible for predicting the potential for flooding in most areas. FEMA routinely performs this function through the update and issuance of Flood Insurance Rate Maps (FIRMs), which depict various levels of predicted inundation.

Surface Water Quality

The Federal Clean Water Act (CWA), 33 United States Code (USC) Section 1301(a)(2), sets forth national goals that waters shall be "fishable, swimmable" waters (Section 101[a][2]). The CWA addresses both point and non-point sources of pollution (Sections 402 and 319, respectively), both of which are controlled through the National Pollutant Discharge Elimination System (NPDES). A NPDES Permit must be obtained in order to discharge pollutants into "Waters of the U.S." In some states, the United States Environmental Protection Agency (USEPA) has delegated permitting authority to the regional water quality agency, in this case MDEQ. However, the USEPA retains authority to regulate discharges to waters on tribal lands, including the alternative sites. The CWA also directs states to establish water quality standards for waterways in their jurisdiction and to review and update these standards every three years (Section 303[c]).

Section 303(d) of the CWA requires states to periodically prepare a list of all surface waters in their respective jurisdictions for which beneficial uses of the water—such as for drinking, recreation, aquatic habitat, and industrial use—are impaired by pollutants. These include water bodies that do not meet state surface water quality standards and are not expected to improve within the next two years. States establish a priority ranking of these impaired waters for purposes of developing water quality control plans that include Total Maximum Daily Loads (TMDLs). A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and includes an allocation for each of the pollutant's sources. These water quality control plans describe how an impaired water body will meet water quality standards through the use of TMDLs.

The surface water quality standards for the State of Michigan include both narrative and numerical water quality objectives to keep Michigan's waters swimmable, fishable, drinkable, and suitable for use by industry, agriculture, and the citizens of the state. The water quality objectives are summarized in **Table 3.3-1**.

TABLE 3.3-1
WATER QUALITY STANDARDS FOR MICHIGAN SURFACE WATERS

Constituent	Water Quality Objective
Bacteria	Waters of the state, which are protected for total body contact recreation, must meet limits of 130 *Escherichia coli* (*E. coli*) per 100 mL water as a 30-day average and 300 *E. coli* per 100 mL water at any time. The limit for waters of the state, which are protected for partial body contact recreation, is 1000 *E. coli* per 100 mL water. Discharges containing treated or untreated human sewage shall not contain more than 200 fecal coliform bacteria per 100 mL water as a monthly average and 400 fecal coliform bacteria per 100 mL water as a 7-day average.
Biochemical Oxygen Demand (BOD)	Although there are no Michigan Water Quality Standards pertaining directly to BOD, effluent limitations for BOD must be restrictive enough to insure that the receiving water will meet Michigan Water Quality Standards for dissolved oxygen.
Dissolved Oxygen	Surface waters designated as coldwater fisheries must meet a minimum dissolved oxygen standard of 7 mg/L, while surface waters protected for warmwater fish and aquatic life must meet a minimum dissolved oxygen standard of 5 mg/L.
pH	The hydrogen ion concentration expressed as pH shall be maintained within the range of 6.5 to 9.0 in all waters of the state.
Phosphorus	Phosphorus concentrations in point source discharges are limited to 1 mg/L of total phosphorus as a monthly average. Other limits may be placed in permits when deemed necessary. Nutrients are limited as necessary to prevent excessive growth of aquatic plants, fungi, or bacteria, which could impair designated uses of the surface water.
Temperature	The Great Lakes, connecting waters, and inland lakes shall not receive a heat load which increases the temperature of the receiving water more than 3 degrees Fahrenheit (° F) above the existing natural water temperature (after mixing with the receiving water). Rivers, streams and impoundments shall not receive a heat load, which increases the temperature of the receiving water more than 2° F for coldwater fisheries, and 5° F Fahrenheit for warmwater fisheries.
Total Suspended Solids (TSS)	Waters of the state shall not have any of the following unnatural physical properties in quantities, which are or may become injurious to any designated use: turbidity, color, oil films, floating solids, foam, settleable solids, suspended solids, and deposits. This kind of rule, which does not establish a numeric level, is known as a "narrative standard." Most people consider water with a TSS concentration less than 20 mg/L to be clear. Water with TSS levels between 40 and 80 mg/L tends to appear cloudy, while water with concentrations over 150 mg/L usually appears dirty. The nature of the particles that comprise the suspended solids may cause these numbers to vary.

Notes: mL = milliliters; mg/L = milligrams per liter.
Source: MDEQ, 2016a; MDEQ, 2016b.

Article V, Section 26-305, of the Muskegon City Ordinance sets forth guidelines and regulations for prohibited discharges into stormwater drainage systems or water bodies of any substance or material, including pollutants that cause or contribute to a violation of water quality standards. The regulation sets forth that all stormwater discharges must have measures to prevent pollutants from being discharged into the stormwater system or water body (Muskegon, 2016).

Stormwater at the Muskegon Site is currently managed by Muskegon County under the State Water Resource Commission (SWRC) and the system is separate from the sanitary sewer system. Muskegon County serves the Fruitport Township for zoning regulations and permitting, plan reviews and approvals/decisions, and other permits and inspections as necessary. There are seven regions within the MDEQ NPDES Permit for the Michigan Department of Transportation (MDOT): Bay Region, Grand Region, Metro Region, North Region, Southwest Region, Superior Region, and University Region. The Muskegon Site is located in the Grand Region which includes Oceana, Newaygo, Mecosta, Mont Calm, Muskegon, Ottawa, Kent, and Iona Counties (MDOT, 2005a). The MDOT developed a Stormwater Management Plan (SWMP) addressing storm water pollution control related to highway planning, design, construction, and maintenance activities in response to the NPDES permit.

Stormwater in the vicinity of the Custer Site is managed by the City of Scottville under the SWRC and the system is separate from the sanitary sewer system. Scottville serves the area for permits and inspections as necessary, along with providing public services such as sewer hookups. The Custer Site is located in the North Region of the MDEQ NPDES permit for MDOT, which includes Emmet, Cheboygan, Presque Isle, Alpena, Mont Morency, Otsego, Charlevo IX, Antrim, Leelanau, Benzie, Grand Traverse, Kaikaska, Crawford, Oscoda, Alcona, Iosco, Oge Maw, Roscommon, Missaukee, Wexford, Manistee, Mason, Lake, and Osceola Counties (MDOT, 2005b).

Drinking Water Quality

Under the mandate of the Safe Drinking Water Act (SDWA), the USEPA sets legally enforceable National Primary Drinking Water Regulations (primary standards) that apply to public water systems. These standards are established to protect human health by limiting the levels of contaminants in drinking water. The USEPA also defines National Secondary Drinking Water Regulations (secondary standards) for contaminants that cause cosmetic and aesthetic effects, but not health effects. The USEPA recommends that these secondary standards be met but does not require systems to comply with them. Both primary and secondary drinking water standards are expressed as either Maximum Contaminant Levels (MCLs), which define the highest level of a contaminant allowed in drinking water, or Maximum Contaminant Level Goals (MCLGs), which define the level of a contaminant below which there is no known or expected risk to health.

3.3.2 ENVIRONMENTAL SETTING

The following describes the existing setting for water resources, including surface water, watersheds, site drainage, floodplains, surface water quality, ground water resources, and groundwater quality on each of the alternative sites.

Surface Water

Watershed

Muskegon Site (Alternatives A, B, and C)

The Pere Marquette-White Watershed comprises approximately 755 square miles of land in west-central Michigan that extends from the Township of Chase in the east to the Ludington River in the west and drains to Lake Michigan (MDNR, 2016b). The Pere Marquette-White Watershed is separated into Northern and Southern parts by the Muskegon Watershed that feeds the Muskegon Lake, which then flows into Lake Michigan. The Muskegon Site is located within the Mona Lake-Black Creek sub watershed which encompasses over 28,476 acres. A map of the Mona Lake Watershed within the Pere Marquette sub watershed is shown in **Figure 3.3-1**. The major surface water body near the Muskegon Site is Mona Lake, approximately 2.8 miles northwest of the Muskegon Site. Mona Lake, which is approximately 700 acres in size, begins near United States Highway 31 (US-31) Business and extends in a southwesterly direction to Lake Michigan. Black Creek feeds into Mona Lake, and extends approximately 10 miles from the Egelston Township southwest to Mona Lake. In Fruitport Township, most residents and businesses are connected to the public water distribution system which treats water from Lake Michigan, a surface water source.

Custer Site (Alternative D)

The Custer Site is also located within the Pere Marquette-White Watershed. The watershed is shown in **Figure 3.3-2**. The major surface water body near the Custer Site is the Pere Marquette River, which flows in a general westerly direction approximately 1,200 feet south of the Custer Site. The Pere Marquette River begins in Lake County and extends approximately 70 miles through Michigan, draining into Lake Michigan. Black Creek, a tributary of Pere Marquette River, extends approximately 5 miles north and west of Pere Marquette River.

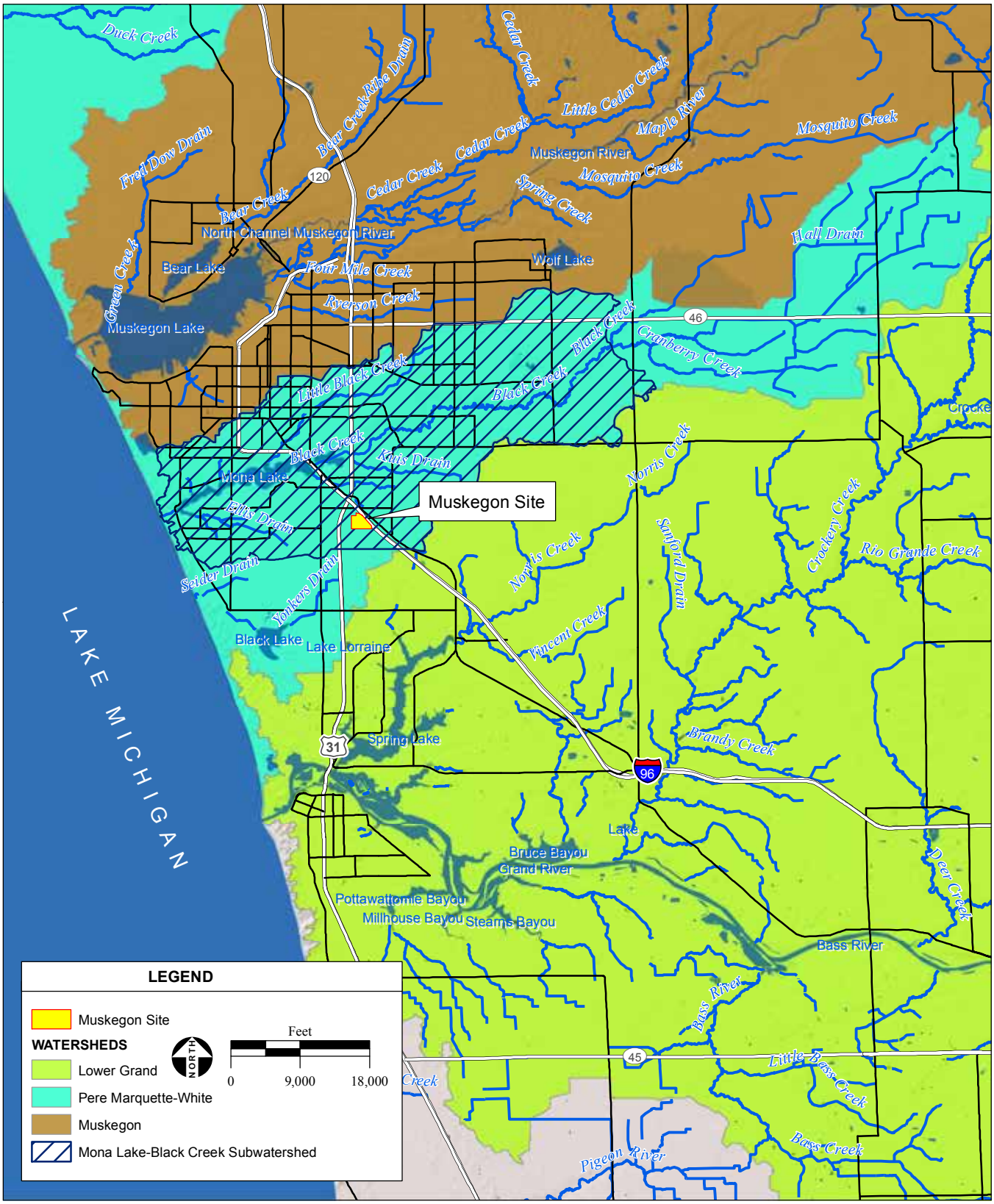
Site Drainage

Muskegon Site (Alternatives A, B, and C)

The Muskegon Site is generally flat with an elevation of approximately 632 feet above mean sea level (amsl). As described in detail in **Section 3.2**, the Muskegon Site is primarily composed of sandy soils including Covert-Pipestone sands (CovabB), Plainfiled Sands (PlfabB and PlfabD), Pipestone-Covert-Saugatuck sands (PpsaaA), and Roscommon and Au Gres sands (Ra). All of these soils are in Hydrologic Soil Groups A and A/D, which generally have a high infiltration rate and a high rate of water transmission (NRCS, 2015).

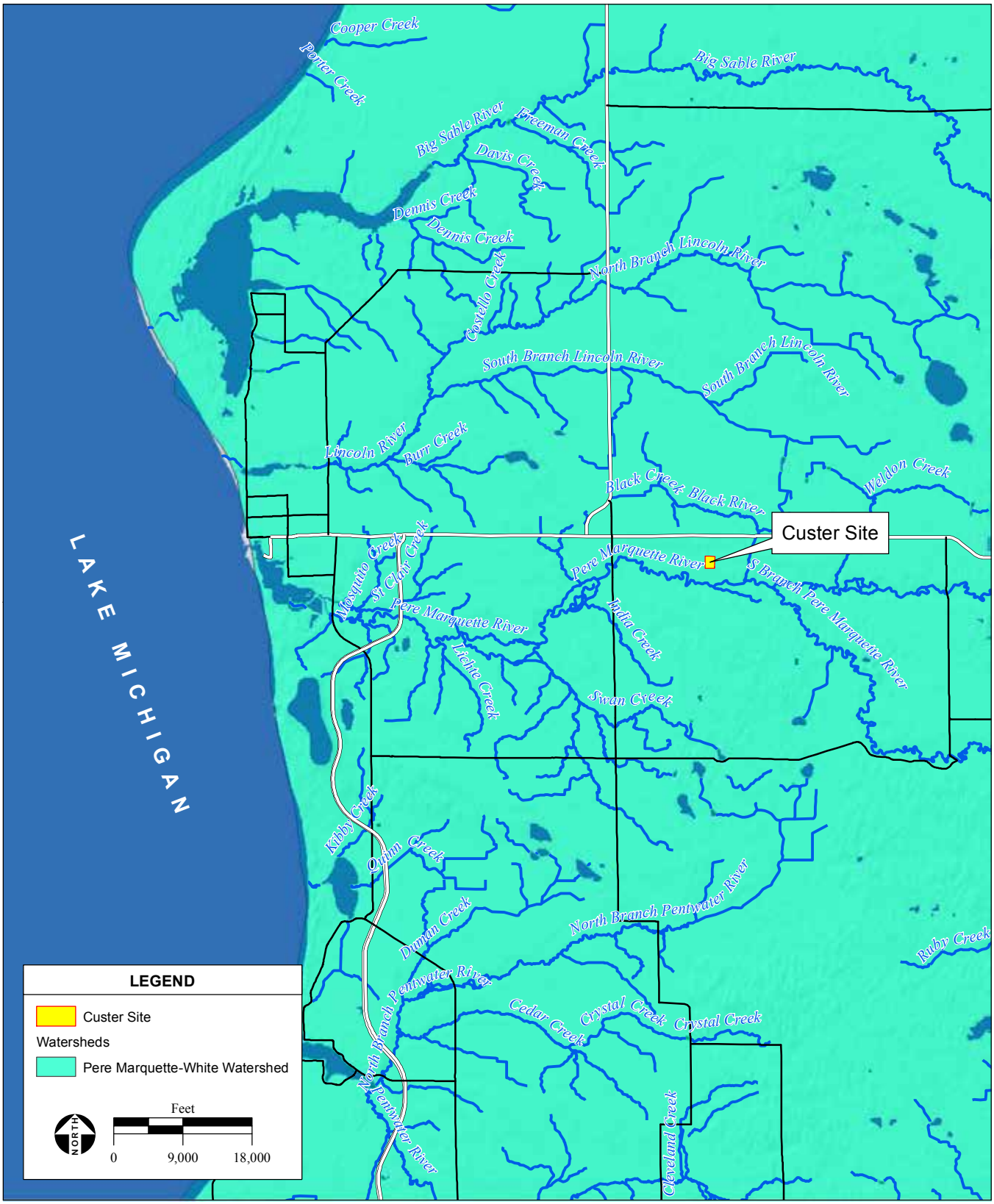
As described in the Grading and Drainage Study (**Appendix F**), the property generally slopes from west to east and is currently covered in native grasses where paving (approximately 24 acres) does not exist.

There is one pond on site and a depression, which acts as a detention basin. The overall Muskegon Site has a tributary area of 86.5 acres. The area is defined by three distinct drainage districts, all of which eventually flow to a MDOT right-of-way drainage ditch. From the ditch, the flow is transported to a 48-inch culvert which crosses under Interstate 96 (I-96) to an unnamed tributary and eventually reaches Mona Lake and eventually Lake Michigan. Total runoff volume generated by a 100-year storm event on



SOURCE: USDA NRCS Watershed Boundary Dataset, 2012; AES, 8/16/2016

Figure 3.3-1
Muskegon Site Watersheds



SOURCE: USDA NRCS Watershed Boundary Dataset, 2012; AES, 6/17/2016

Figure 3.3-2
Custer Site Watershed

the current site is approximately 888,500 cubic feet. The current volume leaving the site in a 100-year event is 436,000 cubic feet (10.0 acre feet) based upon approximately 452,000 cubic feet of retention between the existing pond and depression.

Custer Site (Alternative D)

The Custer Site slopes in a southwesterly direction to a small bluff that edges a terrace of the Pere Marquette River; the elevation where most development would occur is approximately 650 feet amsl. Surface water flows as sheet flows across the site, slowing near a grouping of trees to the southwest portion where slight depression near the tree bases holds water and is listed as a freshwater emergent wetland (NWI, 2016). Surface water then continues to flow southwest towards the Pere Marquette River.

Floodplain

FEMA is responsible for determining flood elevations and floodplain boundaries based on United States Army Corps of Engineers (USACE) studies. FEMA is also responsible for distributing FIRMs, which are used in the National Flood Insurance Program (NFIP). These maps identify the locations of special flood hazard areas, including 100-year floodplains. A 100-year flood event is defined as a flood event which has a 1.0 percent chance of occurring in any given year. The 100-year and 500-year floodplains correspond to a 1.0 percent and 0.2 percent annual chance of a flood, respectively.

Muskegon Site (Alternatives A, B, and C)

The Muskegon Site is located in flood zone "X," which is described as areas determined to be outside the 0.2 percent annual chance floodplain. Therefore, the Muskegon Site is not located within the 100-year or 500-year floodplains based on FIRM FM26121C0287D prepared by FEMA (FEMA, 2016). The closest floodplain is located approximately 0.5 miles to the northwest of the Muskegon Site.

Custer Site (Alternative D)

The Custer Site is located in flood zone "X" as described above; therefore, the Custer Site is not located within the 100-year or 500-year floodplains based on FIRM FM26105C0300C. Mapping of the floodplain surrounding the Pere Marquette River ends to the east of the Custer Site. A swamp/marsh type area is located approximately 0.3 miles to the south of the Custer Site.

Surface Water Quality

Muskegon Site (Alternatives A, B, and C)

The primary natural surface water body within the vicinity of the Muskegon Site is Mona Lake, an impaired water body listed for polychlorinated biphenyls (PCBs), located approximately 1.5 miles northwest of the Muskegon Site. TMDLs for Mona Lake are needed for PCBs in fish tissue (USEPA, 2016a). Black Creek is an impaired waterway listed for PCBs and habitat/flow alterations and is located approximately 1.6 miles due north of the Muskegon Site. Stevens Creek, an unlisted waterway, is located approximately 1.8 miles southeast of the southern boundary of the Muskegon Site.

Stormwater on the Muskegon Site is currently managed by the Muskegon Area Municipal stormwater committee which works in collaboration with municipalities to meet MDEQ requirements for stormwater discharges and regulations (Muskegon, 2016).

Custer Site (Alternative D)

The primary surface water body within the vicinity of the Custer Site is the Pere Marquette River, listed as an impaired waterbody, located approximately 2,000 feet south of the southern property boundary. The Pere Marquette River is listed on the Michigan State 303(d) list for impairment of water quality for mercury and PCBs. Causes of impairment are unknown. Location/type of impairments include mercury in the water column, PCBs in the water column, and PCBs in fish tissues. A TMDL is needed for this water body (USEPA, 2016b). Black Creek is an impaired waterway located approximately 4,500 feet west of the western property site boundary and approximately 1.0 mile north of the northern Custer Site boundary, flowing to the west/southwest. TMDLs are needed for PCBs in fish tissue and in the water column for Black Creek (USEPA, 2016b).

Groundwater

Groundwater Water Supply

Both the Muskegon Site and the Custer Site reside above the Mississippian aquifer. The Mississippian aquifer primarily consists of the Marshall Sandstone; thin sandstone beds in the lower part of the overlying Michigan Formation and in the upper part of the underlying Coldwater Shale also might contribute some water. Recharge to the Mississippian aquifer occurs principally where the aquifer forms the bedrock surface and is directly overlain by and hydraulically connected with the surficial aquifer system to the north and the south of overlying Pennsylvanian rocks. Recharge from precipitation and from lakes and streams is through the surficial aquifer system. Water moves into the aquifer at high areas on the potentiometric surface (the imaginary surface that defines the level to which water in a confined aquifer would rise if it were completely pierced with wells) to the north (1,100- and 1,000-foot contours) and to the south (1,000- and 900-foot contours). Because of the minimal aquifer transmissivity (rate at which groundwater flows horizontally through an aquifer) and the occurrence of dense brine in the central part of the aquifer, little groundwater movement occurs (USGS, 1992).

Muskegon Site (Alternatives A, B, and C)

Fruitport Township, near the Muskegon Site, contains 277 active wells that access the groundwater aquifers to provide drinking and irrigation water. These wells range between 15 and 239 feet in depth, with static water levels ranging from 0 to 93 feet below ground level (MDEQ, 2015a). Several water wells located near the Muskegon Site have a capacity to pump approximately 25 gallons per minute (GPM) of water. Wells near the Muskegon Site draw water from a relatively shallow depth. The static water level is less than 20 feet below ground level in this area. There are no USEPA designated sole-source aquifers present under the Muskegon Site (USEPA, 2016c).

The closest wells to the Muskegon Site are on Harvey Street, approximately 100 feet from the western edge of the Muskegon Site. The addresses associated with the wells are 4821 Harvey Street, 4721 Harvey Street, and 4677 Harvey Street with distances from the Muskegon Site of 26 feet, 32 feet, and 46 feet,

respectively (MDEQ, 2015b). Depth to water table in Muskegon County typically ranges from 0 to 30 feet below ground level (MSU, 2015).

Custer Site (Alternative D)

Custer Township contains 166 water wells that previously or currently access groundwater aquifers to provide drinking and irrigation water. These wells have an average depth of approximately 72 feet. The Custer Site currently has no water supply. The nearest groundwater well to the Custer Site is approximately 0.3 miles to the northwest. The well depth is 84 feet with a static water level of 31 feet below ground surface (MDEQ, 2010).

Groundwater Water Quality

Refer to **Section 3.2**, **Geology and Soils**, for a detailed description of the geologic setting. Water in the Mississippian aquifer, principally in the southern and the eastern parts of the aquifer where it forms the bedrock surface, is typically a mixed ion type with dissolved-solids concentrations that range between 200 and 400 milligrams per liter (mg/L).

Muskegon Site (Alternatives A, B, and C)

While Muskegon County records do not indicate any contaminated groundwater near the Muskegon Site, any well in this area may be susceptible to pollution if surface water is not filtered through surface soils before reaching the shallow water table. In 2014, the County of Muskegon's water supply was in compliance with SDWA standards (Muskegon County, 2014a). In Fruitport Township, most residents and businesses are connected to the public water distribution system. There are however a small number of water wells located near the Muskegon Site primarily used for residences. Wells near the Muskegon Site draw water from a relatively shallow depth. No water quality issues are noted at the groundwater monitoring wells closest to the Muskegon Site.

Custer Site (Alternative D)

Groundwater wells near the site do not have records showing contamination or pollution problems. Well reports were not available for three of the nearest wells to the Custer Site. Well monitoring by the United States Geological Survey (USGS) occurs in some areas of Michigan, however no well monitoring sites are located within 50 miles of the Custer Site and the nearest are wells located in Muskegon, described above (USGS, 2016d).

3.4 AIR QUALITY

This section describes existing conditions related to air quality for the two alternative sites described in **Section 2.2**: the Muskegon Site (Alternatives A, B, and C) and the Custer Site (Alternative D). The general and site-specific description of air quality contained herein provides the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Section 4.0**.

3.4.1 REGULATORY CONTEXT

National Ambient Air Quality Standards (NAAQS)

The Clean Air Act (CAA) of 1970, as amended, authorizes the United States Environmental Protection Agency (USEPA) to identify common air pollutants that impact air quality on a national level and establish corresponding National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. Accordingly, the USEPA has identified six criteria air pollutants (CAPs): ozone (O_3), carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). PM_{10} and CO are CAPs of special concern. These pollutants are termed "criteria" pollutants because the USEPA has established specific concentration threshold criteria based upon specific medical evidence of health effects or visibility reduction, soiling, nuisance, and other forms of damage. The NAAQS for the six CAPs are divided into primary standards and secondary standards. Primary standards are designed to protect the public health and secondary standards are intended to protect the public welfare from effects such as visibility reduction, soiling, nuisance, and other forms of damage. The NAAQS are presented in **Table 3.4-1**.

Under the CAA, areas are designated attainment, nonattainment, or maintenance by the USEPA depending on whether the area is below or exceed the established NAAQS. Non-attainment areas must take steps towards attainment within a specific period of time. Once an area reaches attainment for particular criteria pollutant, then the area is re-designated attainment or maintenance. The CAA places most of the responsibility on states to achieve compliance with the NAAQS. States, municipal statistical areas, air basins, and counties that contain areas of non-attainment are required to develop a State Implementation Plan (SIP), which outlines policies and procedures designed to bring the nonattainment area into compliance with the NAAQS.

Federal General Conformity and Prevention of Significant Deterioration (PSD)

Under the General Conformity Rule, the lead agency with respect to a federal action conducted in an area designated as non-attainment or maintenance for a CAP is required to demonstrate that the proposed federal action conforms to the applicable provisions of a SIP that address meeting the NAAQS for that CAP before the action is taken. There are two phases to a demonstration of general conformity:

1. The Conformity Review process, which in an initial review of the federal action to assess whether a Conformity Determination is necessary; and
2. The Conformity Determination process, which requires that a proposed federal action be demonstrated to conform to the applicable SIP.

TABLE 3.4-1
NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutants	Averaging Time	Primary		Secondary		Violation Criteria
		ppm	µg/m³	ppm	µg/m³	
Ozone (O_3)	8 hours	0.070	-	0.070	-	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Carbon Monoxide (CO)	8 hours	9	-	-	-	Not to be exceeded more than once per year
	1 hour	35	-	-	-	Not to be exceeded more than once per year
Nitrogen Dioxide (NO_2)	1 year	0.053	-	0.053	-	Annual mean
	1 hour	0.100	-	-	-	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
Sulfur Dioxide (SO_2)	1 hour	0.075	-	-	-	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	3 hours	-	-	0.5	-	Not to be exceeded more than once per year
PM_{10}	24 hours	-	150	-	150	Not to be exceeded more than once per year on average over 3 years
$PM_{2.5}$	1 year	-	12.0	-	15.0	Annual mean, averaged over 3 years
	24 hours	-	35	-	35	98th percentile, averaged over 3 years
Lead (Pb)	Rolling 3 month period	-	0.15	-	0.15	Not to be exceeded

Notes: ppm = parts per million; µg/m³= micrograms per meter cubed
Source: USEPA, 2015a.

The Conformity Review requires the lead agency to compare estimated emissions of the CAP(s) for which the area is designated non-attainment or maintenance to the applicable general conformity *de minimis* threshold(s). If the emission estimates from step one is below the applicable threshold(s), then a general conformity determination is not necessary and the full Conformity Determination is not required. If emission estimates are greater than *de minimis* levels, the lead agency must conduct a Conformity Determination.

Conversely, the Prevention of Significant Deterioration (PSD) permit program was developed by the United States Congress under the powers vested by the CAA to prevent significant environmental impacts on "attainment areas" from large industrial sources of air pollution. There are 28 specific industrial processes that must meet the requirements of the PSD program if they emit, or have the potential to emit, at least 100 tons per year (tpy) of any pollutant regulated by the CAA (CAPs and hazardous air pollutants [HAPs]). The development alternatives do not fall under these classifications. For all stationary sources, the PSD program applies if they emit or have the potential to emit at least 250 tpy of any regulated pollutant from a stationary source.

Hazardous Air Pollutants

In addition to the criteria pollutants discussed above, HAPs are a group of pollutants of concern regulated under the CAA. HAPs are listed airborne chemicals developed by the USEPA. Sources of HAPs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, cigarette smoke, and motor vehicle exhaust. Cars and trucks release at least forty different HAPs. The most important, in terms of health risk, are diesel particulates, benzene, formaldehyde, 1,3-butadiene, and acetaldehyde. Health effects of HAPs can include cancer, birth defects, and neurological damage.

HAPs are less pervasive in the urban atmosphere than CAPs, but are linked to short-term (acute) or long-term (chronic or carcinogenic) adverse human health effects. Currently, there are over 188 HAPs listed by the USEPA. The majority of the estimated health risk from HAPs can be attributed to relatively few compounds, the most important being the HAPs found in diesel particulate matter (DPM). Diesel engines emit a complex mixture of air pollutants, composed of gaseous and solid material. The visible emissions in diesel exhaust are particulate matter that includes carbon particles or "soot." Diesel exhaust also contains a variety of harmful gases and over 40 other cancer causing substances. Exposure to DPM is a health hazard, particularly to children whose lungs are still developing and the elderly who may have other serious health problems.

Section 112 of the CAA includes provisions for the promulgation of National Emissions Standards for Hazardous Air Pollutants (NESHAP), or maximum achievable control technology (MACT) standards, as well as several related programs to enhance and support the program. The NESHAPs are additional federal emission limitations established for less widely emitted, but highly dangerous or toxic air pollutants that are not covered by the NAAQS.

Tribal Minor New Source Review (NSR)

New source review (NSR) is a preconstruction air permitting program implemented under the CAA which applies in both attainment and non-attainment areas. The minor NSR program applies to both new minor sources and minor modifications to both major and minor projects. NSR programs must comply with the standards and control strategies of the Tribal Implementation Plan (TIP) or SIP. If there is not an applicable SIP or TIP, the USEPA issues permits and implements the program. A minor NSR permit would be required on tribal trust land if stationary source allowable emissions of regulated pollutants would exceed the thresholds presented in 40 Code of Federal Regulations (CFR) §49.153, Table 1 (presented in **Table 3.4-2**).

TABLE 3.4-2
TRIBAL NEW SOURCE REVIEW POLLUTANT EMISSIONS THRESHOLDS FOR ATTAINMENT AREAS

Pollutant	Emissions Threshold (tpy)
NO_x	10
VOC	10
PM_{10}	5
$PM_{2.5}$	3
CO	10
SO_2	10
Pb	0.1
Source: 40 CFR §49.153.	

Global Climate Change

Climate change is a global phenomenon cumulatively attributable to natural processes and some human activities.

3.4.2 REGIONAL SETTING

Regional Meteorology

The climate and topography of a region can dictate a region's air quality. The structure and orientation of terrain features will often influence and even control air motion and mechanical turbulence in the lower atmosphere, which can dictate whether a region will have an increased or decreased concentration of air pollution.

Muskegon Site (Alternatives A, B, and C)

Muskegon County has cold winters and warm summers, with temperatures averaging 18 degrees Fahrenheit (º F) in the winter and 80º F in the summer. Annual average rainfall is 33 inches, with an annual average snowfall of 93 inches. During most of the year, the prevailing direction of the wind is from the west and southwest. Muskegon County lies in the western central portion of Michigan in the region of Lake Michigan, which greatly influences the regional meteorology.

Custer Site (Alternative D)

Mason County has cold winters and warm summers, with temperatures averaging 16º F in the winter and 82º F in the summer. Annual average rainfall is 31 inches, with an annual average snowfall of 81 inches. During most of the year, the prevailing direction of the wind is from the west. Mason County lies near Lake Michigan, which greatly influences the regional meteorology.

Sensitive Receptors

Sensitive receptors are facilities that house or attract children, the elderly, and people with illnesses, or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors.

Muskegon Site (Alternatives A, B, and C)

The land uses immediately surrounding the Muskegon Site include open space to the south; commercial shopping center to the southwest; a hotel, several houses, and several retail businesses to the west; and a major highway (Interstate 96 [I-96]) to the north and northeast. The nearest residential sensitive receptors are located approximately 100 feet west of the Muskegon Site. The nearest school to the Muskegon Site is Shettler Elementary School located approximately 1.0 mile northeast of the Muskegon Site. The nearest hospital is Mercy Health Urgent Care, located approximately 1.75 miles south of the Muskegon Site on 6401 Prairie St, Norton Shores, Michigan.

Custer Site (Alternative D)

The land uses surrounding the Custer Site consist of rural residential, agricultural, and open space. The nearest residential sensitive receptors are homes located approximately 100 feet north of the Custer Site along East First Street. The nearest schools to the Custer Site are Mason County Eastern Elementary School and Mason County Eastern Junior High/High School located approximately 4,000 feet northeast of the Custer Site. The nearest hospital is Spectrum Health Luddington Hospital located approximately 10 miles west of the Custer Site on 1 North Atkinson Drive, Ludington, Michigan.

Odor

Muskegon Site (Alternatives A, B, and C)

The Muskegon Site is located approximately 3.0 miles southwest of Republic Services and approximately 3.5 miles southwest from Thompson Dumpsters. Additionally, the Muskegon Site is approximately 5.0 miles southwest from Camus Water Technologies. There are no other odor sources closer to the Muskegon Site.

Custer Site (Alternative D)

The Custer Site is located approximately 8.7 miles east of Luddington Wastewater Disposal, and approximately 9.5 miles southeast of Waste Reduction Systems. There are no other odor sources closer to the Custer Site.

3.4.3 EXISTING AIR QUALITY

National Ambient Air Quality Standards

As shown in **Table 3.4-3**, Muskegon County and Mason County are in attainment for all CAPs under the NAAQS and according there are no components of the state SIP that are applicable to the alternative sites.

TABLE 3.4-3
MUSKEGON AND MASON COUNTY ATTAINMENT STATUS

Pollutant	NAAQS – Muskegon County	NNAQS – Mason County
Ozone	Attainment	Attainment
PM_{10}	Attainment	Attainment
$PM_{2.5}$	Attainment	Attainment
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
Pb	Attainment	Attainment
Source: MDEQ, 2014; USEPA, 2016d.		

Emission Sources

Ambient air quality in Michigan is monitored and recorded through the Michigan Air Sampling Network (MASN). MASN monitoring sites are located throughout the state and run by governmental agencies under the Michigan Department of Environmental Quality's (MDEQ) Air Quality Division (AQD; MDEQ, 2015c). **Table 3.4-4** provides the 2011 emission inventory for both Muskegon and Mason Counties. O_3 is not directly emitted, but is formed when oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) react in the presence of sunlight; therefore, NO_x and VOCs are indicative of O_3 levels.

TABLE 3.4-4
MUSKEGON COUNTY AND MASON COUNTY 2014 EMISSIONS INVENTORY SUMMARY

	2014 (tons)					
	VOC[1]	NO_x[1]	CO	SO_2	PM_{10}	$PM_{2.5}$
Muskegon County	11,399	6,467	28,711	9,444	4,116	1,533
Mason County	7,751	1,627	9,665	78	1,668	540

Notes: 1 - Ozone is not directly emitted, but is formed when NO_x and VOCs react in the presence of sunlight. Therefore, NO_x and VOCs are indicative of ozone levels.
Source: USEPA, 2014a.

Primary sources of pollutant emissions in Muskegon County include motor vehicles, a power plant, an automobile part shop, and a solid waste facility. Primary sources of pollutant emissions in Mason County include motor vehicles, an ironworking facility, an electric utility company, and a chemical plant.

Hazardous Air Pollutants

In the vicinity of the Muskegon Site and Custer Site, HAPs are primarily emitted by mobile sources, such as diesel trucks and airplanes. Other sources of HAP emissions in the region include bulk gasoline distributers, dry cleaners, industrial facilities, and paint stripping and miscellaneous surface coating operations. For the Muskegon Site, the nearest facility that has the potential to emit HAPs is the Asphalt Paving Incorporated facility located approximately 2.7 miles northwest of the Muskegon Site. The listed facility's potential emissions are below the major source thresholds and in compliance with all associated

requirements as of May 16, 2014 (the most recent information posted by the USEPA) (USEPA, 2018b). For the Custer Site, the nearest listed facility that has the potential to emit HAPs is the Omimex Energy – Victory 32 Facility located in Ludington, approximately 7.7 miles northwest of the Custer Site. The listed facility's potential emissions are also below the major source thresholds and in compliance with all associated requirements as of May 16, 2014 (the most recent information posted by the USEPA) (USEPA, 2018b).

Environmental Setting

Under the Greenhouse Gas Reporting Program (GHGRP), the USEPA tabulates data submitted in accordance with the Mandatory GHG Reporting regulation. According to the most recent available data (2016), the highest reported emissions within Muskegon and Mason Counties are from electrical generating facilities.

Muskegon Site (Alternatives A, B, and C)

There are three regulated facilities under the GHGRP program that emitted 618,605 tons of CO_2e in Muskegon County in 2016. The BC Cobb power plant is located approximately 16 miles northwest of the Muskegon Site and accounts for approximately 88 percent of the total large facility GHG emissions in the County. The plant mainly emits carbon dioxide (538,718 tons in 2016). The second highest emitter is the Muskegon County Solid Waste Facility located in Ravenna, approximately 17 miles to the northeast of the Muskegon Site. This facility accounts for approximately 7 percent of the total large facility GHG emissions in the County. The solid waste facility mostly emits methane (42,460 tons in 2016). The third facility manufactures iron parts for automobile engines and is located 11 miles northeast of the Muskegon Site. The manufacturing facility emits approximately 6 percent of the total large facility GHG emissions in the County, with a majority of the emissions being CO_2. (USEPA, 2018a)

The Midwest, along with the entire world will experience some adverse effects from climate change, however, the Muskegon Site is not especially vulnerable or susceptible to climate change impacts due to the pre-developed nature of the site. Specifically, the project area does not exhibit water resources shortages or ecological conditions that would be sensitive to climate change impacts associated with droughts, high intensity precipitation events, or other associated ecological change. Furthermore, the Muskegon Site is not located in a forest subject to potential increase in fire risk from climate change nor near a coast subject to potential changes in sea levels. These potential impacts associated with climate change would not significantly increase hazards to human health in the project region.

Custer Site (Alternative D)

There are also three regulated facilities under the GHGRP program that emitted 569,125 tons of CO_2e in Mason County in 2016. All three facilities are located in the western portion of the County near Pere Marquette Lake, with the closest facility approximately 11 miles west of the Custer Site. The Michigan Power Limited Partnership power plant accounts for the majority of reported GHG emissions with 519,851 tons of CO_2e emitted in 2016, with 99 percent of the emissions being CO_2. The Occidental Chemical Corporation plant produces liquid and solid calcium chloride and emitted 24,424 tons of CO_2e in 2016, with 99 percent of the emissions being CO_2. Great Lakes Castings manufactures gray iron

coatings and emitted 24,851 tons of CO_2e in 2016, with 99 percent of the emissions being CO_2. (USEPA, 2018a)

The Custer Site will experience similar impacts from climate change as the Muskegon Site. While the Custer Site is in close proximity to the Pere Marquette River, as discussed in **Section 3.3.2**, the site is not located in the 100 or 500 year floodplain. Although the Custer Site is also surrounded by forest land which is potentially susceptible to forest fire, it has direct access East First Street which provides emergency evacuation access.

3.5 BIOLOGICAL RESOURCES

This section describes the existing environmental conditions related to biological resources in the two alternative sites described in **Section 2.2**: the Muskegon Site (Alternatives A, B and C) and the Custer Site (Alternative D). The general and site-specific profiles of biological resources contained herein provide the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Section 4.0**.

3.5.1 METHODOLOGY

The assessment of existing biological resources was based on the following information: a review of *Michigan's County Distribution of Federally-Listed Endangered and Threatened Species* (USFWS, 2017); Michigan Department of Natural Resources' (MDNR's) Natural Features Inventory (MNFI) list of state and federally-listed species in Muskegon County (MDNR, 2018b; MDNR 2018c); a review of the National Wetlands Inventory (NWI) map (USFWS, 2016); and biological surveys conducted by Analytical Environmental Services (AES) biologists on November 12 and 13, 2013 (Muskegon Site), and August 18, 2015 (Muskegon and Custer Sites), to determine whether state- or federally-listed species or their habitat and wetlands or other Waters of the U.S. occur within the alternative sites. A Biological Assessment (BA) has been prepared for Alternative A and is included as **Appendix G** along with the special-status species lists for each of the alternative sites.

3.5.2 REGULATORY SETTING

Waters of the U.S.

Any person, firm, or agency planning to alter or work in navigable Waters of the U.S., including the discharge of dredged or fill material, must first obtain authorization from the United States Army Corps of Engineers (USACE). Permits, licenses, variances, or similar authorization may also be required by other federal, state, and local statutes. Section 10 of the Rivers and Harbors Act of 1899 prohibits the obstruction or alteration of navigable Waters of the U.S. without a permit from the USACE (33 United States Code [USC] §403). Section 301 of the Federal Water Pollution Control Act and Amendments of 1972 (FWPCA) prohibits the discharge of pollutants, including dredged or fill material, into Waters of the U.S. without a Section 404 permit from USACE (33 USC §1344). A Section 401 Water Quality Certification may be required by the United States Environmental Protection Agency (USEPA) for trust lands before other permits are issued.

Special-Status Species

Federally-Listed Species

The United States Fish and Wildlife Service (USFWS) enforces the provisions of the Federal Endangered Species Act (FESA) for all terrestrial species. Section 9 (16 USC §1538) prohibits the "taking" of a listed species by anyone, including private individuals and state and local agencies. Threatened and endangered species on the federal list (50 CFR §17.11 and 17.12) are protected from take, defined as direct or indirect harm. If "take" of a listed species is necessary to complete an otherwise lawful activity, this triggers the need for consultation under Section 7 of the FESA for federal agencies, including Indian tribes. Pursuant

to the requirements of the FESA, a federal agency reviewing a proposed project within its jurisdiction must determine whether any federally-listed species may be present in the study area and whether the proposed project will have a potentially significant impact upon such species. Under FESA, habitat loss is considered to be an impact to the species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species that is proposed for listing under FESA or to result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC §1536[3] and [4]). Section 7 of the FESA requires the preparation of a BA if the project constitutes a "major construction activity" that may significantly affect the quality of the human environment as referred to in the National Environmental Policy Act (NEPA). The purpose of the BA is to evaluate the potential effects of the action on listed and proposed species and designated and proposed critical habitat and determine whether any such species or habitat are likely to be adversely affected by the action. A BA has been prepared for Alternative A and is included as **Appendix G**, due to the potential presence of federally-protected bat and snake species. Upon concurrence with the mitigation measures provided in the BA, the USFWS may issue a Biological Opinion which provides incidental take provisions for the proposed project.

State-Listed Species

The state recognizes special-status plants and wildlife species that are vulnerable to various causes of habitat loss or population decline. These species are afforded special protection through the Michigan Natural Resources and Protection Act (Part 365 of Public Act [PA] 451, 1994). The species are "in danger of extinction throughout all or a significant part of its range." It is illegal to "take" any of these state-listed species with penalties up to 90 days in jail and/or fines up to $1,000.

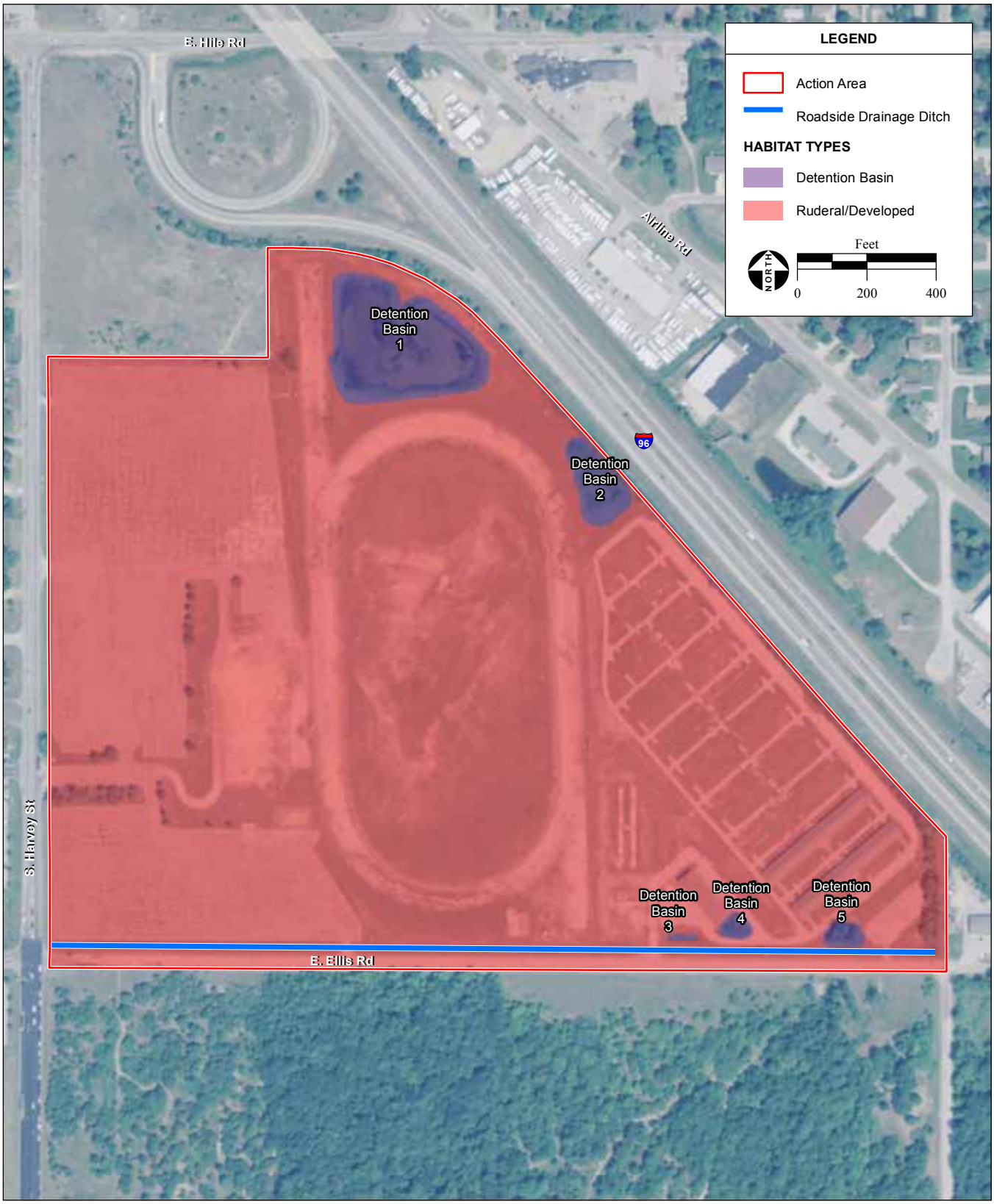
Migratory Birds and Other Birds of Prey

Migratory birds are protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 USC §703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed under 50 CFR 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR §21). The direct injury or death of a migratory bird, due to construction activities or other construction-related disturbance that causes nest abandonment, nestling abandonment, or forced fledging would be considered take under federal law. As such, project-related disturbances must be reduced or eliminated during the nesting season.

3.5.3 ENVIRONMENTAL SETTING

Muskegon Site (Alternatives A, B, and C)

Habitat types within the Muskegon Site are illustrated in **Figure 3.5-1**. **Table 3.5-1** provides a summary of habitat types broken down by acreage. Representative photographs of the habitat types taken during the biological surveys of the Muskegon Site are shown in **Figure 3.5-2a** and **3.5-2b**.



SOURCE: USDA NAIP Aerial Photograph, 7/21/2014;
Muskegon County Parcels, 2013; AES, 6/22/2016

Figure 3.5-1
Habitat Types

PHOTO 1: View of ruderal/disturbed habitat, debris pile, and vacant building facing east. Photo date: 8/18/2015

PHOTO 2: View of ruderal/disturbed habitat and debris pile facing west. Photo date: 8/18/2015

PHOTO 3: View of ruderal/disturbed habitat facing north. Photo date: 8/18/2015.

PHOTO 4: View of ruderal/disturbed habitat facing south. Photo date: 8/18/2015

PHOTO 5: View of Detention Basin 1 facing northeast. Photo date: 8/18/2015

PHOTO 6: View of Detention Basin 2 facing southeast. Feature is surrounded by dense willow stand. Photo date: 8/18/2015

SOURCE: AES, 6/27/2016

Figure 3.5-2a
Site Photographs

PHOTO 7: View of Detention Basin 3 facing southeast. Photo date: 8/18/2015.

PHOTO 8: View of conrete debris pile facing east. Debris pile is potential upland foraging and refuge habitat for eastern rattlesnake. Photo date: 8/18/2015.

PHOTO 9: View of ruderal/disturbed habitat near eastern boundary facing north. Photo date: 8/18/2015.

PHOTO 10: View of ruderal/disturbed habitat near center facing west. Photo date: 8/18/2015.

SOURCE: AES, 6/27/2016

Figure 3.5-2b
Site Photographs

TABLE 3.5-1
SUMMARY OF HABITAT TYPES – MUSKEGON SITE

Habitat Type	Acres
Ruderal/Developed	82.4
Detention Basins	4.05
Roadside Ditch	0.05
Total	**86.5**

Terrestrial Communities

As shown on **Figure 3.5-1**, the only terrestrial community present on the Muskegon Site is ruderal/developed.

The ruderal/ developed habitat within the Muskegon Site consists of vegetated and somewhat barren areas that have been recently disturbed by the demolition of the racetrack facilities beginning in 2007. Ruderal/developed habitat typically supports a low diversity of plant and animal species. Plant species found within this habitat are typically "weedy" or early colonizing species tolerant of disturbance. Plant species observed within the ruderal/developed habitat included yarrow (*Achillea millefolium*), New England aster (*Symphyotrichum novae-angliae*), white sweetclover (*Meliotus alba*), purple loosestrife (*Lythrum salicaria*), common milkweed (*Asclepias syriaca*), panic grass (*Dichanthelium* spp.), ryegrass (*Lolium perenne*), common mullein (*Verbascum thapsus*), tall goldenrod (*Solidago altissima*), and American pokeweed (*Phytolacca americana*). Scattered blue spruce (*Pinea pungens*) and tree-of-heaven (*Ailnthus altissima*) occur within the western and northern portions of the Muskegon Site. Wildlife species observed within the ruderal/ developed habitat included mourning dove (*Zenaida macroura*), Eastern meadowlark (*Sturnella magna*), wild turkey (*Meleagris gallopavo*), meadow vole (*Microtus mynomes*), and white-tailed deer (*Odocoileus virginianus*).

Aquatic Communities

Detention Basins

Five detention basins occur within the Muskegon Site. The detention basins receive runoff from paved and historically paved areas within the Muskegon Site. Two of the detention basins (Detention Basins 1 and 2; **Figure 3.5-1**) were inundated to a depth of approximately 1 to 2 feet at the time of the August 18, 2015, site visit. Maximum pool depths for all the detention basins appeared to be approximately 4 to 5 feet. Detention Basins 1, 2, and 5 were mostly surrounded by moderate to dense stands of sandbar willow (*Salix exigua*), black willow (*Salix nigra*), and eastern cottonwood (*Populus deltoides*). Emergent vegetation in Detention Basins 1 and 2 included narrowleaf cattail (*Typha angustifolia*) and river bullrush (*Bolbochoensus fluviatilis*). Wildlife species observed within the detention basins and surrounding vegetation included mallard (*Anas platyrhynchos*), American black duck (*Anas rubripes*), belted kingfisher (*Megaceryle alcyon*), green heron (*Butorides virescens*), eastern kingbird (*Tyrannus tyrannus*), and an unidentified ranid frog (*Rana* spp).

Roadside Ditch

A roadside drainage ditch occurs along the southern boundary of the Muskegon Site (**Figure 3.5-1**). Plant species observed within the roadside ditch included sedges (*Carex* sp.), common horsetail (*Equisetum arvense*), and bergamot (*Mondara fistulosa*).

Wildlife

The Muskegon Site does not occur within a designated wildlife area and there are no waterfowl production areas, state wildlife refuges, or national wildlife refuges. Wildlife species observed during the biological surveys of the Muskegon Site include all those stated in the habitat descriptions above.

Federally-Listed Species

The term "federally-listed species" is defined to include those plant and animal species that are listed as endangered or threatened under the FESA. Table 1 of the BA (**Appendix G**) provides a summary of federally-listed species regionally occurring in Mason and Muskegon Counties and provides a rationale as to whether the species have the potential to occur within the Muskegon Site based on the presence of the species or potentially suitable habitat during the biological surveys. Federally-listed species without the potential to occur within the alternative sites are not discussed further. The Muskegon Site provides suitable (albeit potentially marginal) habitat for the federally-threatened northern long-eared bat (*Myotis septentrionalis*), the federally-endangered Indiana bat (*Myotis sodalis*), and the federally-threatened eastern massasauga (*Sistrurus catenatus*).

State-Listed Species

The MDNR's Michigan Natural Features Inventory (MDNR, 2018b; MDNR, 2018c) list identifies the following potentially occurring state-listed species for the Muskegon Site: 37 plant species, 17 invertebrate species (mollusks, snails, and insects), 3 fish species, 7 reptile species, and 19 bird species (**Appendix G**). Due to the overall low quality of habitat, none of state-listed species would be expected to occur within the Muskegon Site.

Migratory Birds and other Birds of Prey

Migratory birds and other birds of prey, protected under the MBTA (50 CFR §10), have the potential to nest within the trees in the Muskegon Site.

Wildlife Corridors

Aerial photos were reviewed to evaluate the habitat surrounding the Muskegon Site and to identify the potential for wildlife movement, or wildlife corridors from adjoining properties onto or through the Muskegon Site. The Muskegon Site is functionally part of a larger barrier that exists when combined with the surrounding areas' developed characteristics. Thus, the Muskegon Site possesses very low quality potential for wildlife corridors. Wildlife traversing the Muskegon Site would be limited to those species that are adapted to ruderal/developed settings, including deer, raccoons, foxes, skunks, rabbits, and small rodents. Due to the present condition of the Muskegon Site, it does not provide high-quality habitat for wildlife resources.

Custer Site (Alternative D)

This Custer Site consists of trust land that is undergoing vegetation restoration plantings using tree and shrub species which are of significant cultural importance to the Tribe. Habitat types within the Custer Site are illustrated in **Figure 3.5-3**. **Table 3.5-2** provides a summary of habitat types broken down by acreage. Representative photographs of the habitat types taken during the biological surveys of the Custer Site are shown in **Figure 3.5-4**. Previous land use appeared to consist of undeveloped mixed hardwood-conifer forest and a blue spruce plantation. Adjacent land uses include rural residential parcels to the north and undeveloped forest and rural lands to the south, east, and west.

TABLE 3.5-2
SUMMARY OF HABITAT TYPES – CUSTER SITE

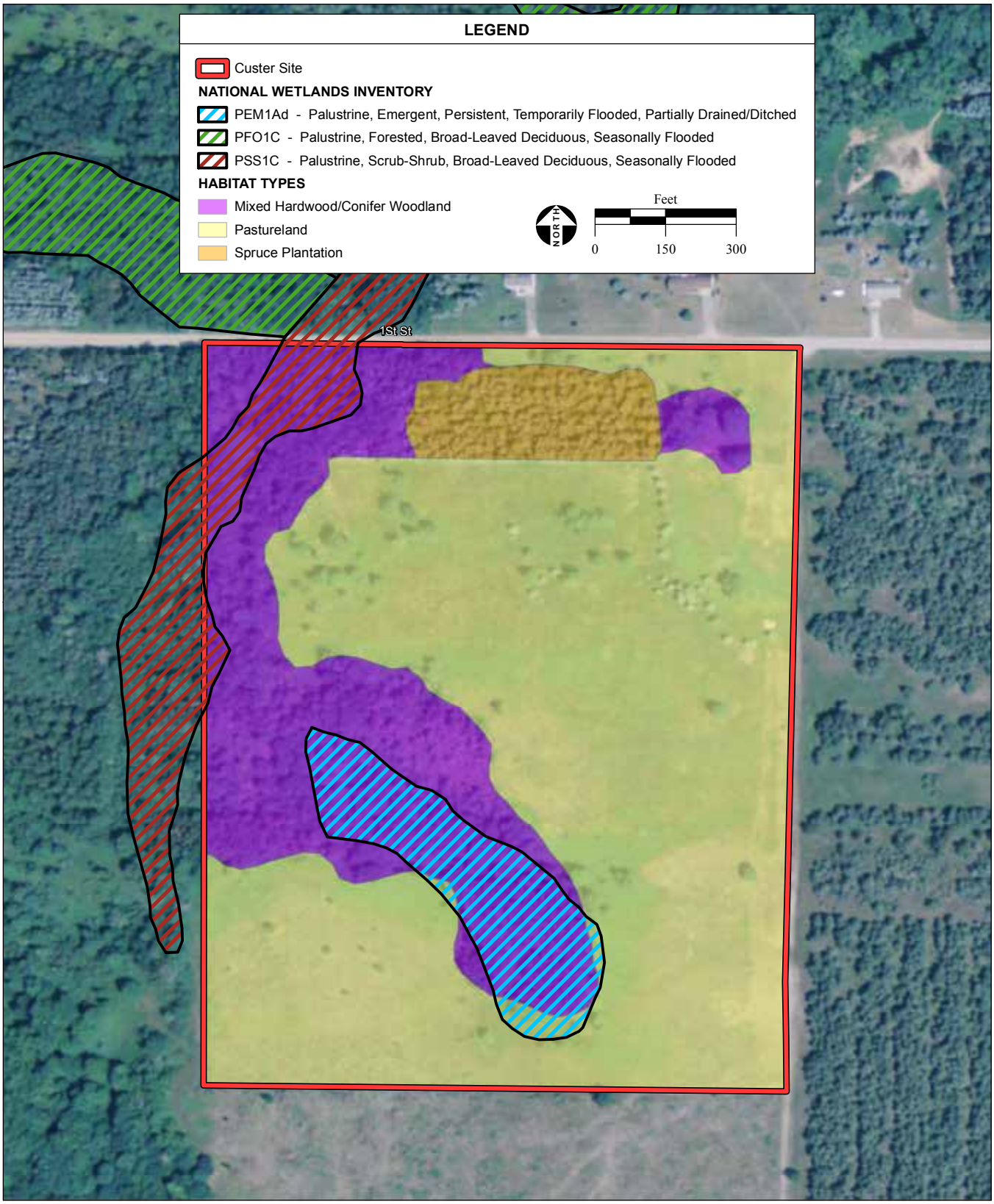
Habitat Type	Size (Acres)
Pastureland	30.05
Mixed Hardwood/Conifer Woodlands	12.98
Spruce Plantation	2.24
Total	**45.27**

Terrestrial Communities

The predominant terrestrial habitat type on the Custer Site does not readily fit within the Michigan Natural Communities Classification (MNFI, 2015) due to the recent clearing of the blue spruce plantation and subsequent restoration efforts. The majority of the site is habitat most closely resembles early successional Dry-mesic Northern Forest, and is described as "Mixed Hardwood/Confier Woodland" (**Figure 3.5-3**). Remnant blue spruce (*Pinea pungens*), white pine (*Pinus strobus*), white oak (*Quercus alba*), black oak (*Quercus nigra*), Northern red oak (*Quercus rubra*), and quaking aspen (*Populus tremuloides*) are present on the central and western portions of the site. A small area of spruce plantation (*Pinea pungens*) is found in the norther portion of the Custer Site. The recently cleared portion of the site consists of scattered white pine, white oak, black oak, and northern red oak seedlings; woody vines; and herbaceous plant species including black raspberry (*Rubus occidentalis*), Allegheny blackberry (*Rubus allegheniensis*), serviceberry (*Amelanchier sp.*), panic grass (*Dichanthelium sp.*), ryegrass (*Lolium perenne*), fall witch grass (*Digitaria cognata*), tall goldenrod (*Solidago altissima*), New England aster (*Symphyotrichum novae-angliae*), English plantain (*Plantago lanceolata*), white sweetclover (*Meliotus alba*), and yarrow (*Achillea millefolium*). Restoration plantings within the site include sugar maple (*Acer saccharum*), highbush cranberry (*Virburnum trilobum*), white oak, black oak, northern red oak, and quaking aspen.

Aquatic Communities

The NWI database (USFWS, 2016) shows there is the potential for two wetlands to occur on the site (**Figure 3.5-3**). The first potential wetland is in the northwestern corner of the site and is classified by NWI as a Freshwater Forested/Shrub Wetland. The second potential wetland occurs in the center of the site and is classified as Freshwater Emergent Wetland but is likely to be more similar to the Freshwater Forested/Shrub Wetland.



SOURCE: USFWS, National Wetlands Inventory, 2005; USDA aerial photograph, 7/21/2014; AES, 6/22/2016

Figure 3.5-3
Habitat Types - Custer Site

PHOTO 1: General habitat from the northern boundary of the Custer Site.

PHOTO 2: General habitat from the southern boundary of the Custer Site.

PHOTO 3: Northern portion of the Custer Site.

PHOTO 4: Southern portion of the Custer Site.

PHOTO 5: Eastern portion of the Custer Site.

PHOTO 6: Western portion of the Custer Site.

SOURCE: AES, 6/27/2016

Figure 3.5-4
Site Photographs

Wildlife

The Custer Site does not appear to occur within a designated wildlife area or critical habitat for any species and there are no waterfowl production areas, state wildlife refuges, or national wildlife refuges on or adjacent to the Custer Site. Wildlife species observed during the biological surveys of the Custer Site include: American crow (*Corvus brachyrhynchos*), black-capped chickadee (*Poecile atricapillus*), downy woodpecker (*Picoides pubescens*), white-breasted nuthatch (*Sitta carolinensis*), American robin (*Turdus migratorius*), white-tailed deer (*Odocoileus virginianus*), and meadow vole (*Microtus mynomes*).

Federally-Listed Species

Table 1 of the BA **(Appendix G)** provides a summary of federally-listed species regionally occurring in Mason County based on the USFWS (2018) and the MDNR (2018b; 2018c) lists and provides a rationale as to whether the species have the potential to occur within the Custer Site based on the presence of the species or potentially suitable habitat during the biological surveys. The Custer Site provides suitable (albeit potentially marginal) habitat for the federally-threatened northern long-eared bat (*Myotis septentrionalis*), the federally-endangered Indiana bat (*Myotis sodalis*), and the federally-threatened eastern massasauga rattlesnake (*Sistrurus catenatus*).

State-Listed Species

The MDNR's MNFI (MDNR, 2018b; MDNR 2018c) list identifies the following potentially occurring state-listed species for Mason County, the location of Custer Site: 15 plant species, 6 invertebrate species (mollusks and insects), 4 reptile species, 2 mammal species, and 15 bird species (**Appendix G**). In addition to the three federally-listed species described above, there is appropriate habitat for 24 additional state-listed species. No state-listed species were observed during the 2015 site visit, but the possibility for them to occur remains.

Plants

The Custer Site has appropriate habitat for 10 state-listed species, although none of these species were observed during the 2015 site visit. These species include Alleghany plum (*Prunus alleghaniensis* var. *davisii*), Black-fruited spike-rush (*Eleocharis melanocarpa*), Cut-leaved water parsnip (*Berula erecta*), Dwarf-bulrush (*Hemicarpha micrantha*), Engelmann's spike rush (*Eleocharis engelmannii*), Ginseng (*Panax quinquefolius*), Hill's thistle (*Cirsium hillii*), Short-fruited rush (*Juncus brachycarpus*), Tall beakrush (*Rhynchospora macrostachya*), and Vasey's rush (*Juncus vaseyi*).

Reptiles

There are appropriate aquatic and upland habitats on the Custer Site for reptile lifecycle needs. State-listed reptile species with the potential to occur on the Custer Site include Blanding's turtle (*Emydoidea blandingii*), Eastern box turtle (*Terrapene carolina carolina*), Spotted turtle (*Clemmys guttata*), and Wood turtle (*Glyptemys insculpta*).

Birds

Within the Custer Site, there are appropriate foraging and nesting habitats for 8 state-listed species. These include Bald eagle (*Haliaeetus leucocephalus*), Cerulean warbler (*Dendroica cerulea*), Grasshopper

sparrow (*Ammodramus savannarum*), Henslow's sparrow (*Ammodramus henslowii*), Northern goshawk (*Accipiter gentilis*), Northern harrier (*Circus cyaneus*), Prairie warbler (*Dendroica discolor*), and Red-shouldered hawk (*Buteo lineatus*).

Invertebrates

Two state-listed invertebrates have the potential to occur on the Custer Site. These are the Dusted skipper (*Atrytonopsis hianna*) and the Great Plains spittlebug (*Lepyronia gibbosa*).

Migratory Birds and Other Birds of Prey

Migratory birds and other birds of prey, protected under the MBTA (50 CFR §10), have the potential to nest within the trees in the Custer Site. American crow (*Corvus brachyrhynchos*), black-capped chickadee (*Poecile atricapillus*), downy woodpecker (*Picoides pubescens*), white-breasted nuthatch (*Sitta carolinensis*), and American robin (*Turdus migratorius*) were observed during the 2015 site visit.

Wildlife Corridors

The Custer Site is unfenced along all of its boundaries. The Custer Site is bordered on the north side by a local road with low density residential and forestland across the street. The Custer Site is located in a relatively undeveloped area with forestland, low-density residential development, and pastureland in all directions. Thus, the Custer Site possesses high quality wildlife corridor potential. Wildlife traversing the Custer Site would have access to significant areas of habitat, including access to the Pere Marquette River corridor to the south.

3.6 CULTURAL AND PALEONTOLOGICAL RESOURCES

This section describes the existing environmental conditions for the two alternative sites described in **Section 2.2**: the Muskegon Site (Alternatives A, B, and C) and the Custer Site (Alternative D). The general and site-specific description of cultural resources contained herein provides the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Section 4.0**. Information in this section regarding cultural resources at the Muskegon Site was summarized from the June 2016 Cultural Resources Report prepared by Analytical Environmental Services (AES); while information regarding cultural resources at the Custer Site was summarized from the December 2003 Archaeological Site Location Survey developed largely by Andrews Cultural Resources (ACR). Both cultural resources reports are included as **Appendix H**.

3.6.1 CULTURAL SETTING

Historic Context

The first known European explorer of Michigan was Étienne Brûlé, around 1620. The City of Detroit was founded in 1701 by a party of French-Canadians, and Michigan became part of French Louisiana. As part of their loss in the French and Indian War, the Michigan territory was ceded to Great Britain, which in turn lost it to the United States after the Revolutionary War. The construction of the Erie Canal, connecting New York and the Great Lakes, brought large numbers of settlers and, by 1837, Michigan had become a state.

Mining, lumber, and farming were important industries, but the establishment of the auto industry around the turn of the century led to rapid changes in the focus of the economy. The Great Depression devastated the automobile industry, but the Civilian Conservation Corps and Works Progress Administration hired hundreds of thousands of people for public works projects. However, it was the advent of World War II that revived both the mining and auto industries in the state. Since then, the oil crisis of the 1970s, high fuel costs, competition with foreign automakers, social problems, and urban blight have created challenges for Muskegon County and Michigan in general.

Muskegon Site

The Muskegon Site is located within Muskegon County, in Fruitport Township, at the former Great Lakes Downs racetrack. The name Muskegon is derived from an Ottawa term "Masquigon" meaning marshy river or swamp, which has been identified on French maps from the late 1600s. French priests, soldiers, and fur traders and trappers established themselves in the area in the latter half of the 1600s, though significant settlement did not occur until the early 1800s. Muskegon County itself was formed in 1859, from portions of Ottawa County to the south and Oceana County to the north. Lumber was the significant industry in the region, peaking in 1887 when a combination of 63 county sawmills cut 665,000,000 board feet of lumber (Muskegon County, 2015).

The Fruitport area was settled beginning in 1836, rapidly becoming popular for peach and apple orchards, until cold weather in the winter of 1874-1875 killed off the crop. Fruitport Village was laid out in 1868, and grew with the discovery of mineral waters in 1871, leading to the development of a resort area, though the associated hotel, the Pomona House, burned down twice and was left in ruins after the second

fire. In 1879, Spring Lake Iron Works blast furnaces were built that smelted pig iron brought in by ship, using rail lines for transportation and supplies (Page, 1882a).

Great Lakes Downs was a 0.625 mile-long oval horse racing track located 2 miles south of Muskegon, in Fruitport Township. Developed in 1989 as the Muskegon Racecourse, the track was used for harness racing until it converted to thoroughbred horse races in 1999. Purchased by Magna in 2000, racing there did not last long and the doors closed in 2007; demolition of the facilities followed in 2009 (Horseracing-tracks.com, 2014). Prior to demolition, there were approximately 25 buildings on the Muskegon Site (AMEC, 2008): the Grandstand Building on the west side of the race course, barns to the east of the race course, jockey's quarters, groom's dorm, maintenance building, guard shack, racing office, and other small support buildings. The area to the west of the Grandstand Building was paved for parking. There were also stormwater catch basins and retention ponds throughout the Muskegon Site as well as landscaping features.

An examination of aerial photographs from 1938, 1955, 1962, 1968, 1974, and 1981 showed the site as mostly undeveloped, with some residences and vegetated/wooded areas. Residences did not appear until at least 1976, and were demolished for the race course. More recent photographs reflect current commercial development in the area, and a well-developed roadway system surrounding and serving the site.

Custer Site

The Custer Site is located within Mason County, which was formed in 1855 from parts of Ottawa and Oceana counties. Jesuit missionary Jacques Marquette arrived in 1668, travelling the Great Lakes to spread Christianity to the Indians of the region. Europeans trappers, lumbermen, and others began arriving in the early to mid-1800s (Page, 1882b). The first European settler was Burr Caswell, a native of New York, who arrived in 1845 and established a farm. The 1855 Treaty of Detroit established Ottawa reservations, including in Custer Township. The village of Custer was platted in 1878; a sawmill, a tannery, stores, and other businesses were quickly established.

3.6.2 REGULATORY SETTING

National Historic Preservation Act (NHPA)

Section 106 of the National Historic Preservation Act (NHPA) as amended, and its implementing regulations found in 36 Code of Federal Regulations (CFR) Part 800, require federal agencies to identify cultural resources that may be affected by actions involving federal lands, funds, or permitting. The Bureau of Indian Affairs (BIA) must comply with Section 106 for the Proposed Action and resulting development. The significance of the resources must be evaluated using established criteria outlined in 36 CFR §60.4, as described below.

If a resource is determined to be a *historic property*, Section 106 of the NHPA requires that effects of the federal undertaking on the resource be determined. A historic property is defined as:

> …any prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion in the National Register of Historic Places (NRHP), including artifacts, records, and material remains related to such a property. (NHPA §301[5])

Section 106 of the NHPA prescribes specific criteria for determining whether a project would adversely affect a historic property, as defined in 36 CFR §800.5. An impact is considered adverse when prehistoric or historic archaeological sites, structures, or objects that are listed on or eligible for listing, in the NRHP are subjected to the following:

- Physical destruction of or damage to all or part of the property;
- Alteration of a property;
- Removal of the property from its historic location;
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the Property's significant historic features;
- Neglect of a property that causes its deterioration; and
- Transfer, lease, or sale of the property out of federal control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

If the historic property will be adversely affected by the undertaking, then prudent and feasible measures to avoid or reduce adverse impacts must be taken. The State Historic Preservation Officer (SHPO) must be provided an opportunity to review and comment on these measures prior to project implementation.

National Register of Historic Places

The eligibility of a resource for listing in the NRHP is determined by evaluating the resource using criteria defined in 36 CFR §60.4 as follows:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, association, and

- That are associated with events that have made a significant contribution to the broad patterns of our history;
- That are associated with the lives of persons significant in our past;
- That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- That have yielded, or may be likely to yield, information important to prehistory or history.

Sites younger than 50 years, unless of exceptional importance, are not eligible for listing in the NRHP.

In addition to meeting at least one of the criteria listed above, the property must also retain enough integrity to enable it to convey its historic significance. The NRHP recognizes seven aspects or qualities that, in various combinations, define integrity (NPS, 1990). These seven elements of integrity are location, design, setting, materials, workmanship, feeling, and association. To retain integrity a property will always possess several, and usually most, of these aspects.

While most historic buildings and many historic archaeological properties are significant because of their association with important events, people, or styles (criteria A, B, and C), the significance of most prehistoric and some historic-period archaeological properties is usually assessed under criterion D. This criterion stresses the importance of the information contained in an archaeological site, rather than its intrinsic value as a surviving example of a type or its historical association with an important person or event. It places importance not on physical appearance but rather on information potential.

Native American Graves Protection and Repatriation Act (NAGPRA)

The Native American Graves Protection and Repatriation Act (NAGPRA), 25 United States Code (USC) §3001 *et seq.*, provides a process for museums and federal agencies to return Native American cultural items—human remains, funerary objects, sacred objects, or objects of cultural patrimony—to lineal descendants, and culturally affiliated Indian tribes and Native Hawaiian organizations. NAGPRA includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American cultural items on federal and tribal lands, and penalties for noncompliance and illegal trafficking.

Archaeological Resources Protection Act of 1979 (ARPA)

The Archaeological Resources Protection Act of 1979 (ARPA; PL 96-95; 16 USC §470aa-mm), provides for the protection of archaeological resources and sites which are on public and Indian lands. It also fosters increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources and data, which were obtained before October 31, 1979. ARPA also provides for penalties for noncompliance and illegal trafficking.

National Environmental Policy Act (NEPA)

The National Environmental Policy Act (NEPA) requires that federal agencies take all practical measures to "preserve important historic, cultural, and natural aspects of our national heritage." NEPA's mandate for considering the impacts of a federal project on important historic and cultural resources is similar to that of Section 106 of the NHPA, and the two processes are generally coordinated when applicable. Section 800.8(a) of NHPA's implementing regulations provides guidance on coordination with NEPA.

3.6.3 RECORD AND LITERATURE SEARCH AND SURVEYS

Area of Potential Effects (APE)

Muskegon Site (Alternatives A, B, and C)

The Area of Potential Effects (APE) for Alternatives A, B, and C consist of two parcels (Assessor's Parcel Numbers [APNs] 15-115-300-0011-10 and 15-115-300-0026-00) that constitute the approximately 86.5-acre Muskegon Site, which includes the Proposed Fee-to-Trust Property and lands owned by the Tribe that will remain in fee status, but will be developed with uses that support the proposed development. It is anticipated that all construction activities and staging would take place within the Muskegon Site and that no excavations would be more than 8 feet deep.

Additionally, the APE includes several off-site road infrastructure and water improvements that will be required to mitigate potential impacts from operation of the proposed development at the following locations:

- Airline Highway / Airport Road (traffic signal update only);
- Airline Highway / Hile Road (traffic signal update only);
- Harvey Street / Hile Road (road widening, lane construction);
- Grand Haven Road / Hile Road (traffic signal update only);
- Harvey Street / Ellis Road (traffic signal update only);
- Harvey Street / Independence Drive (lane construction);
- Harvey Street / Sternberg Road (lane construction);
- Harvey Street / Pontaluna Road (lane construction);
- Airline Highway / Farr Road (traffic signal update only);
- Airline Highway / westbound (WB) Interstate 96 (I-96) Off-Ramp (lane construction, signal installation);
- Airline Highway / southbound (SB) United States Highway 31 (US-31) Ramp (lane construction, signal installation);
- Hile Road / eastbound (EB) I-96 Ramps (lane construction, signal installation);
- Hile Road / northbound (NB) US-31 Off-Ramp (relocate ramp);
- EB Sternberg Road / NB US-31 Off-Ramp (lane construction, signal installation);
- Pontaluna Road / US-31 (roundabout construction);
- Harvey Street / Site Drive (install signal); and
- Fruitport Township's existing 8-inch water main along East Ellis Road will be replaced with a 12-inch water main to accommodate for increased flow requirements.

These improvements are shown on **Figure 4.14-1**. It is assumed that staging would occur for each of these improvement areas on adjacent paved surfaces, and that no excavation would be more than 8 feet deep.

Custer Site (Alternative D)

The APE for Alternative D encompasses the entire 45-acre Custer Site. It is anticipated that all construction activities and staging would take place within the Custer Site and that no excavations would be more than 8 feet deep. The APE also includes several off-site water and wastewater infrastructure

improvements that will be required to mitigate potential impacts from operation of the proposed casino; these are described in **Section 4.14** and **Section 5.10**, and depicted in depicted on **Figure 4.14-2** and **Figure 4.14-3**. These improvements would require water and wastewater pipelines to be installed from the Custer Site to the City of Scottville. This would include a segment along East First Street from the Custer Site to Tuttle Road, a segment along Tuttle Road from East First Street to State Street, and a segment along State Street from Tuttle Road to existing pipelines serving the City of Scottville.

Records and Literature Search

A records search and literature review was performed to (1) determine whether known cultural resources had been recorded within or adjacent to the APEs for the alternative sites and determine if the alternative sites were subject to survey in the past; (2) assess the likelihood of unrecorded cultural resources based on archaeological, ethnographic, and historical documents and literature; (3) to review the distribution of nearby archaeological sites in relation to their environmental setting; and (4) assess the potential for paleontological resources at the alternative sites (see **Section 3.6.4**).

Muskegon Site (Alternatives A, B, and C)

Background research for the Muskegon Site included a search of the archaeological database at the Michigan Historical Center (MHC), performed on August 17, 2015, and a review of online resources such as historic United States Geological Survey (USGS) quadrangle maps for 1930, 1936, 1954, 1958, 1972, 1981, 2011, and 2014; the 1838 General Land Office (GLO) Plat Maps, and Land Patent records maintained by the Bureau of Land Management (BLM). The search included examination of listings on the NRHP, Michigan State Historic Sites, the Michigan Archaeological Sites File, and a bibliography of survey reports. No historical structures were depicted within the Muskegon Site on any historic map.

A search of the BLM Land Patent Records (BLM, 2015) showed that portions of the Muskegon Site were divided into military warrants and deeded to New York Militia veterans of the War of 1812; the warrants were all signed by President Franklin Pierce. Issuance of military warrants was used to transfer or sell federally owned lands to military veterans as a reward for service. Additional portions of the Muskegon Site were sold to Julius Smith in 1854 and to Albanus C. Swift and John C. Ingraham in 1855.

The MHC search indicated that no archaeological sites have been identified at the Muskegon Site, though one cultural resource has been noted within 0.5 miles, a circa 1945-1960 poured concrete foundation with cinderblock construction and associated debris scatter. No previous archaeological surveys were noted within the Muskegon Site, but three have been conducted within 0.5 miles of the site, two at the Muskegon County Airport, and a third survey for a cell tower location to the east.

Custer Site (Alternative D)

A record search was performed for the ACR (2003) effort which uncovered one previously identified archaeological site within the Custer Site, a prehistoric resource dating to at least 7,000 years before present. Other sites were noted within 1 mile of the Custer Site, principally comprised of prehistoric resources along the Pere Marquette River.

Field Survey

Muskegon Site (Alternatives A, B, and C)

An AES archaeological team, led by Senior Archaeologist Charlane Gross, M.A., RPA, conducted a pedestrian field survey and shovel testing of the 86.5-acre Muskegon Site on August 18, 2015. The site is generally divided into thirds; the western third is a paved parking area with a large soil stockpile, and so the survey focused on the central and eastern thirds of the site. The central third consisted of the former racetrack area with a retention pond to the north, and the eastern third is where the stables, jockey quarters, and other support buildings once stood. Though generally level and overgrown, it was apparent that earthmoving activities have disturbed much of the Muskegon Site, creating low berms between the stable buildings and elsewhere, as well as rubble piles distributed across the landscape. The jockey quarters (resembling a hotel building) and two of the stables remained at the time of the field survey; the stables appeared to have been gutted except for stalls near the ends of the buildings. Surface visibility varied widely across the site; in the area between the stable (or former stable) buildings, it ranged from 0 to 20 percent. In the racetrack area, bunchgrasses and weeds limited visibility to a range of less than 50 percent.

To complete the survey, the archaeological team walked a series of parallel transects spaced no more than 30 meters apart across the Muskegon Site. In addition, 10 shovel test pits (STPs) were excavated, one line crossing the stable area and one line bisecting the long axis of the horse track. The STPs were excavated by shovel in 20-centimeter levels and screened through 0.5-inch hardware cloth.

Custer Site (Alternative D)

The Custer Site includes an upland area to the north that is a mixture of fields and forest growth, which were formerly used for various agricultural pursuits; a series of farms and residences were located in this portion of the site. This site consists of trust land that is undergoing vegetation restoration plantings using tree and shrub species which are of significant cultural importance to the Tribe.

In the latter half of 2002, ACR completed a survey of a 612-acre portion of the trust property that contains the Custer Site utilizing STPs spaced at 10-meter intervals where local conditions precluded sufficient ground surface visibility. Larger excavation units were employed where diagnostically important items were found, and post-discovery processing of artifacts and samples was conducted at ACR facilities. When historic-era artifacts were identified, a metal detector was employed to sweep the area.

AES visited the Custer Site in August 2015, for a low-level survey. Little River Band tribal representative Tom St. Dennis was present, and shared general information about the site.

Findings

Muskegon Site (Alternatives A, B, and C)

No cultural resources were identified by the background record searches performed for the Muskegon Site. Structures and structural remains of the Great Lakes Downs complex were noted during the field survey, but no other potential resources were identified. The shovel testing program demonstrated that soils within the site were largely disturbed, and recovered artifacts were all contemporary with Great

Lakes Downs. No evidence of prehistoric or historic-era occupation or use of the Muskegon Site APE were noted.

Custer Site (Alternative D)

Background research uncovered one previously identified archaeological site within the trust property, a prehistoric resource dating to the at least 7,000 years before present. During the course of fieldwork completed in 2002, 60 additional cultural resource locations were identified in the Tribe's approximately 1,087-acre trust property (ACR, 2003), 52 prehistoric and 8 from the historic era. The prehistoric sites revealed a low-density occupation from circa 5,000 years B.P. to 400 B.P. The sites cluster within 200 meters of the floodplain of the Pere Marquette River and likely represent seasonal occupation.

Historic period site 20MN230 is located within the Custer Site. This site, 20MN230, represents the remains of a farm, with a barn, silo, shed, and residence foundation. Shovel testing revealed artifacts from the first half of the 1900s, a date that is confirmed by period maps (ACR, 2003). The Custer Site was included in an allotment transferred to an Ottawa Indian named Wah-suh-din-a-gun, but there is no evidence he ever lived there. A succession of owners developed the Custer Site as a produce farm, dairy farm, and a Christmas tree farm. ACR (2003) did not recommend the site eligible for listing in the NRHP, and did not recommend further study of 20MN230.

3.6.4 PALEONTOLOGICAL RESOURCE SETTING

Paleontological resources are defined as the traces or remains of prehistoric plants and animals. Such remains often appear as fossilized or petrified skeletal matter, imprints, or endocasts, and reside in sedimentary rock layers. Paleontological resources are considered important for their scientific and educational value. Fossil remains of vertebrates are considered significant. Invertebrate fossils are considered significant if they function as index fossils. Index fossils are those that appear in the fossil record for a relatively short and known period of time, allowing geologists to interpret the age range of the geological formations in which they are found (Grabau and Shimer, 1910). This section presents documentation on reported paleontological deposits on the alternative sites and surrounding regions.

The Antiquities Act of 1906 (PL 59-209; 16 USC §431 *et seq*.; 34 Stat. 225) calls for the protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on lands owned or controlled by the Government of the United States. Additional provisions appear in the Archaeological and Historic Data Preservation Act of 1974, as amended, for the survey, recovery, and preservation of significant scientific, prehistoric, historic, archaeological, or paleontological data, in such cases wherein this type of data might be otherwise destroyed or irrecoverably lost as a result of federal projects.

Site and Regional Geology

The geological characteristics of both the Muskegon Site and Custer Site are detailed in **Section 3.2**, **Geology and Soils**. The sites lie atop the sand-filled bowl-shaped remains of a seabed. Underlying Paleozoic sedimentary rock layers extend eastward to Niagara Falls, west to Prairie du Chien, Wisconsin, north to the Upper Peninsula, and south to the Michigan-Ohio border (Clarke Historical Library, 2015).

Database Search

An online records search using the Friends of the University of Michigan Museum of Paleontology Specimen Database failed to identify paleontological resources within the APE for either site (Peters, 2013).

Conclusions

No paleontological resources were identified by the background record searches performed for either the Muskegon Site or Custer Site.

3.6.5 NATIVE AMERICAN CONSULTATION

In accordance with Section 106 of the NHPA, consultation letters will be sent by the BIA to potentially interested Native American Tribes. The BIA has consulted extensively with the Tribe in the preparation of this Environmental Impact Statement (EIS). Little River Band representative Tom St. Dennis met with the AES archaeologist at the Custer Site, and confirmed the conclusions drawn by ACR in 2003, which is that there are a considerable number of prehistoric archaeological sites within the 1,087-acre trust property, specifically on the bluffs overlooking the Pere Marquette River.

3.7 SOCIOECONOMIC CONDITIONS

This section describes the existing environmental conditions related to socioeconomic conditions for the two alternative sites described in **Section 2.2**: the Muskegon Site (Alternatives A, B, and C) and the Custer Site (Alternative D). The general and site-specific description of socioeconomic conditions contained herein provides the environmental baseline by which direct, indirect, and cumulative environmental effects of the proposed alternatives are identified and measured in **Section 4.0**.

3.7.1 SOCIOECONOMIC CHARACTERISTICS OF THE LITTLE RIVER BAND OF OTTAWA INDIANS

As shown in **Table 3.7-1**, the Little River Band of Ottawa Indians (Tribe) has a total enrollment of 4,211 members, a 26 percent increase over 2006 levels. According a Community Wellbeing and Support Survey of tribal members conducted by the Tribe in 2006, when it consisted of 3,337 members, nearly 5 percent of tribal members were homeless, compared to 1 percent nationally; 12 percent of tribal members were unemployed, compared to the Michigan State unemployment rate of 6.9 percent; and the mean household income for tribal members was less than half the mean household income for the State of Michigan. Additionally, over one-third of all tribal members had accessed one or more tribal assistance programs, and less than 40 percent of the Tribe had received education beyond a high school diploma (**Appendix I**; Innovation Group, 2015).

TABLE 3.7-1
TRIBAL ENROLLMENT DEMOGRAPHICS

Geographic Area	Tribal Enrollment			
	Minors	Adults	Elders	Total
Kent County, MI	26	186	79	291
Lake County, MI	0	17	16	33
Manistee County, MI	61	241	113	415
Mason County, MI	25	73	41	139
Muskegon County, MI	66	421	175	662
Newaygo County, MI	1	28	22	51
Oceana County, MI	11	49	21	81
Ottawa County, MI	8	83	24	115
Wexford County, MI	4	15	9	28
Other Michigan Counties	101	613	273	987
Outside Michigan	118	926	365	1,409
Total	**421**	**2,652**	**1,138**	**4,211**

Source: LRBOI, 2015b.

As described in the Tribal Business Plan and Unmet Needs Report (LRBOI, 2015a), the Tribe is currently facing several obstacles to providing adequate services to its membership in both the short and long term. Some of these issues include stagnant revenues from existing enterprises coupled with increasing operation costs, increasing health care costs, reductions in available jobs and affordable housing, and an

ever-increasing number of elders in need of housing and social services. The educational and economic development needs of the Tribe are expected to grow as the population of the Tribe increases.

3.7.2 SOCIOECONOMIC CHARACTERISTICS OF MUSKEGON AND MASON COUNTIES

Population

Table 3.7-2 provides an overview of the population and workforce in Muskegon and Mason counties. In Muskegon County between 2010 and 2014, the local population declined by approximately 1.5 percent. In Mason County between 2010 and 2014, the local population has remained relatively stable. These approximate trends are expected to continue into the future.

TABLE 3.7-2
REGIONAL POPULATION

Location	2010 Population	2014 Population	Percent Change 2010-2014	2019 Estimated Population	Percent Change 2014-2019
Muskegon County	172,188	169,536	-1.5%	167,416	-1.3%
Mason County	28,705	28,684	-0.1%	28,674	-0.03%
Source: Innovation Group, 2015 (**Appendix I**).					

Housing

Housing Units

As shown in **Table 3.7-3**, regional housing stock in both counties is slowly increasing. Muskegon County has approximately four times as many housing units as Mason County. Between 2010 and 2014, Muskegon County and Mason County experienced a 0.6 percent and 0.7 percent growth in regional housing stock, respectively. Between 2014 and 2019, growth in the housing market is expected to slow somewhat, with estimated growth in Muskegon County projected at 0.2 percent and 0.6 percent in Mason County.

TABLE 3.7-3
REGIONAL HOUSING STOCK

County	2010 Census	2014 Estimate	2019 Projection
Muskegon	73,561	73,966	74,141
Mason	17,293	17,406	17,509
Source: Innovation Group, 2015 (**Appendix I**).			

Housing Values

Table 3.7-4 shows median housing values for the State of Michigan, Muskegon and Mason Counties, and Fruitport and Custer Townships from 2009 through 2016. In Michigan as well as the counties and Townships, 2016 home prices had not yet rebounded to 2009 levels.

TABLE 3.7-4
MEDIAN HOUSING VALUES

Location	2009	2010	2011	2012	2013	2014	2015	2016
State of Michigan	$147,500	$144,200	$137,300	$128,600	$121,700	$120,200	$122,400	$127,800
Muskegon County	$114,100	$112,800	$108,700	$105,700	$100,900	$98,600	$99,000	$101,400
Fruitport Township	$136,300	$134,100	$132,600	$125,000	$118,900	$117,500	$117,900	$119,000
Mason County	$120,300	$121,600	$121,500	$121,500	$117,000	$118,600	$119,900	$123,200
Custer Township	$99,500	$101,000	$107,000	$93,800	$96,200	$98,300	$95,800	$94,500
Source: U.S. Census, 2009-2016.								

Employment

As shown in **Table 3.7-5**, since nearing a high of 14.9 percent in 2009, the unemployment rate in Muskegon County declined to 7.4 percent in 2014. Mason County peaked at 13.3 percent unemployment in 2009 before falling to 7.3 percent in 2014. Statewide unemployment in 2014 was relatively similar to the rates in Muskegon and Mason Counties, but at 7.3 percent it remained above the 2014 national average of 6.2 percent. As shown in **Table 3.7-6**, unemployment in both Muskegon and Mason Counties is projected to continue to decline through 2019.

As shown in **Table 3.7-7**, firms in manufacturing, retail trade, and health care and social services employ the largest percentage of the Muskegon County workforce. When compared to the structure of the U.S. economy, Muskegon's economy is more heavily weighted towards manufacturing, which is its largest segment as measured by employment (**Appendix I**; Innovation Group, 2015). Similar to Muskegon County, Mason County's largest industries are manufacturing, retail trade, and healthcare and social services (Mason County Growth Alliance, 2015).

Income

Median annual household income in Michigan declined in 2013 even as the national average recorded a slight growth of less than half a percent. Michigan is unusual in terms of median income trends in that statewide median income entered a sustained decline in 2000, while the national median income remained relatively flat until the beginning of the Great Recession in early 2008. As indicated in **Table 3.7-8**, Michigan's median income declined even further once the recession hit. Michigan's median household income now stands at approximately $3,000 below the national average.

Property Tax

As shown in **Figure 2-3**, the Muskegon Site is located on two parcels, identified by Assessor's Parcel Numbers (APNs) 15-115-300-0011-10 and 15-115-300-0026-00. The Tribe purchased these parcels in 2008, which were originally divided into three parcels. The taxable value for the 60-acre proposed fee-to-trust parcel in 2016 was $1,431,600 (Muskegon County, 2016). Property taxes collected from the entire property in 2014 totaled $136,727 (Muskegon County, 2016). The Custer Site is currently held in federal trust for the Tribe by the U.S. government; therefore, the property is exempt from paying any state or local property taxes.

TABLE 3.7-5
UNEMPLOYMENT AND LABOR DATA

Year	Civilian Labor Force	Employment	Unemployment	Unemployment Rate
State of Michigan				
2006	5,076,656	4,721,085	355,571	7.0%
2007	5,011,120	4,658,939	352,181	7.0%
2008	4,921,466	4,529,289	392,177	8.0%
2009	4,903,544	4,233,803	669,741	13.7%
2010	4,798,954	4,194,041	604,913	12.6%
2011	4,686,948	4,198,276	488,672	10.4%
2013	4,671,183	4,244,118	427,065	9.1%
2013	4,728,376	4,306,448	421,928	8.9%
2014	4,750,279	4,402,307	347,972	7.3%
Muskegon County				
2006	90,509	84,055	6,454	7.1%
2007	89,458	82,943	6,515	7.3%
2008	88,699	81,253	7,446	8.4%
2009	88,315	75,137	13,178	14.9%
2010	77,712	66,420	11,292	14.5%
2011	75,668	66,987	8,681	11.5%
2012	75,668	68,085	7,583	10.0%
2013	76,447	68,942	7,505	9.8%
2014	76,809	71,123	5,686	7.4%
Mason County				
2006	15,089	13,854	1,235	8.2%
2007	14,924	13,756	1,168	7.8%
2008	14,814	13,582	1,232	8.3%
2009	14,812	12,843	1,969	13.3%
2010	14,567	12,733	1,834	12.6%
2011	14,266	12,690	1,576	11.0%
2012	14,354	12,962	1,392	9.7%
2013	14,538	13,201	1,337	9.2%
2014	14,794	13,709	1,085	7.3%

Source: Innovation Group, 2015 (**Appendix I**).

TABLE 3.7-6
PROJECTED EMPLOYMENT AND CIVILIAN LABOR FORCE

	2019 Estimated	Projected Percent Change 2014-2019
Muskegon County		
Workforce	85,548	+1.0%
Unemployment	5,000	-12.1%
Percent Unemployed	**5.8%**	
Mason County		
Workforce	14,972	+1.2%
Unemployment	1,000	-7.8%
Percent Unemployed	**6.7%**	

Source: Innovation Group, 2015 (**Appendix I**).

TABLE 3.7-7
MUSKEGON COUNTY INDUSTRY STRUCTURE 2013

Industry	Employment	Percent of Total
All industries	**51,949**	**100.00%**
Agriculture, forestry, fishing and hunting, and mining	ND	ND
Mining, quarrying, and oil and gas extraction	ND	ND
Utilities	ND	ND
Construction	1,762	3.39%
Manufacturing	12,396	23.86%
Wholesale trade	1,248	2.40%
Retail Trade	10,542	20.29%
Professional and technical services	947	1.82%
Management of companies and enterprises	119	0.23%
Administrative and waste services	1,843	3.55%
Educational services	769	1.48%
Health care and social assistance	10,045	19.34%
Transportation and warehousing	ND	ND
Information	705	1.36%
Finance and insurance	1,021	1.97%
Real estate	603	1.16%
Arts, entertainment, and recreation	943	1.82%
Accommodation and food services	5,431	10.45%
Other services except public admin	1,836	3.53%
Unclassified	30	0.06%

Notes: ND = not disclosed
Source: Innovation Group, 2015 (**Appendix I**).

TABLE 3.7-8
MEDIAN HOUSEHOLD INCOME

Year	Michigan	United States
2000	$61,564	$56,800
2001	$59,271	$55,562
2002	$55,310	$54,913
2003	$57,023	$54,865
2004	$52,112	$54,674
2005	$54,809	$55,278
2006	$56,204	$55,689
2007	$55,466	$56,436
2008	$53,866	$54,423
2009	$49,951	$54,059
2010	$49,441	$52,646
2011	$50,625	$51,842
2012	$50,742	$51,758
2013	$48,801	$51,939
Source: Innovation Group, 2015 (**Appendix I**).		

Schools

Table 3.7-9 shows the current school enrollment in Muskegon and Mason Counties. The Muskegon Site is served by the Fruitport Community School District. The Fruitport Community School District includes three elementary schools, one middle school, and two high schools (Fruitport Community Schools, 2016). The nearest schools are Shettler Elementary School, located approximately 1 mile northeast of the Muskegon Site, and Beach Elementary School, located approximately 2 miles northeast of the site. Schools in Muskegon County experienced a 1.4 percent decrease in student enrollment between 2010 and 2014. The area in the vicinity of the Custer Site is served by the Mason County Eastern School District, which consists of one elementary school and one middle/high school, both located approximately 4,000 feet northeast of the Custer Site. Mason County schools experienced a 0.4 percent decrease in student enrollment between 2010 and 2014.

TABLE 3.7-9
SCHOOL ENROLLMENT

School Year	Muskegon County	Mason County
2010-2011	29,997	8,376
2011-2012	29,484	8,471
2012-2013	28,893	8,311
2013-2014	29,997	8,374
2014-2015	29,576	8,339
Percent Change 2010-2014	**-1.4%**	**-0.4%**
Source: Innovation Group, 2015 (**Appendix I**).		

3.7.3 ENVIRONMENTAL JUSTICE

Regulatory Setting

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, as amended, directs federal agencies to develop an Environmental Justice Strategy that identifies and addresses disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. The Council on Environmental Quality (CEQ) has oversight responsibility of the federal government's compliance with EO 12898 and the National Environmental Policy Act (NEPA). The CEQ, in consultation with the United States Environmental Protection Agency (USEPA) and other agencies, has developed guidance to assist federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed.

According to guidance from the CEQ (1997b) and USEPA (1998), agencies should consider the composition of the affected area, to determine whether minority populations, low-income populations, or Indian tribes are present in the area affected by a proposed action and, if so, whether there may be disproportionately high and adverse environmental effects to those populations. Communities may be considered "minority" under the EO if one of the following characteristics apply:

- The cumulative percentage of minorities within a Census tract is greater than 50 percent (primary method of analysis).
- The cumulative percentage of minorities within a Census tract is less than 50 percent, but the percentage of minorities is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (secondary method of analysis).

According to the USEPA, either the county or the state can be used when considering the scope of the "general population." A definition of "meaningfully greater" is not given by the CEQ or USEPA, although the latter has noted that any affected area that has a percentage of minorities above the state's percentage is a potential minority community and any affected area with a minority percentage double that of the state's is a definite minority community under EO 12898.

Communities may be considered "low-income" under the EO if one of the following characteristics applies:

- The median household income for a Census tract is below the poverty line (primary method of analysis).
- Other indications are present that indicate a low-income community is present within the Census tract (secondary method of analysis).

In most cases, the primary method of analysis will suffice to determine whether a low-income community exists in the affected environment. However, when a Census tract income may be just over the poverty line or where a low-income pocket within the tract appears likely, the secondary method of analysis may be warranted. Other indications of a low-income community under the secondary method of analysis

include limited access to health care, overburdened or aged infrastructure, and dependence on subsistence living.

Affected Environment

To determine whether a proposed action is likely to have disproportionately high and adverse effects on a population, agencies must identify a geographic scale for which they will obtain demographic information. Census tracts are a small, relatively permanent statistical subdivision of a county delineated by a local committee of Census data users for the purpose of presenting data. Census tracts are designed to be relatively homogeneous units with respect to population characteristics, economic status, and living conditions at the time of establishment. Therefore, statistics of Census tracts provide a more accurate representation of a community's racial and economic composition.

Census tracts analyzed include Muskegon County Census Tract 27, which contains the Muskegon Site, and Mason County Census Tract 9506, which contains the Custer Site, as well as adjacent tracts. Census tracts in the vicinity of the Muskegon Site are shown in **Figure 3.7-1** and those in the vicinity of the Custer Site are shown in **Figure 3.7-2**.

Race

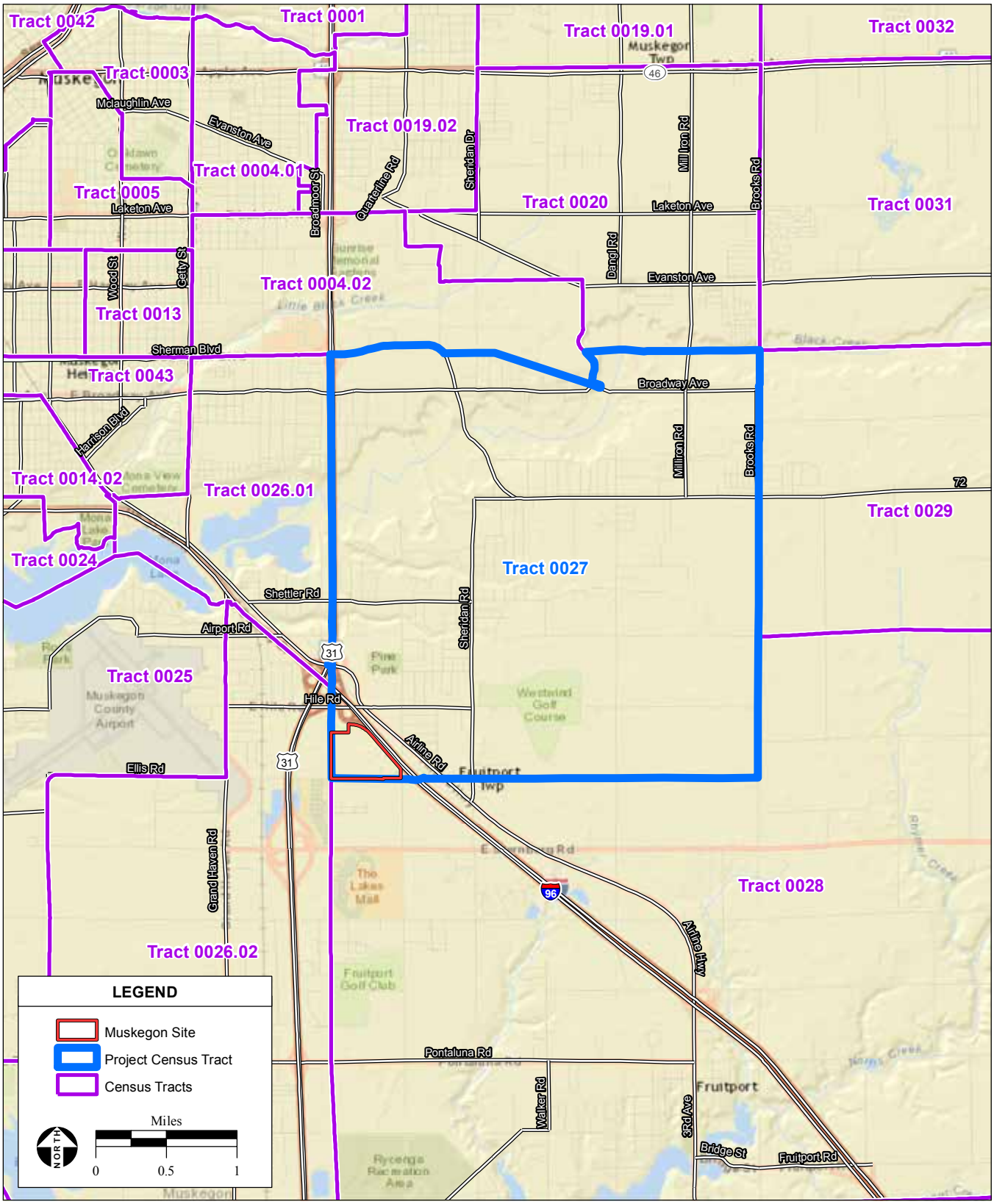
The following races are considered minorities under the EO:

- American Indian or Alaskan Native;
- Asian or Pacific Islander;
- Black, not of Hispanic origin; and
- Hispanic.

Populations of two or more races and populations classified as "Other" were also considered to be minority races for the purpose of the environmental justice analysis.

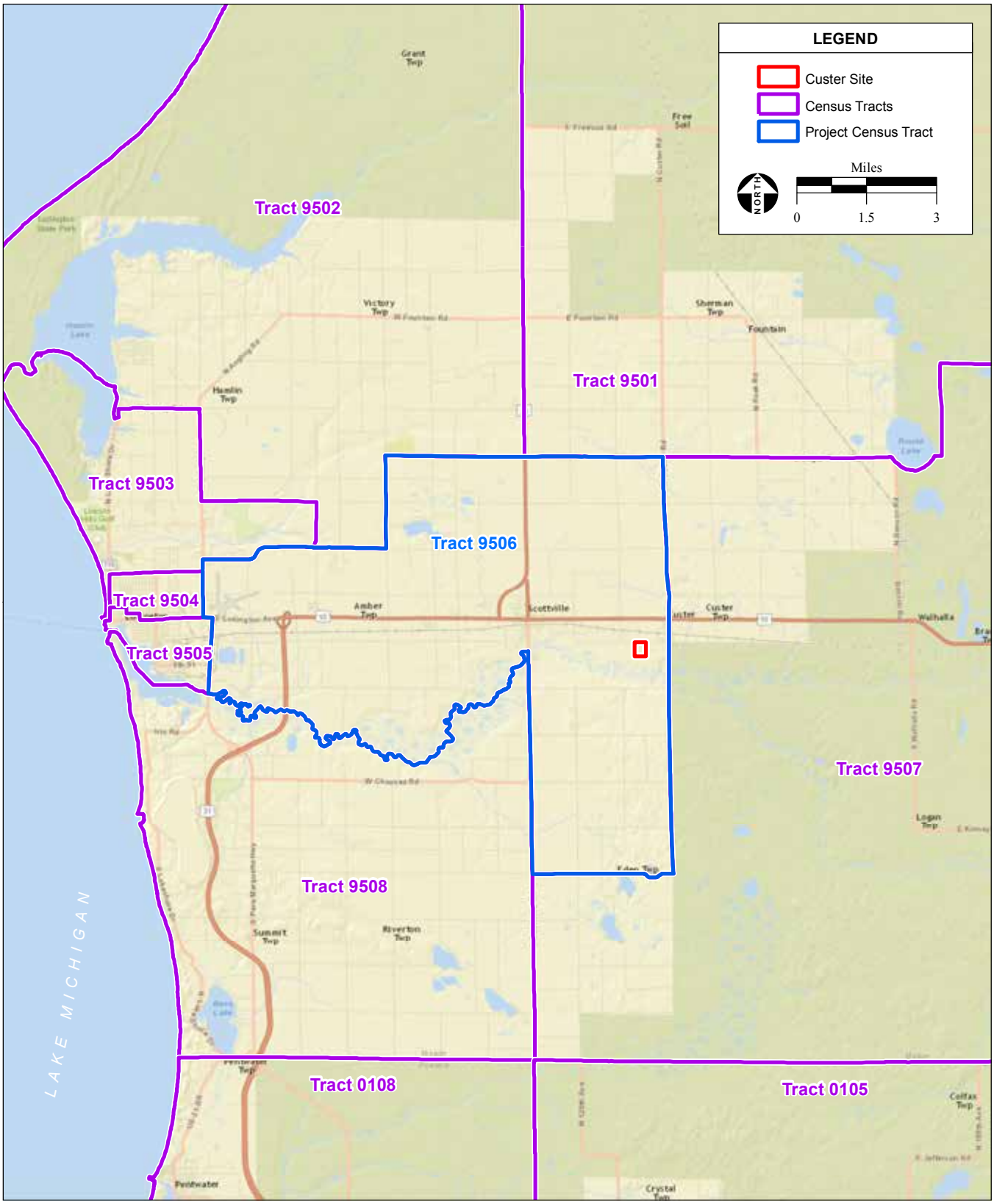
The U.S. Census Bureau's 2012-2016 American Community Survey 5-Year Estimates provides the most current racial data available by Census tract. In the time since the data was reported, the racial composition of the Census tracts is not expected to have changed substantially. **Table 3.7-10** displays the population of each minority race by Census tract in the vicinity of the alternative sites.

As shown in **Table 3.7-10**, the minority population of each Census tract in the vicinity of the Muskegon and Custer Sites was less than the 50 percent threshold, except Muskegon 4.02, which has a minority population of 62.7 percent. Therefore, Muskegon 4.02 is identified as a minority community in the vicinity of the Muskegon Site. In addition, the project itself would also directly impact members of the Tribe; therefore, the Tribe is also considered to be a minority community that would be impacted by the Proposed Action.



SOURCE: US Census, 2010; State of Michigan Open Data, 2016; ESRI Street Map, 2016; AES, 4/7/2016

Figure 3.7-1
Census Tracts - Muskegon Site



SOURCE: US Census, 2010; State of Michigan Open Data, 2016; ESRI Street Map, 2016; AES, 6/1/2016

Figure 3.7-2
Census Tracts - Custer Site

TABLE 3.7-10
MINORITY POPULATION – ALTERNATIVE SITES AND ADJACENT CENSUS TRACTS

Area (State, County, Census Tract)	Total Population	White (alone)	Black or African American	American Indian or Alaska Native	Asian	Native Hawaiian or Other Pacific Islander	Other Race	Two or More Races	Hispanic or Latino of Any Race	Total Minority Population	Percent Minority
Michigan	9,909,600	7,503,076	1,361,993	45,525	275,696	2,103	13,569	233,257	474,381	2,406,524	24.3%
Muskegon County	172,148	132,051	23,347	1,067	922	32	57	5,499	9,173	40,097	23.3%
Mason County	28,755	26,407	246	254	160	0	0	431	1,257	2,348	8.2%
Fruitport Charter Township	13,835	12,712	164	32	83	0	10	342	492	1,123	8.1%
Custer Township	1,291	1,158	50	13	2	0	0	23	45	133	10.3%
Muskegon Site and Nearby Census Tracts											
Muskegon 4.02	4,299	1,602	2,114	82	20	0	0	182	299	2,697	62.7%
Muskegon 20	3,952	3,404	10	5	0	11	0	114	408	548	13.9%
Muskegon 26.01	3,625	3,015	67	106	5	0	0	213	219	610	16.8%
Muskegon 26.02	4,255	3,524	267	0	83	0	0	92	267	709	16.7%
Muskegon 27	7,606	6,996	21	32	42	0	0	241	274	610	8.0%
Muskegon 28	6,299	5,716	143	0	41	0	10	101	218	513	8.1%
Muskegon 29	5,410	5,017	11	30	6	0	0	52	294	393	7.3%
Muskegon 31	4,473	3,830	217	9	6	0	0	113	298	643	14.4%
Custer Site and Nearby Census Tracts											
Mason 9501	2,462	2,179	10	37	12	0	0	50	174	283	11.5%
Mason 9502	3,452	3,340	0	23	4	0	0	23	62	112	3.2%
Mason 9503	3,423	3,266	0	32	11	0	0	31	82	156	4.6%
Mason 9504	4,676	4,321	61	67	48	0	0	50	129	355	7.6%
Mason 9505	3,588	3,172	24	19	0	0	0	68	305	416	11.6%
Mason 9506	5,234	4,689	53	44	64	0	0	84	297	542	10.4%
Mason 9507	3,070	2,839	50	28	2	0	0	60	91	231	7.5%
Mason 9508	2,850	2,601	45	4	19	0	0	65	116	249	8.7%

Source: U.S. Census, 2016a.

Income

The U.S. Census Bureau's 2012-2016 American Community Survey 5-Year Estimates are the most current household income data available by Census tract. The use of older income data is expected to result in a conservative estimate of income, given that income levels tend to rise over the years due to inflation. **Table 3.7-11** displays the median household income and poverty income limit for each identified Census tract. A low-income community is defined as a Census tract where the median household income falls below the poverty limit.

As shown in **Table 3.7-11**, the median household income of each Census tract surveyed in the vicinity of the Muskegon Site and Custer Site was greater than the poverty threshold. The poverty threshold for each Census tract was determined from the average household size of the Census tract. The poverty threshold assumes average household size is conservatively rounded up to the nearest person. None of the identified Census tracts have a median household income less than the determined poverty thresholds; therefore, no low-income communities have been identified in the vicinity of the alternative sites.

TABLE 3.7-11
HOUSEHOLD INCOME – ALTERNATIVE SITES AND NEARBY CENSUS TRACTS

Census Tract	Median Household Income	Average Household Size	Poverty Threshold[1]
Michigan	$50,803	2.51	$20,160
Muskegon County	$43,920	2.55	$20,160
Mason County	$43,497	2.32	$20,160
Fruitport Township	$55,357	2.66	$20,160
Custer Township	$41,488	2.26	$20,160
Muskegon Site and Nearby Census Tracts			
Muskegon 4.02	$24,911	2.68	$20,160
Muskegon 20	$41,389	2.56	$20,160
Muskegon 26.01	$37,803	2.40	$20,160
Muskegon 26.02	$49,865	2.36	$20,160
Muskegon 27	$52,195	2.73	$20,160
Muskegon 28	$59,005	2.57	$20,160
Muskegon 29	$53,734	2.69	$20,160
Muskegon 31	$46,250	2.91	$20,160
Custer Site and Nearby Census Tracts			
Mason 9501	$42,632	2.37	$20,160
Mason 9502	$48,298	2.31	$20,160
Mason 9503	$60,694	2.24	$20,160
Mason 9504	$34,049	2.07	$20,160
Mason 9505	$36,068	2.33	$20,160
Mason 9506	$41,419	2.48	$20,160
Mason 9507	$36,127	2.35	$20,160
Mason 9508	$60,391	2.53	$20,160

Notes: 1 – Calculated by AES, using Average Household Size figures listed in table, and U.S. Department of Health and Human Services poverty threshold figures.
Source: U.S. Census, 2016b; U.S. Census, 2016c; HHS, 2016.

3.8 TRANSPORTATION/CIRCULATION

This section describes the existing environmental conditions related to transportation and circulation for the alternative sites described in **Section 2.2**: the Muskegon Site (Alternatives A, B, and C) and the Custer Site (Alternative D). The general and site-specific description of transportation facilities and circulation contained herein provides the environmental baseline by which the direct, indirect, and cumulative environmental effects of the proposed alternatives are identified and measured in **Section 4.0**. Information in this section is based on a Traffic Impact Study (TIS) prepared by Fleis & Vandenbrink for the development alternatives, which is included as **Appendix J**.

3.8.1 EXISTING CIRCULATION NETWORK

Muskegon Site (Alternatives A, B, and C)

The study area roadways located in the vicinity of the Muskegon Site are described below.

United States Highway 31 (US-31) is a four-lane divided freeway, though a small segment of US-31 operates as a six-lane divided highway west of the Muskegon Site.

Interstate 96 (I-96) is a four-lane divided freeway. I-96 is a northwest-southeast oriented freeway under the jurisdiction of the Michigan Department of Transportation (MDOT) with a posted speed limit of 70 miles per hour (mph), which provides regional access to southwestern Michigan.

Harvey Street is a north-south roadway under the jurisdiction of Muskegon County Road Commission (MCRC). South of Pontaluna Road, Harvey Street is a two-lane roadway with a posted speed limit of 45 mph and is classified as a Minor Collector. North of Pontaluna Road, Harvey Street is classified as a Principal Arterial. Between Pontaluna Road and Mt. Garfield Road, Harvey Street is a three-lane roadway. Between Mt. Garfield Road and East Ellis Road, Harvey Street is a five-lane roadway, with a speed limit of 35 mph. North of East Ellis Road, Harvey Street is a three-lane roadway.[1]

Sternberg Road is an east-west roadway under the jurisdiction of MCRC. West of Grand Haven Road, Sternberg Road is a two-lane roadway with a posted speed limit of 35 mph and is classified as an Urban Principal Arterial with an Average Daily Traffic (ADT) of 7,600 vehicles per day.

Grand Haven Road is a north-south roadway under the jurisdiction of MCRC and is classified as a Minor Arterial with an ADT of 10,000 vehicles per day.

Pontaluna Road is an east-west roadway under the jurisdictions of MCRC and is classified as a Minor Arterial with an ADT of 6,500 vehicles per day.

[1] Harvey Street north of East Ellis Road was upgraded to a five-lane roadway in 2017, after the completion of the TIS (**Appendix J**).

East Ellis Road is an east-west roadway under the jurisdiction of MCRC and is classified as a Local Road with an unposted speed limit. East Ellis Road is a four-lane roadway west of Harvey Street to its terminus at US-31 and a two-lane roadway east of Harvey Street to its terminus at I-96.

Hile Road is an east-west two-lane undivided roadway, which widens to provide exclusive left turn lanes at signalized intersections. Hile Road is under the jurisdiction of the MCRC and is classified as a Major Collector with an ADT volume of 9,000 vehicles per day.

Airline Highway is a northwest-southeast two-lane roadway under the jurisdiction of MCRC and is classified as a Minor Arterial.

Airport Road is an east-west two-lane roadway under the jurisdiction of MCRC and is classified as a Major Collector.

Mt. Garfield Road is an east-west two-lane roadway under the jurisdiction of MCRC and is classified as a Local Road with a posted speed limit of 55 mph.

Custer Site (Alternative D)

The Custer Site is located south of East First Street and west of Custer Street, between Tuttle Road and Jefferson Street in the Township of Custer, Mason County, Michigan (see **Figure 2-11**). The study area roadways located in the vicinity of the Custer Site are described below.

United States Highway 10 (US-10) is an east-west roadway under the jurisdiction of MDOT and is classified as a Principal Arterial with an ADT of approximately 8,000 vehicles per day.

US-31 is generally described under the Muskegon Site above. In the vicinity of the Custer Site and south of US-10, US-31 is a two-lane roadway with a posted speed limit of 55 mph and an ADT of 6,000 vehicles per day.

Custer Road is a north-south two-lane undivided local roadway located east of the Custer Site. The posted speed limit on Custer Road is 25 mph.

East First Street is an east-west two-lane undivided local roadway located along the northern boundary of the Custer Site. The speed limit on East First Street is assumed to be 25 mph.

3.8.2 LEVEL OF SERVICE STANDARDS

Traffic congestion is generally measured in terms of level of service (LOS). Peak hour LOS at critical off-site and driveway intersections was determined using the methodology described in the 2010 Highway Capacity Manual (HCM; TRB, 2010). At intersections where the 2010 HCM methodology does not support complex intersection geometry or signal phasing, the LOS analysis was completed using the 2000 version of the HCM. In accordance with the HCM, intersections are rated between LOS A and F, with LOS A representing minimal delay and LOS F indicating failing conditions. The LOS at intersections is measured in terms of seconds of delay per vehicle. Typically, LOS D is considered

acceptable in urban areas and is therefore used as the threshold for acceptable levels in this Environmental Impact Statement (EIS).

Each signalized and unsignalized intersection movement LOS is determined using approved traffic model software. The approved traffic model software used in this analysis is Syncro 9.0 and SimTraffic 9.0 (Fleis & Vandenbrink, 2016c). The LOS intersection criteria are listed in **Table 3.8-1**.

TABLE 3.8-1
INTERSECTION LEVEL OF SERVICE CRITERIA

LOS	Signalized Delay (sec/veh)	Unsignalized Delay (sec/veh)
A	≤10	≤10
B	>10 - ≤20	>10 - ≤15
C	>20 - ≤35	>15 - ≤25
D	>35 - ≤55	>25 - ≤35
E	>55 -80	>35 -50
F	>80	>50
Source: TRB, 2010.		

Roadway segment peak hour volume-to-capacity ratios (V/C) and LOS were calculated based on data baseline capacity collection for roadway segments outlined in the 2010 HCM.

Freeway facilities were analyzed in accordance with the methodologies of the 2010 HCM. The LOS measurement for freeway facilities is density, which is a measurement of the proximity of vehicles to each other in the traffic stream and is quantified in terms of passenger cars per mile per lane (pc/mi/ln).

3.8.3 EXISTING CONDITIONS

Muskegon Site (Alternatives A, B, and C)

Intersection Operations

Weekday traffic counts were assessed by Fleis & Vandenbrink subconsultant Traffic Data Collection, Inc. (TDC) in 15-minute intervals on Friday, December 4 and 11, 2015, between the hours of 4:00 pm and 6:00 pm at the 26 study intersections listed below, and the data was used as a baseline to establish the current Friday peak hour traffic volumes for the analysis of existing traffic conditions. The following intersections were studied for the Muskegon Site:

- Airport Road / westbound (WB) US-31 BUS On-Ramp;
- Airport Road / Airline Highway;
- Airline Highway / WB I-96 Off-Ramp;
- Airline Highway / southbound (SB) US-31 Ramps;
- Airline Highway / northbound (NB) US-31 On-Ramp;
- Airline Highway / Hile Road;
- Hile Road / Harvey Street;
- Hile Road / SB I-96 Ramps;
- Harvey Street / East Ellis Road;
- Harvey Street / Independence Drive;
- East Sternberg Road / Harvey Street;
- East Sternberg Road / NB US-31 Ramps;

- East Sternberg Road / SB US-31 Ramps;
- Pontaluna Road / SB US-31 Off-Ramp;
- Pontaluna Road / SB US-31 On-Ramp;
- Pontaluna Road / NB US-31 Ramps;
- Pontaluna Road / Grand Haven Road;
- Airline Highway / Farr Road;
- Airline Highway / eastbound (EB) I-96 Ramps;
- Farr Road / WB I-96 Ramps;
- Airline Highway / Sternberg Road;
- Grand Haven Road / Sternberg Road;
- Grand Haven Road / Hile Road;
- Harvey Road / Pontaluna Road;
- Harvey Road / Mount Garfield Road; and
- Proposed site access / Harvey Road.

The existing transportation system and lane use and traffic control at the Muskegon Site study intersections are shown in **Figure 3.8-1a** and **3.8-1b**. Figures 3-1 and 3-2 in the TIS show traffic volumes at Muskegon Site study intersections. Existing PM peak hour delay and LOS for the Muskegon Site study intersections are listed in **Table 3.8-2**. As shown in **Table 3.8-2**, all study intersections operate at acceptable LOS D or better under existing conditions with the exception of the following:

- Sternberg Road / NB US-31 Ramps; and
- Pontaluna Road / NB US-31 Ramps.

The only intersection approach that operates unacceptably under existing conditions is the stop controlled NB left turn movement from the EB I-96 Off-Ramp to Hile Road.

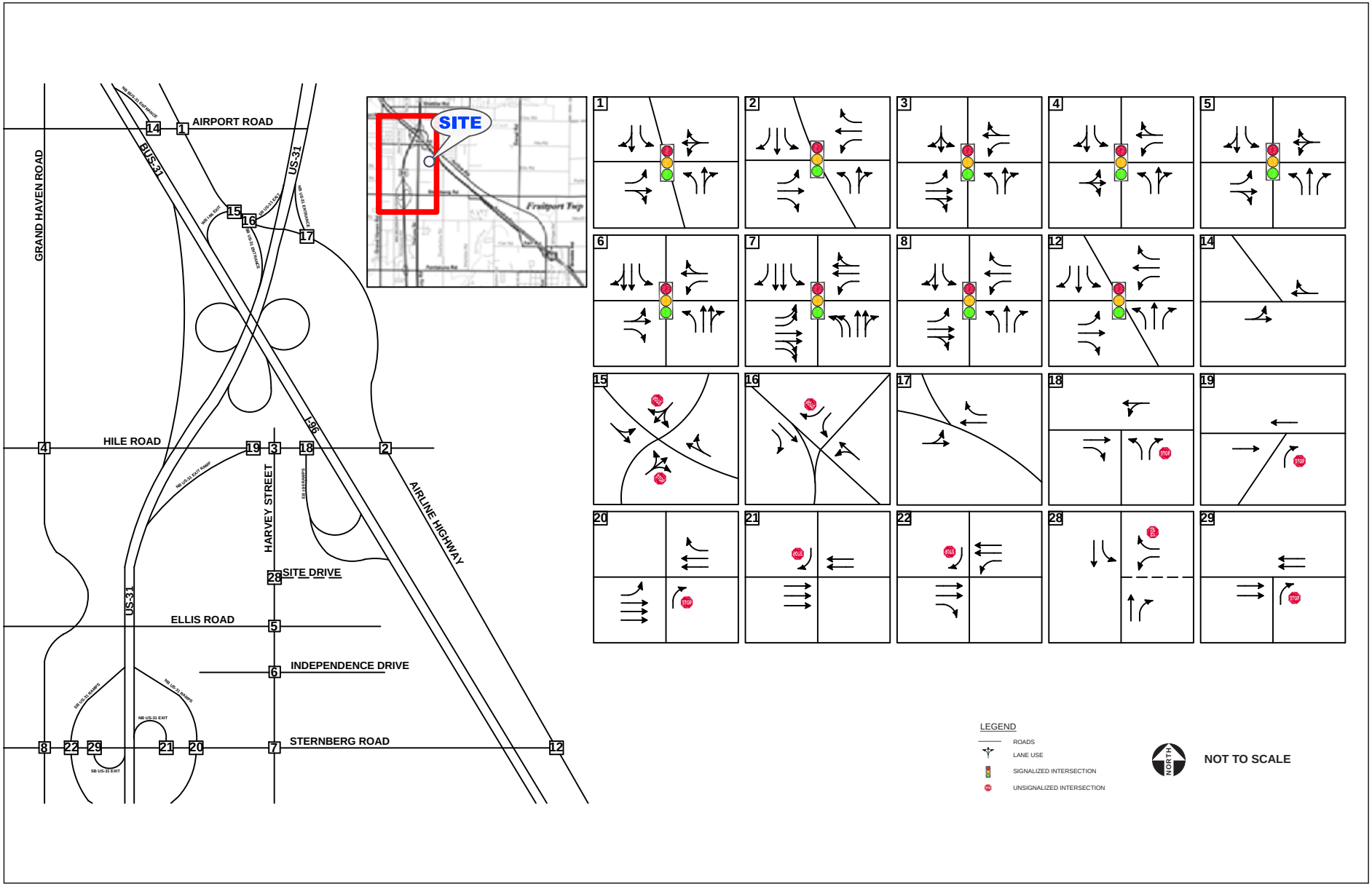
Additionally, the following approaches and movements experience long vehicle queues during the peak period:

- NB left turn movement from Airline Highway to Airport Road;
- NB left turn movement from Harvey Street to Independence Drive;
- NB right turn movement from NB US-31 Off-Ramp to EB Sternberg Road;
- WB approach at the Harvey Street / Sternberg Road intersection; and
- EB left turn movement from Sternberg Road to the NB US-31 On-Ramp.

Roadway Segment Operations

For the purposes of calculating segment capacities based on the HCM methodologies, the study roadways were segregated in order to analyze the two-lane and four-lane segments separately. Direction peak hour demand flows were calculated from existing traffic volume data and respective peak hour flows. The V/C ratios were then matched with the appropriate chart in MDOT Traffic and Safety Note 901B. The available data was extrapolated where posted speed limits were not provided in the charts. The following roadway segments were studied for the Muskegon Site:

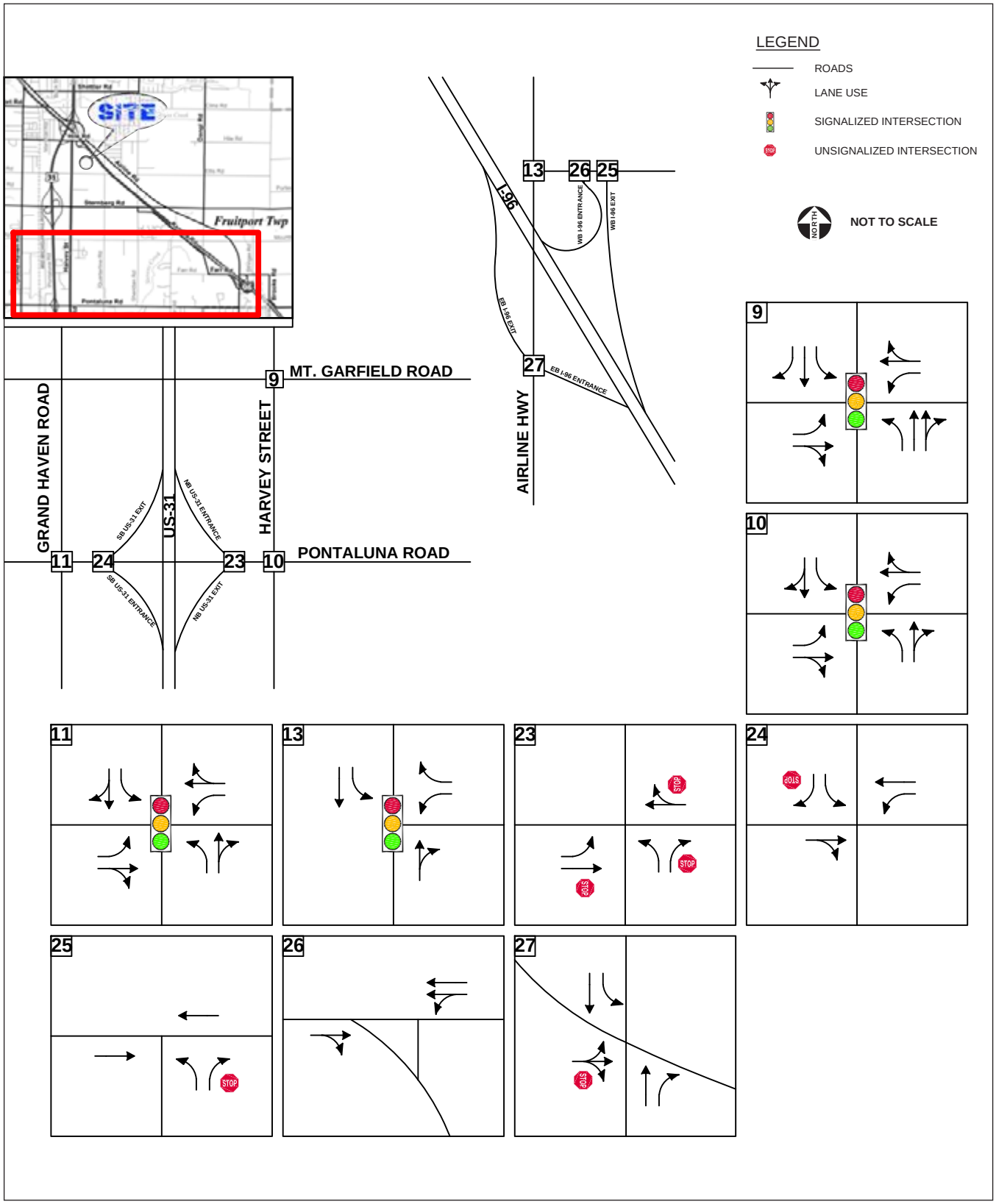
- Sternberg Road between Harvey Street and Grand Haven Road;
- Harvey Street between Sternberg Road and Hile Road;
- Hile Road between Harvey Street and Airline Highway; and
- Airline Highway between Hile Road and Airport Road.



SOURCE: F&V, 2016; AES, 10/18/2016

Figure 3.8-1a

Muskegon Site Study Intersections – Lane Use and Traffic Control



SOURCE: F&V, 2016; AES, 10/14/2016

Figure 3.8-1b

Muskegon Site Study Intersections - Lane Use and Traffic Control

TABLE 3.8-2
2015 EXISTING INTERSECTION OPERATIONS – MUSKEGON SITE

Intersection	Control	Approach	Delay	LOS
1. Airline Highway & Airport Road	Signalized	Overall	18.5	B
2. Airline Highway & Hile Road	Signalized	Overall	14.8	B
3. Harvey Street & Hile Road	Signalized	Overall	19.3	B
4. Grand Haven Road & Hile Road	Signalized	Overall	12.6	B
5. Harvey Street & East Ellis Road	Signalized	Overall	9.7	A
6. Harvey Street & Independence Drive	Signalized	Overall	27.4	C
7. Harvey Street & Sternberg Road	Signalized	Overall	38.4	D
8. Grand Haven Road & Sternberg Road	Signalized	Overall	29.4	C
9. Harvey Street & Mount Garfield Road	Signalized	Overall	20.4	C
10. Harvey Street & Pontaluna Road	Signalized	Overall	25.8	C
11. Grand Haven Road & Pontaluna Road	Signalized	Overall	26.1	C
12. Airline Highway & Sternberg Road	Signalized	Overall	17.2	B
13. Airline Highway & Farr Road	Signalized	Overall	14.6	B
14. Airport Road & NB US-31 BR On-Ramp	Free-Flow	EB LT	8.6	A
15. Airline Highway & WB I-96 Off-Ramp	SSSC	NB	31.1	D
		SB	25.2	D
16. Airline Highway & SB US-31 Ramps	SSSC	SB	18.0	C
17. Airline Highway & NB US-31 On-Ramp	Free-Flow	EB LT	8.0	A
18. Hile Road & EB I-96 Ramps	SSSC	NB	31.7	D
19. Hile Road & NB US-31 Off-Ramp	SSSC	NB	11.5	B
20. Sternberg Road & NB US-31 Ramps	SSSC	NB	143.1	F
21. Sternberg Road & NB US-31 Off-Ramp to WB Sternberg Road	SSSC	SB	11.6	B
22. Sternberg Road & SB US-31 Ramps	SSSC	SB	12.6	B
23. Pontaluna Road & NB US-31 Ramps	AWSC	Overall	57.6	F
24. Pontaluna Road & SB US-31 Off-Ramp	SSSC	SB	18.5	C
25. Pontaluna Road & SB US-31 On-Ramp	Free-Flow	WB LT	10.2	B
26. Farr Road & WB I-96 Off-Ramp	SSSC	NB	12.3	B
27. Farr Road & WB I-96 On-Ramp	Free-Flow	WB LT	7.5	A
28. Airline Highway & EB I-96 Ramps	SSSC	EB	32.5	D

Notes: Delay reported in seconds per vehicle. AWSC = all-way stop controlled; SSSC = side-street stop controlled; NB = northbound; SB = southbound; EB = eastbound; WB = westbound; LT = left-turn; BR = Business Route
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

Existing V/C and LOS for the Muskegon Site study roadway segments are listed in **Table 3.8-3**.

As shown in **Table 3.8-3**, all study roadway segments operate at acceptable LOS D or better under existing conditions.

TABLE 3.8-3
2015 EXISTING ROADWAY SEGMENT OPERATIONS – MUSKEGON SITE

Roadway Segment	Direction	2015 Existing	
		V/C	LOS
1. Harvey Street – Hile Road to East Ellis Road	NB	0.51	D
	SB	0.41	D
2. Harvey Street – East Ellis Road to Independence Drive	NB	0.20	C
	SB	0.18	C
3. Harvey Street – Independence Drive to Sternberg Road	NB	0.36	D
	SB	0.32	D
4. Sternberg Road – Harvey Street to NB US-31	EB	0.37	C
	WB	0.46	D
5. Hile Road – Harvey Street to Airline Highway	EB	0.52	D
	WB	0.33	C
6. Airline Highway – Hile Road to US-31	EB	0.40	C
	WB	0.39	C
7. Airline Highway – US-31 to Airport Road	EB	0.44	D
	WB	0.25	C

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

Freeway Operations

TDC collected 24-hour directional ramp volume counts on all ramps within the limits of the study freeway facilities. The December 2015 freeway mainline volumes for US-31 were obtained from the MDOT Permanent Traffic Recorder (PTR) located south of Broadway Avenue. 2013 hourly traffic count data for I-96 was obtained from the MDOT Traffic Monitoring Information System (TMIS) website, and a growth rate was applied to the 2013 traffic volumes on I-96 to obtain 2015 volumes. Additionally, traffic count data collected in December was seasonally adjusted to account for recreational trips near Lake Michigan that occur during the summer months. The 24-hour traffic volume data are included in Appendix A of the TIS (**Appendix J**).

Operational analysis of all freeway facilities was performed using the 2010 Highway Capacity Software. The following freeway facilities were studied for the Muskegon Site:

- NB US-31 from south of Pontaluna to south of Broadway;
- SB US-31 from south of Broadway to south of Pontaluna;
- EB US-31 BUS/I-96 from west of Airport Road to east of Airline Highway; and
- WB I-96/US-31 BUS from east of Airline Highway to west of Airport Road.

As shown in **Table 3.8-4**, all study freeways segments and ramps operate at acceptable LOS C or better under existing conditions.

TABLE 3.8-4
2015 EXISTING FREEWAY OPERATIONS – MUSKEGON SITE

Freeway Segment / Ramp / Weave Segment	2015	
	Density (pc/mi/ln)	LOS
NB US-31		
1. South of Pontaluna Road	16.9	B
2. Pontaluna Road Off-Ramp	20.3	C
3. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	13.1	B
4. Pontaluna Road On-Ramp	17.1	B
5. Pontaluna Road On-Ramp to EB Sternberg Road Off-Ramp	15.2	B
6. EB Sternberg Road Off-Ramp	17.9	B
7. EB Sternberg Road Off-Ramp to WB Sternberg Road Off-Ramp	13.3	B
8. WB Sternberg Road Off-Ramp	16.1	B
9. WB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	12.3	B
10. Sternberg Road On-Ramp to Hile Road Off-Ramp	17.5	B
11. Hile Road Off-Ramp to EB US-31 BR On-Ramp *(Weave)*	20.0	C
12. EB US-31 BR On-Ramp to WB US-31 BR Off-Ramp *(Weave)*	17.0	B
13. WB US-31 BR Off-Ramp to WB I-96 / Airline Highway On-Ramps	16.4	B
14. WB I-96 / Airline Highway On-Ramps	23.4	C
NB US-31 Freeway Facility	**16.6**	**B**
SB US-31		
1. North of Airline Highway	20.5	C
2. Airline Highway Off-Ramp	24.3	C
3. Airline Highway Off-Ramp to Airline Highway On-Ramp	16.8	B
4. Airline Highway On-Ramp to EB I-96 Off-Ramp *(Weave)*	14.3	B
5. EB I-96 Off-Ramp to EB I-96 On-Ramp *(Weave)*	13.2	B
6. EB I-96 On-Ramp to WB Sternberg Road Off-Ramp	12.4	B
7. WB Sternberg Road Off-Ramp to EB Sternberg Road Off-Ramp	14.8	B
8. EB Sternberg Road Off-Ramp	19.2	B
9. EB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	7.8	A
10. Sternberg Road On-Ramp	11.2	B
11. Sternberg Road On-Ramp to Pontaluna Road Off-Ramp	10.2	A
12. Pontaluna Road Off-Ramp	11.9	B
13. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	8.5	A
14. Pontaluna Road On-Ramp	12.4	B
15. Pontaluna Road On-Ramp to south of Pontaluna Road	11.1	B
SB US-31 Freeway Facility	**13.9**	**B**
EB I-96		
1. Grand Haven Road to SB US-31 Off-Ramp	8.9	A
2. SB US-31 Off-Ramp	10.8	B
3. SB US-31 Off-Ramp to SB US-31 On-Ramp	4.3	A
4. SB US-31 On-Ramp to NB US-31 Off-Ramp *(Weave)*	8.0	A
5. Hile Road Off-Ramp	11.1	B

Freeway Segment / Ramp / Weave Segment	2015	
	Density (pc/mi/ln)	LOS
6. Hile Road Off-Ramp to Hile Road On-Ramp	8.1	A
7. Hile Road On-Ramp	10.2	B
8. Hile Road On-Ramp to Airline Highway Off-Ramp	9.1	A
9. Airline Highway Off-Ramp	10.8	B
10. Airline Highway Off-Ramp to Airline Highway On-Ramp	7.5	A
11. Airline Highway On-Ramp	10.0	B
12. Airline Highway On-Ramp to east of Airline Highway	8.9	A
EB I-96 Freeway Facility	**9.1**	**A**
WB I-96		
1. East of Airline Highway to Farr Road / Airline Highway Off-Ramp	9.9	A
2. Farr Road / Airline Highway Off-Ramp	11.7	B
3. Farr Road / Airline Highway Off-Ramp to Farr Road On-Ramp	7.9	A
4. Farr Road / Airline Highway On-Ramp	10.3	B
5. Farr Road / Airline Highway On-Ramp to NB US-31 Off-Ramp	9.3	A
6. NB US-31 Off-Ramp	11.3	B
7. NB US-31 Off-Ramp to NB US-31 On-Ramp	3.2	A
8. NB US-31 On-Ramp to Airline Highway Off-Ramp *(Weave)*	6.4	A
9. Airline Highway Off-Ramp to Airport Road On-Ramp	6.5	A
10. Airport Road On-Ramp	10.0	B
WB I-96 Freeway Facility	**9.1**	**A**
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).		

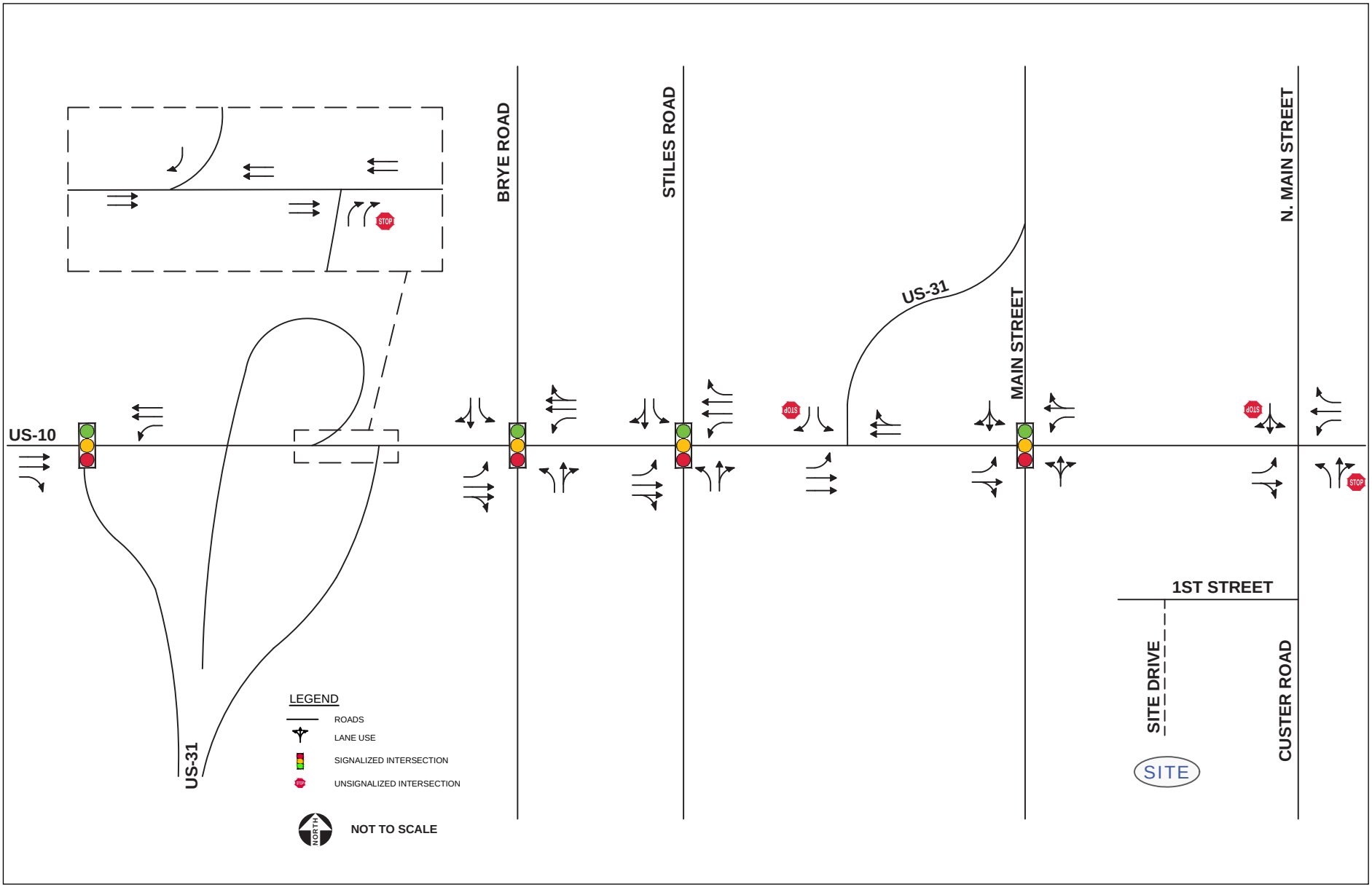
Custer Site (Alternative D)

Intersection Operations

Weekday traffic counts were collected by TDC in 15-minute intervals on Friday, December 4 and 11, 2015, between the hours of 4:00 pm and 6:00 pm. The following intersections were studied for the Custer Site:

- US-10 / SB US-31 Entrance Ramp;
- US-10/US-31 / Brye Road;
- US-10/US-31 / North Stiles Road;
- US-10 / Main Street;
- NB US-10 / EB US-31 Off-Ramp;
- US-10 / US-31;
- US-10 / Custer Road; and
- Proposed site access / East First Street.

The existing transportation system and lane use and traffic control at Custer Site study intersections are shown in **Figure 3.8-2**. PM peak-hour traffic delays and LOS, for existing study intersections listed



SOURCE: F&V, 2016; AES, 10/14/2016

Figure 3.8-2
Custer Site Lane Use and Traffic Control

above, are shown in **Table 3.8-5**. All Custer Site study intersections operate at an acceptable LOS under existing conditions. Additionally observation of the SimTraffic network simulation indicates unacceptable traffic operations and significant vehicle queues were not observed (**Appendix J**).

TABLE 3.8-5
2015 EXISTING INTERSECTION OPERATIONS – CUSTER SITE

Intersection	Control	Approach	Delay	LOS
1. US-10 & SB US-31 Entrance Ramp	Signalized	Overall	3.6	A
2. US-10 / US-31 & Brye Road	Signalized	Overall	19.3	B
3. US-10 / US-31 & Stiles Road	Signalized	Overall	6.0	A
4. US-10 (State Street) & Main Street	Signalized	Overall	11.4	B
5. NB US-10 & EB US-31 Off-Ramp	SSSC	NB	14.1	B
6. US-10 & US-31	SSSC	SB	10.8	B
7. US-10 & Custer Road	SSSC	NB	14.4	B
		SB	13.3	B
8. Custer Road & East First Street	SSSC	EB	9.7	A
		WB	8.7	A

Notes: Delay reported in seconds per vehicle. SSSC = side-street-stop-controlled.
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

Roadway Segment Operations

The following roadway segments were studied for the Custer Site:

- US-10 between Custer Road and Bean Road;
- US-10 between Bean Road and US-31;
- US-10 between US-31 and Brye Road; and
- US-10 between Brye Road and SB US-31 Ramp.

Existing PM peak hour V/C and LOS for the Custer Site study roadway segments are listed in **Table 3.8-6**.

TABLE 3.8-6
2015 EXISTING ROADWAY SEGMENT OPERATIONS – CUSTER SITE

Roadway Segment	Direction	2015	
		V/C	LOS
1. US-10 - Custer Road to Bean Road	EB	0.25	B
	WB	0.18	B
2. US-10 - Bean Road to US-31	EB	0.35	D
	WB	0.30	D
3. US-10 - US-31 to Brye Road	EB	0.29	B
	WB	0.20	B
4. US-10 - Brye Road to SB US-31 Ramp	EB	0.31	B
	WB	0.29	B

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

As shown in **Table 3.8-6**, all Custer Site study roadway segments operate at an acceptable LOS D or better under existing conditions.

Freeway Operations

The following freeway facilities were studied for the Custer Site:

- NB US-31 Off-Ramp to EB US-10; and
- NB US-31 Off-Ramp to WB US-10.

Existing PM peak hour densities and LOS for the Custer Site study freeway facilities are listed in **Table 3.8-7**. As shown therein, all study freeway ramps operate acceptably at LOS A under existing conditions.

TABLE 3.8-7
2015 EXISTING FREEWAY OPERATIONS – CUSTER SITE

Freeway Ramp	2015	
	Density (pc/mi/ln)	LOS
NB US-31		
1. NB US-31 Off-Ramp to EB US-10	1.2	A
2. NB US-31 Off-Ramp to WB US-10	8.4	A
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).		

3.8.4 TRANSIT SERVICES

Muskegon Site (Alternatives A, B, and C)

Public transit service within the Township is provided by the Muskegon Area Transit System (MATS). MATS currently provides 13 scheduled bus routes within the County. The bus route that provides service to the immediate vicinity of the Muskegon Site is the Harvey route, which travels along Harvey Street immediately west of the Muskegon Site. The closest bus stops to the Muskegon Site are at the intersection of Harvey Street and Hile Road, approximately 900 feet north of the Muskegon Site, and at the Lakeshore Marketplace South, approximately 0.25 miles southwest of the Muskegon Site. The Harvey route has operating stops every Monday through Friday from 6:37 am to 10:36 pm and Saturdays from 9:37 am to 5:21 pm.

Custer Site (Alternative D)

The public transit service within the region is provided by the Ludington Mass Transportation Authority (LMTA). The LMTA currently provides contract service to clients of West Michigan Community Health, Senior Meals Program, Ludington, and Scottville Schools (MDOT, 2016a). LMTA serves residents in the cities of Ludington, Scottville, and Pere Marquette Charter Township through dial-a-ride services. Scottville is approximately 2 miles west of the Custer Site. However, LMTA does not service the Village of Custer and no other transportation services operate in the vicinity of the Custer Site.

3.8.5 BIKE AND PEDESTRIAN FACILITIES

Muskegon Site (Alternatives A, B, and C)

The only existing sidewalks within roadways located adjacent to the Muskegon Site are crosswalks located on the corners of Harvey Street and East Ellis Road and sidewalks along the eastern side of Harvey Street across from the Muskegon Site. No other roadways immediately adjacent to the Muskegon Site have designated bicycle facilities.

Custer Site (Alternative D)

There are no existing sidewalks or bike paths located in the vicinity of the Custer Site along East First Street or Custer Road.

3.9 LAND USE

This section contains a discussion of the existing land uses for the two alternative sites described in **Section 2.2**: the Muskegon Site (Alternatives A, B, and C) and the Custer Site (Alternative D). The general and site-specific description of land use contained herein provides the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Section 4.0**.

3.9.1 REGIONAL AND LOCAL LAND USE SETTING

Muskegon Site (Alternatives A, B, and C)

Once taken into trust by the United States, the Proposed Fee-to-Trust Property will not be subject to State or local land use regulations. However, local land use policies are discussed below to provide a context for the analysis of potential land use conflicts in **Section 4.0**. Additionally, the approximately 26.5 acres remaining in fee will continue to be subject to applicable State and local regulations.

Muskegon County Zoning

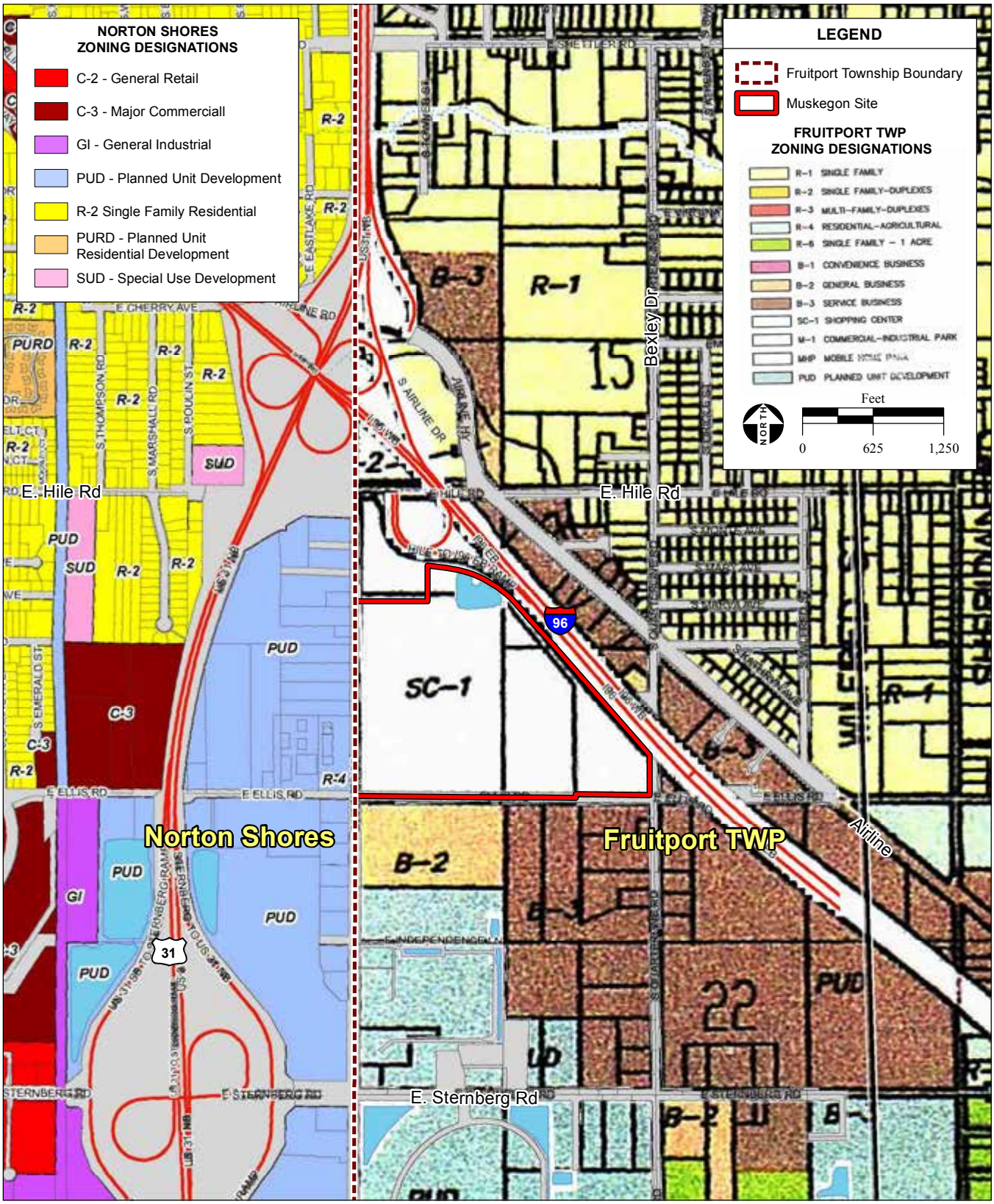
Figure 3.9-1 shows the current zoning designations of for the Muskegon Site and the area surrounding the Muskegon Site. As shown therein, the Muskegon Site is zoned as Shopping Center (SC-1) and currently consists of an abandoned racetrack, parking lots, and vegetation. Surrounding land is zoned Service and General Business (B-3, B-2, respectively; northeast, east, south, and southeast), Single Family Residential (R-1; east), and Planned Unit Development (PUD; City of Norton Shores, west). Definitions of these zoning designations are provided in **Table 3.9-1**. Permitted land uses under these zoning designations include commercial, coordinated development, and residential uses (Muskegon County, 2014b). Current land uses of the surrounding properties include open space to the south; commercial shopping center to the southwest; a hotel, several houses, and several retail businesses to the west; and a major highway (Interstate 96 [I-96]) to the north and northeast. There is commercial development located on the northeast side of I-96 and there are several shopping centers along Harvey Street to the south.

Shettler Elementary School is located approximately 1 mile northeast of the Muskegon Site. The Muskegon County Airport is located approximately 0.55 miles east of the Muskegon Site.

Muskegon County Comprehensive Plan (2013)

The central purpose of the 2013 *Muskegon County Comprehensive Plan* (Comprehensive Plan) is to "involve citizens in creating a shared vision for the future of Muskegon County" (Muskegon County, 2013). The Comprehensive Plan contains five visions, including Land Use and Growth, which individually and collectively influence the County's future development. The Muskegon County preferred development alternative (Smart Growth) aims to "encourage and promote land use and growth patterns that sustain and improve quality of life in Muskegon County, while maintaining a strong sense of place, community, and responsibility" (Muskegon County, 2013).

Current land use designations near the Muskegon Site according to the Muskegon County Comprehensive Plan include commercial (southwest and northeast), forest (south), utilities (north), and industrial



SOURCE: Fruitport Township, MI/Prein & Newhof Engineers, January, 2007; AES, 6/1/2016

Figure 3.9-1
Fruitport Township Zoning Map

(northwest). The nearest residential land use according to the Comprehensive Plan's Land Use Map is located across I-96 to the northeast (Muskegon County, 2013).

TABLE 3.9-1
ZONING DEFINITIONS – MUSKEGON COUNTY

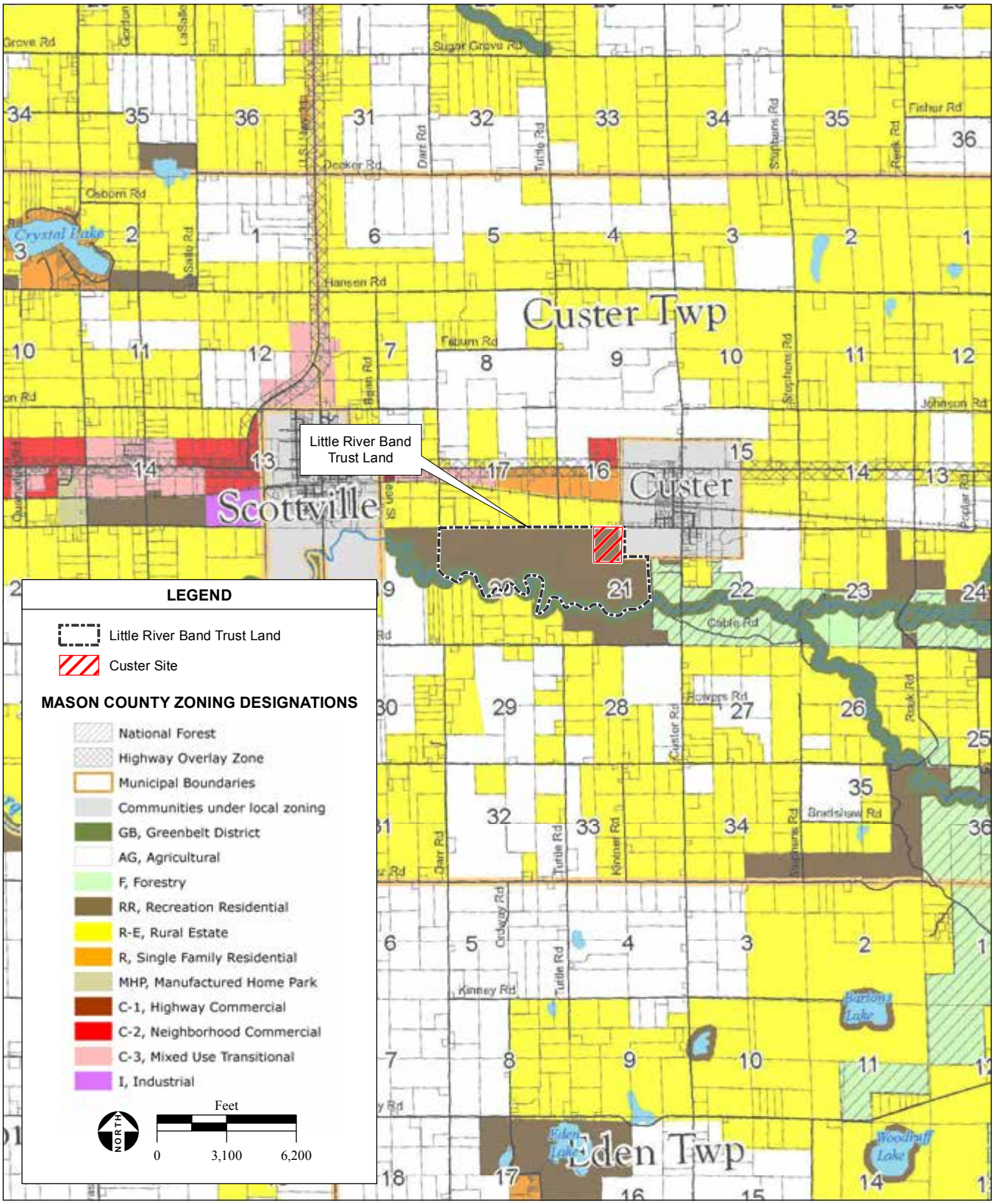
Zoning Code	Zoning	Definition
SC-1	Shopping Center	The Shopping District is intended to allow small, neighborhood business enclaves that service the needs of residents in the neighborhood. Business footprints are intended to be small and the nature of activity should not impose upon neighborhoods.
B-2	General Business	The B-2 Central Business District is intended to support a traditional downtown main street atmosphere and is characterized by smaller lot sizes, mixed land uses and higher percentages of lot coverage. The District is further intended to promote the consolidation of commercial activities in the existing Community center by providing for a variety of retail, office, restaurant and entertainment activities that are not automotive dependent. The purpose of this District is to encourage and promote the business use of the first floor of existing structures and to permit residential uses on upper stories. Screening, landscaping and site design will be strongly considered when sites are developed to ensure they mesh well with adjacent residential uses.
B-3	Service Business	The B-3 Business District is intended primarily for uses emphasizing higher intensity uses that tend to be auto dependent which are not well suited in a Central Business District but instead should be situated near major travel corridors.
PUD	Planned Unit Development	The PUD provisions are intended to result in development that is substantially consistent with the zoning requirements as generally applied to the proposed uses, but with specific modifications that, in the judgment of the City, assure a superior quality of development.
R-1	Single-Family Residential	The R-1 Single Family District is designed to create quiet, low density single family neighborhoods.
Source: Muskegon County, 2014b.		

Custer Site (Alternative D)

As the property is currently held in trust, the Custer Site is not subject to State or local land use regulations. Local land use policies are discussed below to provide a context for the analysis of potential land use conflicts in **Section 4.0**, even though the Custer Site is not subject to local land use regulations.

Mason County Zoning

The 45-acre Custer Site is located west of the Village of Custer, within Custer Township, and adjacent to rural residential and agricultural land in Mason County, Michigan. The Custer Site is currently undeveloped and was last zoned as Recreation Residential (RR). Neighboring parcels are zoned Rural Estate (RE; north and south), Agricultural (AG; small parcels to the southeast and southwest), RR (directly west and southeast) and Forestry (F; Manistee National Forest 0.5 miles to the east) (Mason County, 2014). **Figure 3.9-2** shows the zoning designations for the area surrounding the Custer Site. Permitted land uses under these zoning designations include all types of agriculture, rural residential lots, timber harvests, and environmental protection. Surrounding land uses consist of four plots to the north and northeast that are developed with rural residential units.



SOURCE: Mason County Zoning Map, Effective 12/1/2014; AES, 6/1/2016

Figure 3.9-2
Custer Township Zoning Map

Mason County Eastern Elementary School and Mason County Eastern Junior High/High School are located approximately 4,000 feet northeast of the Custer Site. The Thorn Airport, a private airport with one runway, is located approximately 3.5 miles east of the Custer Site.

Mason County Master Plan

The central purpose of the *2013-14 Mason County Master Plan Update* (Master Plan) is to "provide policy that guides decision making for future land and infrastructure development within Mason County" (Mason County, 2014). The Master Plan contains 14 goals, which individually and collectively influence the County's future development. The Master Plan includes components designating Future Land Use to concentrate development along United States Highway 10 (US-10) and United States Highway 31 (US-31) between Ludington and Scottville. Scottville is located approximately 3 miles west of the Custer Site. Custer Township follows the Mason County Master Plan. In general, Mason County aims to broaden its economic base by increasing tourist attractions, including those related to green energy, and expanding recreational activities.

3.9.2 AGRICULTURE

Farmland Protection Policy Act (FPPA)

The Farmland Protection Policy Act (FPPA) is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It ensures that federal programs are administered in a manner that is compatible with State and local units of government, and private programs and policies to protect farmland (7 United States Code [USC] §4201-4202).

The Natural Resource Conservation Service (NRCS) is responsible for the implementation of the FPPA and categorizes farmland in a number of ways. These categories include prime farmland, farmland of statewide importance, and unique farmland. Prime farmland is considered to have the best possible features to sustain long-term productivity. Farmland of statewide importance is designated by the state government and generally includes farmland important for the production of food, feed, fiber, forage, and oil seed. Unique farmland is used for the production of specific high-value food and fiber crops with a special combination of soil quality, location, growing season, and moisture supply. Farmland does not include land already in or committed to urban development or water storage (7 Code of Federal Regulations [CFR] §658.2[a]).

The NRCS, an agency of the United States Department of Agriculture (USDA), fulfills the directives of the Soil and Water Conservation Act (16 USC §2001-2009) by identifying significant areas of concern for the protection of resources. NRCS uses a Land Evaluation and Site Assessment (LESA) system to establish a Farmland Conversion Impact Rating (FCIR) score. This evaluation is completed on Form AD 1006, the FCIR Form. The FCIR Form has two components: the land evaluation, which rates soil quality up to 100 points, and the site assessment, which measures other factors that affect the farm's viability up to 160 points. The total FCIR score is used as an indicator for the project's sponsor to consider alternative sites if the potential adverse impacts on the farmland exceed the recommended allowable level. Sites receiving a combined score of less than 160 (out of 260 possible points) do not require further evaluation; alternative project locations should be considered for sites with a combined score greater than

160 points. Therefore, if a site scores fewer than 60 points in the site assessment, the land evaluation need not be completed as there is no way for the site to reach the minimum of 160 points.

Muskegon Site (Alternatives A, B, and C)

The USDA performs a state-by-state census of agriculture every five years. The National Agricultural Statistical Service (NASS) collects census data from a list of all known potential agriculture operators. The census reports on various statistics relating to crop yields, farm acreage, and farm economics. According to the *2012 Census of Agricultural Crop Report*, 74,246 acres of the total 934,400 acres in Muskegon County (approximately 7.9 percent) were used for farming purposes. The market value of agricultural products sold in 2012 by the 514 farms in Muskegon County was approximately $76,000,000 (USDA, 2014; U.S. Census, 2016d).

According to the USDA NRCS Web Soil Survey database, none of the Muskegon Site is considered prime farmland (NRCS, 2016a). Currently, no farming operations occur on the site, and as previously discussed in **Section 3.9.1**, the Muskegon Site is zoned SC-1 (Shopping Center) and is surrounded by areas zoned as business, planned development, and residential. Therefore, there are no protections provided to the site by the local or State government, and there are no NRCS easements on the site.

The Muskegon Site received a score of 11 for the site assessment component of the FCIR Form evaluation (**Appendix K**). Thus, the Muskegon Site does not meet the requirements for protection under the FPPA.

Custer Site (Alternative D)

According to the USDA *2012 Census of Agricultural Crop Report*, 79,048 acres of the total 794,880 acres in Mason County (approximately 9.9 percent) were used for farming purposes. The market value of agricultural products sold in 2012 by the 440 farms in Mason County was approximately $52,881,000 (USDA, 2014; U.S. Census, 2016d).

According to the USDA NRCS Web Soil Survey database, none of the Custer Site is considered prime farmland (NRCS, 2016b). As previously discussed in **Section 3.9.1**, the Custer Site is surrounded by areas zoned as rural, agricultural, and forest. The site is not under any State, or local agricultural protections, nor are there any NRCS easements on the site.

The Custer Site received a score of 55 for the site assessment component of the FCIR Form evaluation (**Appendix K**). Thus, the Custer Site does not meet the requirements for protection under the FPPA.

3.10 PUBLIC SERVICES

This section addresses existing public services relating to the two alternative sites described in **Section 2.2**: the Muskegon Site (Alternatives A, B, and C) and the Custer Site (Alternative D). The following public services are addressed: water supply, wastewater collection and treatment, solid waste service, law enforcement, fire protection and emergency medical services (EMS), and electricity and natural gas. The general and site-specific description of public services contained herein provides the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Section 4.0**.

3.10.1 WATER SUPPLY

Muskegon Site (Alternatives A, B, and C)

The Muskegon Site is currently served by the Regional Water System (RWS). A description of the RWS is provided within the Water Demand and Supply Study (Fleis & Vandenbrink, 2016d) included as **Appendix D**, and summarized below.

Fruitport Township and the City of Norton Shores are partnered to operate the RWS, which relies on Lake Michigan surface water purchased from the City of Muskegon. There is no contractual limit to how much water can be purchased. The Muskegon Site is currently connected to the Fruitport Township's (Township's) portion of the water distribution system. The Township operates 103 miles of water main, along with 2 elevated storage tanks that have a combined 1.5 million gallons (MG) of storage capacity.

The RWS has an average daily demand of 4.2 million gallons per day (MGD), with a peak hour demand of 19.1 MGD, and a capacity of 22.8 MGD. No additional storage is required for equalization of peak hour demands, since the capacity of the system exceeds the peak hour demand. The storage in the system is used for fire and emergency demand storage, and provides an adequate fire flow of 3,500 gallons per minute (GPM) over 3 hours.

The RWS treats water in the City of Muskegon's Filtration Plant. The plant has a maximum treatment capacity of 40 MGD. The Filtration Plant's current average daily flow is 9.6 MGD and summer average flow is 14.6 MGD. The historical peak of the plant was 24.3 MGD, during a drought in 1988 (Fleis & Vandenbrink, 2016d; **Appendix D**). The City of Muskegon's Filtration Plant has adequate treatment capacity to serve the current demand.

The Muskegon Site is currently connected to the Township's water distribution system via two connections to the 8-inch water main along East Ellis Road. The connection sizes are 6 and 8 inches and they supply water to the site in the form of a system loop. Another 8-inch water main connected to this loop serves other areas within the site. Additionally, a 12-inch water main currently runs along Harvey Street. See Figure 3 of the Water Demand and Supply Study for a diagram of the existing water mains (Fleis & Vandenbrink, 2016d; **Appendix D**).

Custer Site (Alternative D)

There is currently no public water supply at the Custer Site. The nearest municipal water system is located in the City of Scottville. The City of Scottville water supply system is located approximately 3 miles west of the Custer Site. The City of Scottville operates 10 miles of water main and one 200,000-gallon elevated storage tank. The City of Scottville relies on Lake Michigan surface water purchased from the City of Ludington and treated in the Ludington Water Treatment Plant (LWTP; Fleis & Vandenbrink, 2016d; **Appendix D**). The LWTP utilizes a filter, chemical treatment, and a settling system for treating water. The LWTP has a capacity of 6.4 MGD, with an average daily flow of 2.8 MGD and a maximum daily demand of 3.6 MGD. The LWTP has adequate capacity to provide for current water demands. The City of Scottville's water system has an average water demand of 0.1 MGD, a maximum daily demand of 0.2 MGD, a peak hour demand 0.4 MGD, and a capacity of 0.58 MGD. The storage in the system is currently used for fire and emergency demand storage, and is not required during peak hour demands. Current storage is adequate to provide 2,500 GPM over a 2-hour duration in the City of Scottville. The City of Scottville's water system has adequate capacity to provide for current water demands.

3.10.2 WASTEWATER COLLECTION AND TREATMENT

Muskegon Site (Alternatives A, B, and C)

The Muskegon Site is currently connected to the Township's wastewater collection system, although no wastewater is currently generated at the Muskegon Site. A description of the Township's wastewater system is provided in the Wastewater Disposal Study (Fleis & Vandenbrink, 2016a) included as **Appendix E** and summarized below.

The Township operates 19 miles of sewer collection system, including 5 lift stations. The Hile Road Lift Station and force main both have a capacity of 1,200 GPM, with historical peak flow rates at the Hile Road Lift Station being approximately 400 GPM (Fleis & Vandenbrink, 2016a; **Appendix E**). The lift station has an adequate capacity for current wastewater flow demands.

Collected wastewater flows to the Muskegon County Wastewater Management System (MCWMS). The MCWMS utilizes a pre-aeration tank, aeration cells, settling lagoons, storage lagoons, irrigated crop land, and 200 miles of underdrains which divert clean water to local rivers and lakes. The MCWMS has a current flow of less than 12 MGD. Of the current flow, the Township's average daily flow is 0.2 MGD. The Muskegon County Wastewater Treatment Facility (MCWTF) has a capacity of 43 MGD. There is adequate existing capacity at the MCWTF for current wastewater treatment demands from the MCWMS.

The Muskegon Site is currently connected to the Township's wastewater collection system via two 8-inch sewer lines connected to the 10-inch sewer line along East Ellis Road, which flows to a 12-inch sewer pipe along Harvey Street.

Custer Site (Alternative D)

Currently, there is no wastewater collection or disposal system at the Custer Site. There are two nearby municipal wastewater systems that serve the Village of Custer and the City of Scottsville. The Village of

Custer has wastewater facilities consisting of a stabilization lagoon, which is allowed to discharge 43,800 GPD into Black Creek, located upstream of the Pere Marquette River.

The City of Scottville's collection system is located approximately 3 miles west of the Custer Site. The City of Scottville transports wastewater to the Ludington Wastewater Treatment Plant (LWWTP), which treats a total of approximately 2.5 MGD, and has a capacity of 3.5 MGD. Therefore, the LWWTP has adequate capacity for current demands on the treatment plant. The LWWTP has 31 acres of aerated lagoons, which have a capacity of 90 MG. Lagoon effluent enters the plant's clarifiers and then is treated, disinfected, and discharged into the Pere Marquette River. Sludge is transferred to a sludge storage lagoon. The Custer Site is within 15 miles of the LWWTP, which is within the LWWTP's service area for accepting either septage or sludge from septic tanks (City of Ludington, 2016).

3.10.3 SOLID WASTE SERVICE

Management of non-hazardous solid waste in Michigan is guided by State statutes and controlled by state law, Michigan's Solid Waste Policy, and county policies and plans. The Michigan Department of Environmental Quality (MDEQ) oversees waste management at the state level through waste management programs including hazardous waste, liquid industrial by-products, medical waste, radiological protection, recycling, scrap tires, and solid waste. MDEQ approves Solid Waste Management Plans for each county in Michigan. Most solid waste services provide curbside pickup of both solid waste and recyclables. Recyclable materials include glass, plastic, aluminum, tin, all metals, cardboard, newspaper, corrugated containers, motor oil, batteries, and lawn waste.

The State of Michigan is served by several commercial and county-owned municipal solid waste (MSW) landfills and hauling companies. The available capacity of Michigan landfills exceeds the state's needs; for this reason, solid waste is imported from surrounding states and disposed of in Michigan's landfills (MDEQ, 2018).

Muskegon Site (Alternatives A, B, and C)

Businesses can choose a solid waste provider from several local options for solid waste collection services. Commercial hauling is done by a number of private companies serving area businesses and industries (Muskegon County, 2001). Several solid waste collection services could potentially serve the Muskegon Site, including Republic Services, RMS Disposal, and Waste Management. RMS Disposal provides solid waste service for residential and commercial disposal and recycling, including construction container service (RMS Disposal, 2016). Waste Management also provides service to commercial facilities during construction and operation (Waste Management, 2016).

Muskegon County disposes of waste in several landfills, the two most prominent being the Muskegon County Solid Waste Landfill and the Ottawa County Farms Landfill. Depending on the solid waste service provider chosen for the project, solid waste could be disposed of at either landfill.

The Muskegon County Solid Waste Landfill is located at 9366 Apple Avenue, Ravenna, in Muskegon County. The facility is an active/accepting Type II, which accepts MSW including household waste and friable asbestos (MDEQ, 2016c). Type III landfills also accept construction and demolition waste. The

landfill accepts waste from Muskegon, Ottawa, and Newaygo Counties. In fiscal year 2017, the Muskegon County Landfill accepted 344,494 cubic yards of waste, 300,569 cubic yards of which was generated in Muskegon County (MDEQ 2016c). The landfill has a remaining capacity of 801,920 total cubic yards (267,306 tons[1]), and is expected to remain open until 2026 (MDEQ, 2018; Leverence, 2016). The Muskegon County Landfill is currently in the planning process for a landfill expansion, which will extend the expected closure date (Leverence, 2016).

The Ottawa County Farms Landfill is located at 15550 68th Avenue, Coopersville, in Ottawa County. The facility is an active/accepting Type II. The landfill accepts waste from Allegan, Barry, Berrien, Branch, Calhoun, Kalamazoo, Kent, Mason, Mecosta, Montcalm, Muskegon, Newaygo, Oceana, Osceola, Ottawa, and Van Buren Counties. In fiscal year 2017, the Ottawa County Farms Landfill accepted 1,466,607 total cubic yards of waste, 330,319 cubic yards of which was generated in Muskegon County. The landfill has a remaining capacity of 34,700,557 cubic yards (11,566,852 tons), and is expected to remain open until 2054 (MDEQ, 2018).

Custer Site (Alternative D)

Mason County's Solid Waste Management Plan gives businesses and industries the option to contract with private enterprises for solid waste pickup, including recycling materials (Mason County, 2008). One such business, Waste Reduction Systems, LLC, is based out of Ludington and provides solid waste service to Mason County (Waste Reduction Systems, 2016). Waste Reduction Services is a transfer station that contracts out to transfer waste to the Manistee County Landfill (Mason County, 2008).

The Manistee County Landfill, Inc., is located at 3890 Camp Road, Manistee, in Manistee County. The facility is an active/accepting Type II (MDEQ, 2016c). MSWs primarily arrive to the facility from surrounding county contracts and municipalities within an approximate 100-mile radius of the facility including the Counties of Mason, Lake, Manistee, Benzie, Grand Traverse, and Leelanau. In fiscal year 2017, the Manistee County Landfill accepted 415,890 cubic yards of waste, 90,918 cubic yards of which was generated in Mason County. The landfill has a capacity of 8,803,986 cubic yards (2,934,662 tons) and is expected to remain open until 2069 (MDEQ, 2018).

3.10.4 LAW ENFORCEMENT

Muskegon Site (Alternatives A, B, and C)

The Fruitport Township Police Department (FPD), located at 5825 Airline Highway, is approximately 2.25 miles southeast of the Muskegon Site. The FPD is composed of five divisions including the Patrol Division, Crime Investigations Unit, Evidence Response Team, School Resource Officer Program, and Retail Liaison Officer, which includes 18 uniformed officers (9 full-time and 9 part-time officers) (FPD, 2016; Innovation Group, 2015). A summary of crimes reported by the FPD during 2014 is provided below in **Table 3.10-1**.

[1] Michigan uses the unit of measure of cubic yards to be reported by landfills. A conversion factor of 3 cubic yards per 1 ton of solid waste was used (MDEQ, 2018).

TABLE 3.10-1
FPD REPORTED CRIMES IN 2014

Crime	Number of Incidents Reported
Homicide	0
Rape	3
Robbery	11
Assault	10
Burglary	39
Larceny Theft	539
Motor Vehicle Theft	14
Source: FBI, 2014.	

Custer Site (Alternative D)

The closest police department to the Custer Site is the Scottville Police Department (SPD), located at 105 North Main Street, Scottville, approximately 2.5 miles from the Custer Site. The department includes 3 officers, which serve a population of approximately 1,200. A summary of crimes reported by the SPD during the year 2014 is provided below in **Table 3.10-2**.

TABLE 3.10-2
SPD REPORTED CRIMES IN 2014

Crime	Number of Incidents Reported
Homicide	0
Rape	2
Robbery	1
Assault	1
Burglary	3
Larceny Theft	48
Motor Vehicle Theft	0
Source: FBI, 2014.	

3.10.5 FIRE PROTECTION AND EMERGENCY MEDICAL SERVICES

Muskegon Site (Alternatives A, B, and C)

The closest fire stations to the Muskegon Site are two Fruitport Fire Department (FPFD) stations; one is located at 3368 Black Creek Road, approximately 2.0 miles from the Muskegon Site; and one at 5815 Airline Highway, approximately 2.25 miles from the Muskegon Site. The FPFD employs 15 firefighters, and has 10 types of vehicles (FPFD, 2016; Innovation Group, 2015). In 2014, FPFD responded to 1,199 calls (Innovation Group, 2015). Additionally, both FPFD and White Lake Ambulance Authority provide EMS within Fruitport Township.

Custer Site (Alternative D)

There is no fire department in the Village of Custer. The closest fire department to the Custer Site is the Scottville Fire Department (SFD), located at 110 East Broadway Street, Scottville, approximately 2.5 miles from the Custer Site. The SFD employs 13 part-time firefighters and no full-time firefighters (SFD, 2015).

3.10.6 ELECTRICITY AND NATURAL GAS

Through the customer choice program, residents of Michigan can choose between several electricity and natural gas providers, including Alpena Power Company, Consumers Energy Company, DTE Company, Great Lakes Energy Cooperative, Presque Isle Electric and Gas Cooperative, and Tri-County Electric Cooperative.

Muskegon Site (Alternatives A, B, and C)

The Muskegon Site is within the service boundary of Michigan Gas Utilities Company, DTE Energy, Great Lakes Energy Corporation, Consumers Energy Company, Constellation New Energy, Inc., Direct Energy, First Energy Solutions, Noble Americas Energy Solutions, Wolverine Power Marketing Cooperative, Continuum Energy, Michigan Gas and Electric, Michigan Natural Gas, Realgy Energy Services, and Volunteer Energy. Each service varies in price and available contracts. It is anticipated that electricity and natural gas services to the Muskegon Site would be provided by Consumers Energy and DTE Energy, respectively.

Consumers Energy provides electricity services to approximately 1.8 million customers in 61 Michigan Lower Peninsula counties, including Muskegon County. Consumers Energy's service territory includes approximately 71,109 miles of electric transmission lines (Consumers Energy, 2016). Electricity is not currently being used on the Muskegon Site but is available west of the Muskegon Site along Harvey Street and south of the Muskegon Site along East Ellis Road (Page, 2016). DTE Energy provides natural gas services to approximately 2.1 million customers in Michigan, including those in Muskegon County.

DTE Energy's gas storage includes 278 storage wells (DTE Energy, 2016). Natural gas utilities are not currently being used on the Muskegon Site but are available west of the Muskegon Site along Harvey Street (Kerfoot, 2016).

Custer Site (Alternative D)

The Custer Site is within the natural gas and/or electricity service boundary of DTE Gas Company, Consumers Energy Company, Constellation New Energy, Inc., Direct Energy, First Energy Solutions, Noble Americas Energy Solutions, Wolverine Power Marketing Cooperative, Michigan Gas and Electric, Michigan Natural Gas, Realgy Energy Services, and Volunteer Energy. Each service varies in price and available contracts.

It is anticipated that electricity and natural gas services to the Custer Site would be provided by Consumers Energy and DTE Gas Company, respectively. Electricity is not currently available on the Custer Site but is available north of the Custer Site along East First Street. Natural gas is not currently

available on the Custer Site but a pipeline is located east of the Custer Site at the intersection of East First Street and Jefferson Street.

3.11 NOISE

This section describes the existing environmental conditions for the two alternative sites described in **Section 2.2**: the Muskegon Site (Alternatives A, B, and C) and the Custer Site (Alternative D). The general and site-specific description of the noise setting contained herein provides the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Section 4.0**.

3.11.1 ACOUSTICAL BACKGROUND AND TERMINOLOGY

Sound is defined as any pressure variation in air that the human ear can detect, and is technically described in terms of loudness (amplitude) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB). The dB scale uses the hearing threshold (20 micropascals of pressure), as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The dB scale allows a million-fold increase in pressure to be expressed as 120 dB.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, the perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. There is a strong correlation between A-weighted sound levels (dBA) and community response to noise. For this reason, the dBA has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of dBA levels.

Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (Leq) over a given time period (usually one hour). Leq is the foundation of the Day-Night Average Sound Level (Ldn) noise descriptor, and shows very good correlation with community response to noise. Ldn is based upon the average noise level over a 24-hour day, with an additional +10 dB weighting applied to noise occurring during nighttime (10:00 pm to 7:00 am) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were louder than daytime exposures.

Table 3.11-1 contains definitions of acoustical terminology used in this section. **Table 3.11-2** shows examples of noise sources and there effects on humans, which correspond to various sound levels.

Effects of Noise on People

The effects of noise on people fall into three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction;
- Interference with activities such as speech, sleep, and learning; and
- Physiological effects such as hearing loss or sudden startling.

TABLE 3.11-1
ACOUSTICAL TERMINOLOGY

Terms	Definitions
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency (Hertz [Hz])	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level (dBA)	Sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network, which accounts for sensitivity by de-emphasizing very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear, and correlates well with subjective reactions to noise.
Equivalent Noise Level (Leq)	The average A-weighted noise level during the measurement period.
Day/Night Noise Level (Ldn)	The average A-weighted noise level during a 24-hour day, obtained after the addition of 10 dB to levels measured in the night between 10:00 pm and 7:00 am.
Ambient Noise Level	All-encompassing sound associated with a given environment, excluding the analysis system's electrical noise and the sound of interest.
Source: FHWA, 2011a.	

TABLE 3.11-2
TYPICAL A-WEIGHTED SOUND LEVELS

Common Noises	Noise Level (dBA)	Typical Response
Threshold of Pain	140	Painfully Loud
Jet Take Off (200 feet)	130	Limits of Amplified Speech
Heavy Equipment	120	Maximum Vocal Effort
Night Club (with music)	110	Very Annoying
Construction Site	100	Annoying
Boiler Room	90	
Freight Train (100 feet)	80	Telephone Use Difficult
Classroom Chatter	70	
Conversation (3 feet)	60	
Urban Residence	50	Quiet
Soft Whisper (5 feet)	40	
North Rim of Grand Canyon	30	Very Quiet
Silent Study Room	20	
	10	Just Audible
Threshold of Hearing (1000 Hz)	0	Threshold of Hearing
Source: OSHA, 2015.		

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Human reaction to a new noise can be estimated through comparison of the new noise to the existing ambient noise level within a given environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will likely be judged by the recipients. With regard to increases in dBA levels, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness and can cause adverse responses.

Noise effects on humans can be physical or behavioral in nature. The mechanism for chronic exposure to noise leading to hearing loss is well established. The elevated sound levels cause trauma to the cochlear structure in the inner ear, which gives rise to irreversible hearing loss. Though not considered a health effect similar to those noted above, noise pollution also constitutes a significant factor of annoyance and distraction in modern artificial environments. Scenarios are detailed below.

- Listeners can attribute annoyance to the sound—if listeners dislike the noise content, they are annoyed.
- If the sound causes activity interference (for example, sleep disturbance), it is more likely to be considered an annoyance.
- If listeners believe they can control the noise source, it less likely to be perceived as annoying.
- If listeners believe that the noise is subject to third party control, including police, but control has failed, they tend to feel more annoyance.

Generally, most noise is generated by transportation systems, principally motor vehicle noise, but also including aircraft noise and rail noise. The level of traffic noise depends on three things: l) the volume of the traffic, 2) the speed of the traffic, and 3) the number of trucks in the flow of the traffic. Because noise is measured on a logarithmic scale, 70 dBA plus 70 dBA does not equal 140 dBA. Instead, two sources of equal noise added together have been found to result in an increase of 3 dBA. That is, if a certain volume of traffic results in a noise level of 70 dBA the addition of the same volume of traffic, or doubling, would result in a noise level of 73 dBA (FHWA, 2011b). As stated above, 3 dBA is just audible; therefore, if the project doubles the traffic volume there would be an audible increase in the ambient noise level.

Noise attenuates (lessens) at a rate of 6 to 9 dBA per doubling of distance from the source, depending on environmental conditions (i.e., atmospheric conditions and noise barriers, either vegetative or manufactured, etc.). Widely distributed noises, such as a large industrial facility or a street with moving vehicles would typically attenuate at a lower rate, approximately 4 to 6 dBA per doubling of distance.

Noise Sensitive Receptors

Noise sensitive land uses are generally defined as land uses with the potential to be adversely affected by the presence of noise. Examples of noise sensitive land uses include residential housing, schools, and health care facilities.

The nearest sensitive noise receptors are residences located approximately 100 feet west of the Muskegon Site and residences located approximately 100 feet north of the Custer Site. The nearest school to the Muskegon Site is Shettler Elementary School located approximately 1.0 mile northeast of the Muskegon Site at 2187 Shettler Road, Muskegon. The nearest schools to the Custer Site are the Mason County Eastern Schools located approximately 4,000 feet northeast of the Custer Site at 18 Custer Road, Custer. The nearest hospital to the Muskegon Site is Mercy Health Urgent Care located approximately 1.75 miles south of the Muskegon Site at 6401 Prairie Street, Norton Shores. The nearest hospital to the Custer Site is Spectrum Health Ludington Hospital located approximately 10 miles west of the Custer Site at 1 North Atkinson Drive, Ludington.

3.11.2 EXISTING NOISE LEVELS AND REGULATORY CONTEXT

Federal

The Federal Highway Administration (FHWA) provides construction noise level thresholds in its Construction Noise Handbook (2006) which are provided in **Table 3.11-3**.

TABLE 3.11-3
FEDERAL CONSTRUCTION NOISE THRESHOLDS

Noise Receptor Locations and Land-Uses	Daytime (7 am - 6 pm)	Evening (6pm - 10 pm)	Nighttime (10 pm - 7 am)
	dBA, Leq[1]		
Noise-Sensitive Locations: (residences, Institutions, Hotels, etc.)	72 or Baseline + 5 (whichever is louder)	Baseline + 5	Baseline + 5 (if Baseline < 70) or Baseline + 3 (if Baseline > 70)
Commercial Areas: (Businesses, Offices, Stores, etc.)	77 or Baseline + 5	None	None
Industrial Areas: (factories, Plants, etc.)	82 or Baseline + 5	None	None

Notes: 1 - Leq thresholds were empirically determined using the equation L10 = Leq + 3 (FHWA, 2011c).
Source: FHWA, 2006.

Operational noise standards used in this analysis are FHWA Noise Abatement Criteria (NAC) for the assessment of noise consequences related to surface traffic and other project-related noise sources. These standards are discussed below.

The FHWA establishes NAC for various land uses that have been categorized based upon activity. Land uses are categorized on the basis of their sensitivity to noise as indicated in **Table 3.11-3**. The FHWA NAC is based on peak traffic hour noise levels. Sensitive receptors with the potential to be impacted by the project alternatives include residential land uses for both the Muskegon Site and Custer Site; thus, the Category B 67 dBA Leq noise standard would apply for the residential use (see **Table 3.11-4**).

TABLE 3.11-4
FEDERAL NOISE ABATEMENT CRITERIA HOURLY A-WEIGHTED SOUND LEVEL DECIBELS

Activity Category	Activity Criteria[1] (Leq [h], dBA)	Evaluation Location	Activity Category Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[2]	67	Exterior	Residential.
C[2]	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[2]	72	Exterior	Hotels, motels, offices, restaurants/bars, other developed lands, and properties or activities not included in A-D or F.
F	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electricity), and warehousing.
G	--	--	Undeveloped lands that are not permitted.

Notes:
1 - The Leq(h) Activity Criteria values are for impact determinations only, and are not design standards for noise abatement measures.
2 - Includes undeveloped lands permitted for this activity category.
Source: FHWA, 2011d.

State

While FHWA considers a traffic noise impact to occur if predicted peak-hour traffic noise levels "approach" or exceed the NAC or "substantially exceed" existing levels, the Michigan Department of Transportation (MDOT) Noise Handbook defines a noise impact as either a 10 dBA increase between the existing noise level to the design year predicted noise level, or a predicted design year noise level that is 1.0 dBA less than the levels shown in **Table 3.11-4** (MDOT, 2011). Because MDOT's standards are more stringent than the FHWA, MDOT's criteria will be used to determine whether a traffic noise impact would occur. Therefore, the NAC in **Table 3.11-4** should be reduced by 1.0 dBA in accordance with MDOT criteria and the absolute criteria for Activity Category B would be 66 dBA.

Local

Applicable local noise standards for both the Muskegon Site and the vicinity of the Custer Site are listed below.

Muskegon Site

Fruitport Township's ordinances indicate that construction activities, particularly in residential areas, are restricted to the hours of 7:00 am to 11:00 pm (Fruitport Township Ordinances Section 42-603[10]).

The Muskegon Site borders the City of Norton Shores, and the nearest sensitive receptor is located approximately 100 feet west of the Muskegon Site, within Norton Shores. Norton Shores does not have any specific noise ordinances, but does state that no land use shall cause excessive noise (Municode, 2015).

Custer Site

Mason County's zoning code indicates that the pressure level of sounds shall not exceed the 65 dBA when adjacent to residential uses, measured at the boundary property line (Mason County, 2015).

Existing Noise Levels

Existing noise levels were measured at locations around the Muskegon Site and Custer Site boundaries where project-related noise has the potential to raise the ambient noise level. **Figure 3.11-1** and **Figure 3.11-2** depict the noise measurement locations at each alternative site. Measurement equipment consisted of Quest SoundPro SE/DL sound level meters. An acoustical calibrator was used to calibrate the sound level meter before and after use. All instrumentation used satisfies the Type II (precision) requirements. Noise Measurement Output Files are provided as **Appendix L**.

Muskegon Site (Alternatives A, B, and C)

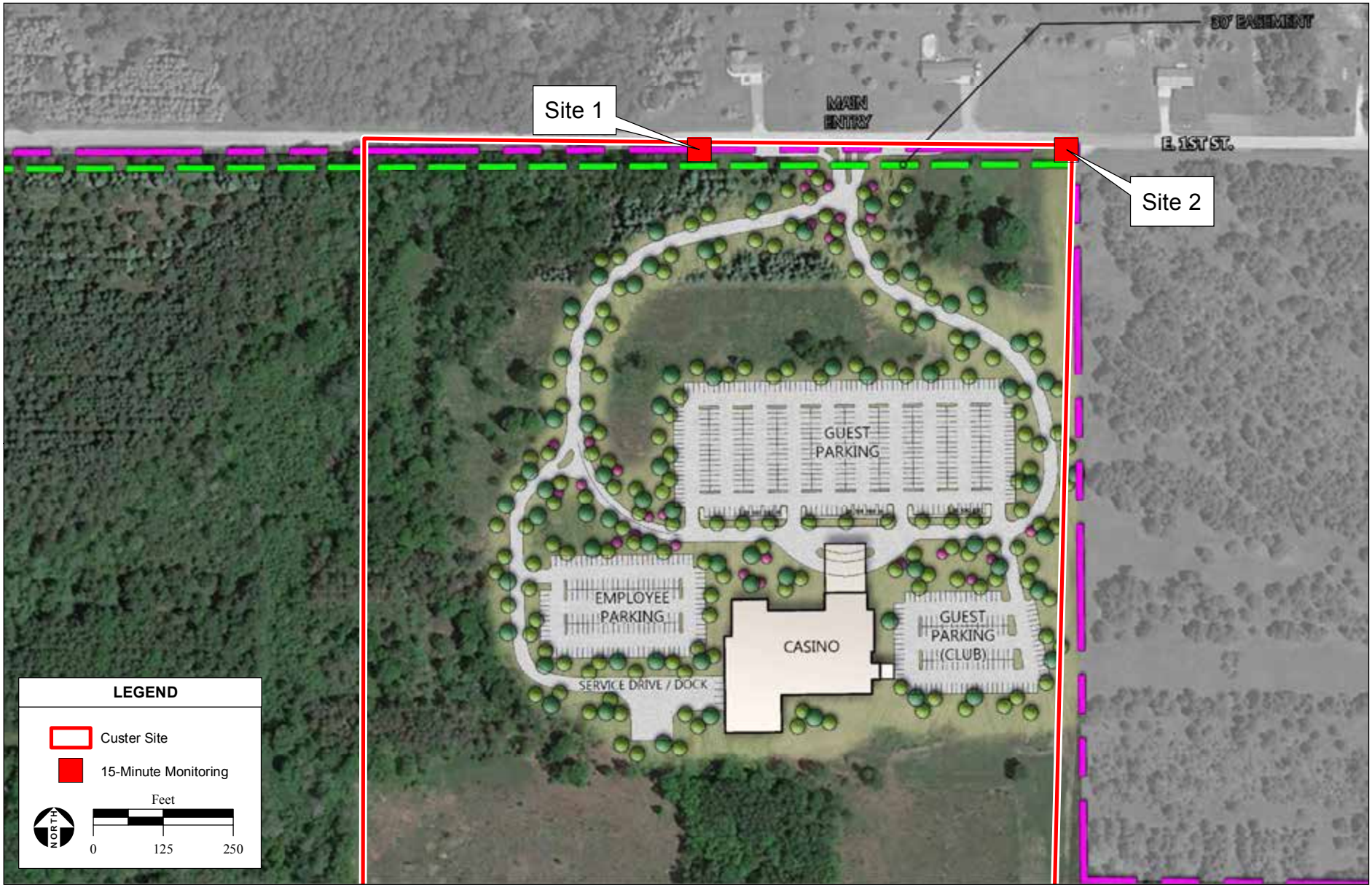
Table 3.11-5 provides the ambient noise levels in the immediate vicinity of the Muskegon Site, including background traffic noise levels along Interstate 96 (I-96; Sites A and B), East Ellis Road (Site C), and Harvey Street (Site D). The background traffic on East Ellis Road is generally fewer than 10 trips per hour, therefore the ambient noise near East Ellis Road is likely due to traffic on nearby roadways (i.e. Harvey Street, I-96) rather than traffic on East Ellis Road alone. It should be noted that the 24-hour measurements more accurately represent the ambient noise levels surrounding the Muskegon Site, because the 15-minute measurements are dependent on the amount of traffic on the roadway, and therefore the time of day the noise measurement was taken. The primary source of noise in the vicinity of the Muskegon Site is generated by traffic on I-96, East Ellis Road, and Harvey Street. Additionally, the Muskegon Site is located 0.55 miles east of the Muskegon County Airport. The airport averages 88 operations per day, with no flights allowed between 11:00 pm and 6:00 am on the runway closest to the Muskegon Site (Flight Aware, 2016). Noise from the Muskegon County Airport was captured in the 24-hour noise measurements at Site B and Site D. As shown in the Noise Measurement Output Files (**Appendix L**), the ambient noise never exceeded 60 dBA.

Custer Site (Alternative D)

Table 3.11-5 provides the noise levels along East First Street (Sites 1 and 2) which borders Custer Site to the north. The primary source of noise in the vicinity of the Custer Site is generated by traffic on East First Street.

SOURCE: HBG, 2015; AES, 3/30/2016

Figure 3.11-1
Noise Monitoring Locations - Muskegon Site



SOURCE: HBG, 2015; AES, 3/30/2016

Figure 3.11-2
Noise Monitoring Locations - Custer Site

TABLE 3.11-5
SUMMARY OF 24-HOUR AND 15-MINUTE EXISTING NOISE LEVEL MEASUREMENTS

Site	Date	Start Time	End Time	Noise Source	Receptor	Measured Noise Level (dBA Leq)
Muskegon Site						
A	10/14/2015	5:30 pm	5:45 pm	Traffic on Hile Road / I-96 On-Off Ramp	N/A	56.0
B	10/14/2015 – 10/16/2015	4:16 pm	4:20 am	Traffic on I-96	Businesses	51.7
C	10/14/2015	3:26 pm	3:41 pm	Traffic on East Ellis Road	N/A	54.6
D	10/14/2015 – 10/15/2015	6:08 pm	6:09 pm	Traffic on Harvey Street	Businesses/ Residences	52.7
Custer Site						
1	10/15/2015	10:08 am	10:23 am	Traffic on East First Street	Residences	59.9
2	10/15/2015	9:50 am	10:05 am	Traffic on East First Street	Residences	55.1
Source: AES, 2015 (**Appendix L**).						

3.11.3 EXISTING VIBRATION LEVELS AND REGULATORY CONTEXT

The effects of groundborne vibrations typically cause only a nuisance to people, but at extreme vibration levels, damage to buildings may occur. Although groundborne vibration can be felt outdoors, it is typically an annoyance only indoors, where the associated effects of the building shaking can be notable. Groundborne noise is an effect of groundborne vibration and only exists indoors, since it is produced from noise radiated from the motion of the walls and floors of a room and may consist of the rattling of windows or dishes on shelves.

Peak particle velocity (PPV) is often used to measure vibration. PPV is the maximum instantaneous peak (inches per second) of the vibration signal. The PPV levels are used to estimate L_v or vibration decibel (VdB) levels (vibration decibels with a reference velocity of 1 micro-inch per second). Scientific studies have shown that human responses to vibration vary by the source of vibration, which is either continuous or transient. Continuous sources of vibration include construction, while transient sources include truck movements. Generally, the thresholds of perception and annoyance are higher for transient sources than for continuous sources. **Table 3.11-6** summarizes the Federal Transit Administration's (FTA's) guideline vibration damage criteria for various structural categories. As shown therein, buildings extremely susceptible to vibration damage could be damaged if vibration levels exceed 90 VdB. Additionally, although sensitive receptors have a perceptibility threshold of 65 VdB, they begin to exhibit a significant response at 70 VdB for ground-borne vibration (FTA, 2006). Background vibration velocity in residential areas is usually 50 VdB or lower.

There are no sources of existing background ground-borne vibration in the vicinity of the Muskegon Site or the Custer Site.

TABLE 3.11-6
CONSTRUCTION VIBRATION DAMAGE CRITERIA

Building Category	Approximate L_v (VdB)
Reinforced-concrete, steel, or timber (no plaster)	102
Engineered concrete and masonry (no plaster)	98
Non-engineered timber and masonry buildings	94
Buildings extremely susceptible to vibration damage	90
Source: FTA, 2006.	

3.12 HAZARDOUS MATERIALS

This section describes the existing environmental conditions related to hazardous materials for the two alternative sites described in **Section 2.2**: the Muskegon Site (Alternatives A, B, and C) and the Custer Site (Alternative D). The general and site-specific descriptions of hazardous materials contained herein provides the environmental baseline by which direct, indirect, and cumulative environmental effects of the proposed alternatives are identified and measured in **Section 4.0**.

3.12.1 REGULATORY SETTING

Hazardous materials are those materials that may pose a material risk to human health or the environment. These materials are subject to numerous laws and regulations at several levels of government. At the federal level, human exposure to chemical agents, and in some cases environmental and wildlife exposure to such agents, is regulated primarily by four agencies: the United States Environmental Protection Agency (USEPA), the Food and Drug Administration (FDA), the Occupational Safety and Health Administration (OSHA), and the Consumer Product Safety Commission (CPSC). The USEPA administers several Congressional statutes pertaining to human health and the environment, including the Clean Air Act (CAA), which regulates hazardous air pollutants and the Resource Conservation and Recovery Act (RCRA), which regulates land disposal of hazardous materials. The FDA plays a limited role in regulating hazardous substances; it primarily regulates food additives and contaminants, human drugs, medical devices, and cosmetics. OSHA helps ensure employee safety by regulating the handling and use of chemicals in the workplace. The CPSC also plays a limited role in regulating hazardous substances; it mostly deals with the labeling of consumer products. In addition to these agencies, the United States Department of Transportation (DOT) regulates the interstate transport of hazardous materials.

Hazardous materials are subject to numerous laws and regulations at several levels of government. The primary legislation enacted to control the disposal of hazardous materials is RCRA (codified in 42 United States Code [USC] §6901 *et seq*.). Under RCRA, materials are considered hazardous if they display one or more of the following characteristics: corrosivity, flammability, reactivity, or toxicity (40 Code of Federal Regulations [CFR] §261).

3.12.2 EXISTING SETTING

Muskegon Site (Alternatives A, B, and C)

The Muskegon Site consists of a former racetrack, parking lots, and vegetation.

Previous Phase I Environmental Site Assessments (ESAs)

AMEC Earth and Environmental, Inc. (2008)

AMEC Earth and Environmental, Inc. prepared a Phase I Environmental Site Assessment (ESA) of the Muskegon Site (**Appendix M**) in February 2008. The 2008 Phase I ESA was prepared in accordance with the American Society for Testing and Materials (ASTM) Practice E 1527-05 for ESAs. The purpose of this assessment was to identify environmental conditions and hazardous materials involvement that

may pose a material risk to human health or to the environment, or in any way affect the future use of the Muskegon Site.

The 2008 Phase I ESA recommended proper decommissioning and disposal of the fuel aboveground storage tanks (ASTs) and drums of used oil, oil, and antifreeze, as well proper closure and abandonment of unused wells.

According to the 2008 Phase I ESA, a release of diesel fuel on August 6, 2005, is considered a historical recognized environmental condition. A total of 35.75 tons of soil was excavated, tested, and subsequently disposed of as nonhazardous waste in the Ottawa County Farms landfill. There was no evidence of current recognized environmental conditions on the Muskegon Site.

Amec Foster Wheeler Environment & Infrastructure, Inc. (2015)

Amec Foster Wheeler Environment & Infrastructure, Inc. prepared a Phase I ESA of the Muskegon Site (**Appendix M**) in February 2015. The 2015 Phase I ESA was prepared in accordance with the ASTM Practice E 1527-13 for ESAs.

The 2015 Phase I ESA notes that at the time of the 2015 site visit the ASTs and one of the water supply wells mentioned in the 2008 Phase I ESA were no longer present. The 2015 Phase I ESA revealed no evidence of recognized environmental conditions in connection with the Muskegon Site.

Database Report

A project area database record search was conducted by Environmental Data Resources, Inc. (EDR) in March 2016, to identify locations of past and current hazardous materials involvement (EDR, 2016a; **Appendix N**). Numerous regulatory agency databases were searched for records of known storage tank sites, known sites of hazardous materials generation, storage, or contamination, or violations pertaining to storage and use of hazardous materials. Databases were searched for sites and listings up to one mile from the perimeter of the Muskegon Site. EDR uses a geographical information system to plot locations of past and/or current hazardous materials involvement. The Muskegon Site was not listed on any regulatory agency database as having previous or current hazardous materials involvement. The database search located six sites with known history of storage, use, or release of hazardous materials within the one-mile EDR search radius. These sites are summarized in **Table 3.12-1** below. As shown in **Table 3.12-1**, none of the sites are likely to affect the Muskegon Site.

Several sites, Target Corporation, Pearle Vision, Inc, and 1908 East Stemberg, shown do not have any indication of a release of hazardous materials. The Ted Glomb site was the location of several underground storage tanks (USTs). Samples taken during removal of these USTs revealed elevated levels of total petroleum hydrocarbons (TPH; Mecher, 2016). Any release of TPH, if it reached soil, would not migrate to affect the Muskegon Site, as the Ted Glomb site is lower in elevation and thus against the local groundwater gradient. The Muskegon County Airport site had a release of gasoline in 1994. The leaking underground storage tank (LUST) case has been closed since 1995, and the associated UST was removed. Because the case was successfully closed and has been closed for over 20 years, it is unlikely to have affected the Muskegon Site.

TABLE 3.12-1
RESULTS OF HAZARDOUS MATERIALS DATABASE SEARCHES FOR THE MUSKEGON SITE

Property	Proximity to Site	Cleanup Status	Potential Contaminants of Concern	Database	Likely to Affect Muskegon Site?
Target Corporation 5057 Harvey Street	< 0.25 mile	Not applicable	Not applicable	RCRA-SQG	No – no indication of a release.
Pearle Vision Inc. 5169 Harvey Street	< 0.25 mile	Not applicable	Not applicable	RCRA-CESQG	No – no indication of a release.
Ted Glomb 1315 East Ellis Road	< 1 mile	Open	TPH	LUST, UST, INVENTORY	No – site is located against the groundwater gradient.
Muskegon County Airport 1217 East Ellis Road	< 1 mile	Closed as of 3/9/1995	Gasoline	LUST, UST, FINDS, ECHO	No – site closed.
1908 East Sternberg Road	< 1 mile	Not applicable	Not applicable	INVENTORY	No – no indication of a release.

Notes: SQG – Small Quantity Generator; CESQG – Conditionally Exempt Small Quantity Generator; LUST – Leaking Underground Storage Tank; UST – Underground Storage Tanks; INVENTORY – Inventory of Facilities; FINDS – Facility Index System/Facility Registry System; ECHO – Enforcement and Compliance History Information; TPH – total petroleum hydrocarbons.
Source: EDR, 2016a (**Appendix N**).

Custer Site (Alternative D)

The Custer Site is currently undeveloped and consists of a revegetated area within an approximately 1,087-acre property currently held in federal trust for the Tribe. A desktop survey of the Custer Site was performed and a site survey was conducted in October 2015. No evidence of previous or current hazardous materials involvement was identified on the Custer Site as part of this effort.

Previous Investigations

No previous hazardous materials investigations have been conducted on the Custer Site.

Database Report

A record search was conducted by EDR in March 2016 to identify locations of past and current hazardous materials involvement on the Custer Site (EDR, 2016b; **Appendix N**). The Custer Site is not listed on any regulatory agency database as having current or previous hazardous materials involvement. Potential hazardous waste effects on the Custer Site, as indicated in **Table 3.12-2**, are discussed further below.

The Custer Property – First Street site (First Street site) is located within the Tribe's Off-Reservation Trust Land, southwest of the Custer Site. The First Street site is a brownfield site that was first developed with a residence and two barns that were demolished in 2001. The First Street site did not show evidence of any contamination, as recorded in the BROWNFIELDS database. Therefore, the First Street site is unlikely to affect the Custer Site.

The DNR Real Estate Division site is located northeast of the Custer Site, on the opposite side of the Village of Custer. This site is an abandoned gas station with a previously reported gasoline release in 1995. In 2004, 250,000 tons of contaminated soil was excavated from the site, which was at that time being used as a parking lot. Groundwater sampling was performed in 2008 and the site received partial

closure. In 2012, the site was closed with no anticipation of using additional state funds for cleanup, but full closure was not sought because additional state investment was not warranted based on the limited available funding (Vanderhoof, 2016). Therefore, this property is unlikely to affect the Custer Site.

TABLE 3.12-2
RESULTS OF HAZARDOUS MATERIALS DATABASE SEARCHES FOR THE CUSTER SITE

Property	Proximity to Site	Cleanup Status	Potential Contaminants of Concern	Database	Likely to Affect Custer Site?
Custer Property First Street	< 1.0 mile	Not reported	Not reported	US BROWNFIELDS, FINDS, ECHO	No – records of Phase I ESA do not indicate a release
DNR Real Estate Division 2447 East US-10	< 1.0 mile	Open	Gasoline	LUST, UST, Part 201, INVENTORY	No – partial closure in 2012 and full closure not sought due to limited funding (Vanderhoof, 2016).

Notes: See **Table 3.12-1** for a list of database acronyms. Additional acronyms are as follows: US BROWNFIELDS – Brownfields List; PART 201 – Part 201 List.
Source: EDR, 2016b (**Appendix N**); Vanderhoof, 2016.

3.13 AESTHETICS

This section describes the existing environmental conditions for the two alternative sites described in **Section 2.2**: the Muskegon Site (Alternatives A, B, and C) and the Custer Site (Alternative D). The general and site-specific description of the aesthetic environment contained herein provides the environmental baseline by which direct, indirect, and cumulative effects are identified and measured in **Section 4.0**.

3.13.1 ENVIRONMENTAL SETTING

A viewshed is comprised of one or more viewing corridors from a specific location or viewpoint. Viewpoints and photographs of viewsheds from the Muskegon Site and Custer Site are shown in **Figures 3.13-1** through **3.13-4**. Each of these viewpoints provides a line-of-sight that can be characterized uniquely from among other viewpoints within the viewshed. The visual experience within each viewpoint is comprised of the following constituent elements:

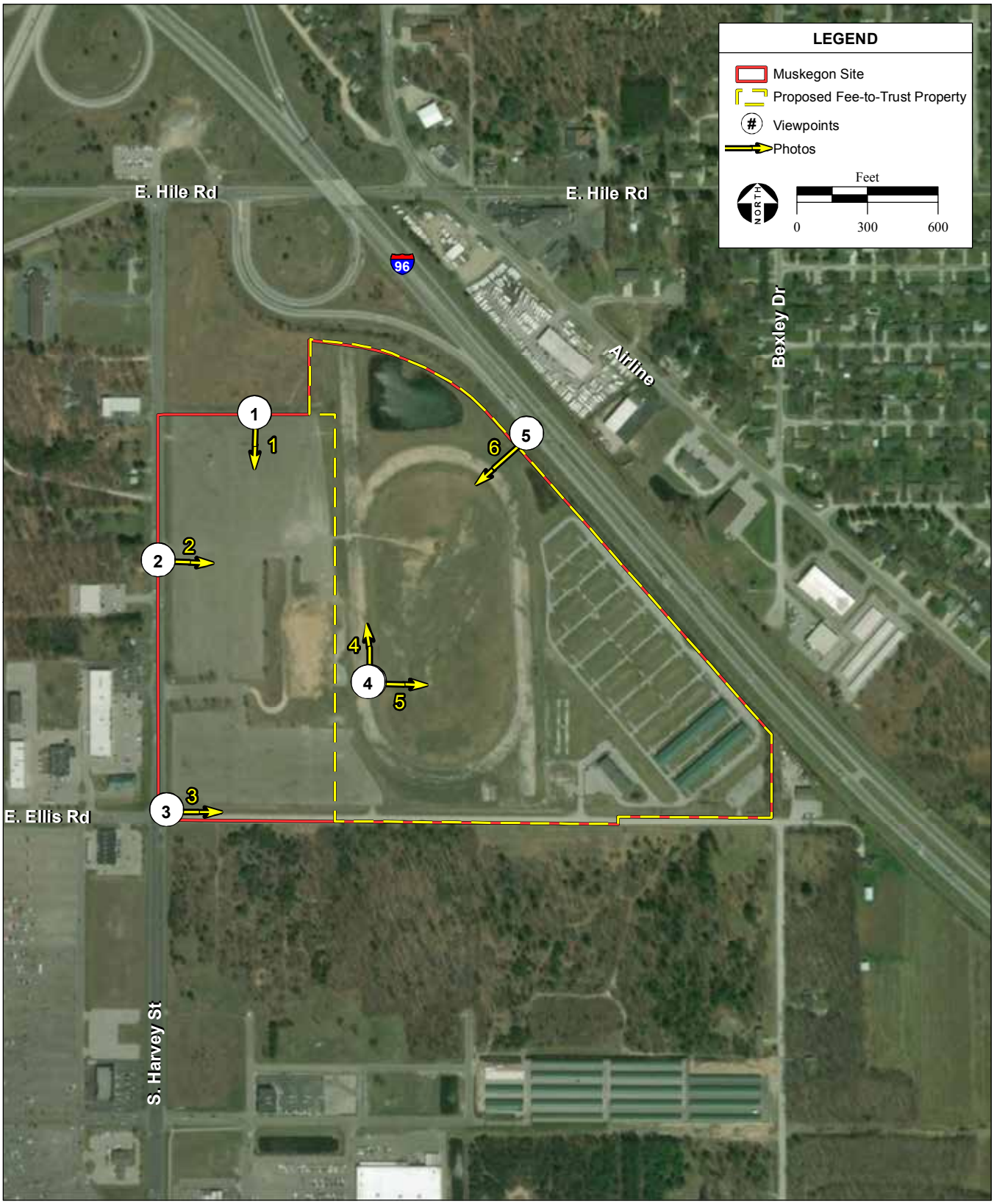
- Clarity in Line of Sight—the overall visibility of the object within the viewshed, influenced by such factors as trees, buildings, topography or any other potential visual obstruction within the viewshed.
- Duration of Visibility—the amount of time the object is exposed to viewers within the viewshed. For example, a passing commuter will experience a shorter period of viewing time than a resident within the viewshed.
- Proximity of the Viewer—the effects of foreshortening due to the distance of the viewer from the object will influence the dominance of the object in the perspective of the viewer within the viewshed.
- Number of Viewers—the number of viewers anticipated to experience the visual character of the object in forward-oriented view (i.e., not through a rear-view mirror). A densely populated residential district, or a busy highway within the viewshed of the object would present more viewers than unpopulated areas.

Viewsheds and viewpoints are described by expressing the strength of the viewing experience, framed within the analytical criteria listed above. While the viewing experience is personal and subjective in nature, the application of the above criteria allows for an objective, baseline assessment of the visual environment and subsequent visual impacts.

Regional Context

Muskegon Site (Alternatives A, B, and C)

The Muskegon Site is bordered by Interstate 96 (I-96) to the northeast, Harvey Street to the west, and East Ellis Road to the south. The nearest urban populations include Fruitport Township and the City of Norton Shores and the nearest residential area is located approximately 100 feet west of the Muskegon Site.



SOURCE: USDA aerial photograph, 7/21/2014; Muskegon County Parcels, 2013; AES, 5/7/2018

Figure 3.13-1
Muskegon Site Viewpoints

PHOTO 1: View of the Muskegon Site from the north facing south.

PHOTO 2: View of the Muskegon Site from the west facing east.

PHOTO 3: View of the Muskegon Site from the southwest facing east.

PHOTO 4: View of the Muskegon Site from the center facing north.

PHOTO 5: View of the Muskegon Site from the center facing east.

PHOTO 6: View of the Muskegon Site from the northeast facing southwest.

SOURCE: AES, 5/10/2018

Figure 3.13-2
Muskegon Site Photographs

SOURCE: HBG, 2015; AES, 5/27/2016

Figure 3.13-3
Custer Site Viewpoints

PHOTO 1: View of the Custer Site from the north facing south.

PHOTO 3: View of the Custer Site from the northeast facing west.

PHOTO 5: View of the Custer Site from the east facing west.

PHOTO 2: View of the Custer Site from the north facing east.

PHOTO 4: View of the Custer Site from the northeast facing southwest.

SOURCE: AES, 4/4/2016

Figure 3.13-4
Custer Site Photographs

Custer Site (Alternative D)

The Custer Site is bordered by East First Street to the north, trust land belonging to the Tribe to the west and south, and undeveloped land to the east. The nearest urban population is the Village of Custer and the nearest residential area is located adjacent to the northern border of the Custer Site.

Views and Viewsheds

Muskegon Site (Alternatives A, B, and C)

The majority of the Muskegon Site is comprised of a former racetrack, parking lots, and related facilities. Trees are located at the edge of the Muskegon Site along I-96. Viewpoint locations on the Muskegon Site are shown in **Figure 3.13-1**, and the viewsheds are shown in **Figure 3.13-2**. The topography of the Muskegon Site is generally flat with no excessively steep slopes. The elevation of the majority of the site is approximately 632 feet above mean seal level (amsl).

The immediate vicinity surrounding the Muskegon Site is dominated by I-96 to the northeast, vacant vegetated areas to the south, and residences, small commercial buildings, and parking lots to the west and northwest. The Fruitport Township and City of Norton Shores zoning designations surrounding the Muskegon Site are primarily commercial, planned unit development, and residential. Six viewsheds have been selected from the viewpoints surrounding and containing the Muskegon Site (**Figures 3.13-1** and **3.13-2**). These individual viewpoints were selected based on adjacent sensitive receptors and identified local areas of high population.

Custer Site (Alternative D)

The majority of the Custer Site is an undeveloped field surrounded by trees, with trees and shrubs scattered throughout. A patch of upland forest comprised primarily of mixed hardwood trees occurs within the northwestern portion of the Custer Site. Viewpoint locations on the Custer Site are shown in **Figure 3.13-3**, and the viewsheds are shown in **Figure 3.13-4**. Rows of planted trees occur along the northern portion of the Custer Site. The topography of the Custer Site is generally flat, sloping slightly to the south. The elevation of the majority of the site is approximately 650 feet amsl.

The immediate vicinity surrounding the Custer Site is dominated by undeveloped forestland, agricultural fields, several residential houses immediately north of the Custer Site, and the Riverside Cemetery to the southeast. The Mason County zoning designations surrounding the Custer Site are primarily agricultural, rural residential, and forest. Five viewsheds have been selected from the viewpoints surrounding the Custer Site (**Figure 3.13-3** and **3.13-4**). These individual viewpoints were selected based on the locations of adjacent sensitive receptors.

Shadow, Light and Glare

Muskegon Site (Alternatives A, B, and C)

No significant lighting, shadow, or glare is currently emitted from the Muskegon Site. Sources of light within the vicinity of the site include vehicle headlights from traffic on I-96 immediately east of the

Muskegon Site; vehicle headlights from traffic along Hile Road, Harvey Street, and East Ellis Road; and lighting associated with the residential and commercial land uses.

Custer Site (Alternative D)

No significant lighting, shadow, or glare is currently emitted from the Custer Site. Sources of light in the vicinity of the site include vehicle headlights from traffic on East First Street immediately north of the Custer Site, and lighting associated with the residential houses immediately north of the Custer Site.

Scenic Resources

There is no comprehensive list of specific features that automatically qualify as scenic resources; however, certain characteristics can be identified that contribute to the determination of a scenic resource. The following is a partial list of visual qualities and conditions that if present, may indicate the presence of a scenic resource:

- A tree that displays outstanding features of form or age;
- A landmark tree or a group of distinctive trees accented in a setting as a focus of attention;
- An unusual planting that has historical value;
- A unique, massive rock formation;
- An historic building that is a rare example of its period, style, or design, or that has special architectural features and details of importance;
- A feature specifically identified in applicable planning documents as having a special scenic value;
- A unique focus or a feature integrated with its surroundings or overlapping other scenic elements to form a panorama; or
- A vegetative or structural feature that has local, regional, or statewide importance.

Muskegon Site (Alternatives A, B, and C)

There are no features on the Muskegon Site that include the characteristics of a scenic resource. United States Highway 31 (US-31) west of the Muskegon Site is designated as a memorial highway; however, I-96 northeast of the Muskegon Site is not (MDOT, 2015).

Custer Site (Alternative D)

There are no features on the Custer Site that include the characteristics of a scenic resource. In addition, the roadways surrounding the Custer Site and nearest highway to the Custer Site, United States Highway 10 (US-10) east of Scottville, do not have any scenic designations (MDOT, 2015). The Pere Marquette River to the south of the Custer Site is classified as a National Scenic River and State Natural River (Mason County, 2013).

3.13.2 REGULATORY SETTING

Muskegon Site (Alternatives A, B, and C)

Once taken into trust, the Proposed Fee-to-Trust Property would not be subject to State or local land use regulations. Only federal and tribal regulations are applicable on trust lands. Local policies applicable to visual resources are summarized below, as they would continue to apply to the 26.5-acre portion of the Muskegon Site that would remain in fee. Additionally, regulations associated with the Muskegon Site's proximity to US-31, a designated memorial highway, are also provided below.

Muskegon County Comprehensive Plan

The following goals and strategies related to aesthetics and visual resources are contained within the Muskegon County Comprehensive Plan.

- Protect and preserve natural resources and continually improve the quality of air, water, and land resources found in Muskegon County.
- Preserve open space, farmland, natural beauty, and critical environmental areas.

Fruitport Township Ordinances

Fruitport Township Ordinances include the following regulations on commercial signage (Section 42-673):

- All signs require a permit from the township building inspector. Signs must conform with the size, type, number, location, and use requirements for each zoning district.
- No business establishment shall have more than three signs facing one street or parking area, and the total sign area shall not exceed 15 percent of the area of the building face.
- All signs shall be flat signs, parallel to and no more than 15 inches from the face of the building. The maximum width shall not exceed 90 percent of the width of the wall.
- Freestanding signs shall not exceed the sum of two square feet in area on a side for each linear foot the sign is set back from the front property line plus one square foot for each foot the building is set back from the front property line. Freestanding signs closer than 8 feet to the ground or larger than 200 square feet are prohibited.
- Light sources illuminating signs, business buildings, or areas surrounding them shall be shielded from the view of vehicular traffic using public streets, except for diffused lighting within translucent signs.
- Signs shall not exceed 30 feet or extend above the height of the building to which it is attached.
- Billboards are permitted on property zoned Shopping Center (SC-1), and are subject to the following regulations:

    - Billboards are only allowed along US-31 and I-96. Billboards must be within 100 feet of these freeways, at least 100 feet from residential zoning districts, at least 500 feet from all existing residences., at least 1,000 feet from any other billboards facing the same direction of traffic on either side of the freeway, and at least 100 feet from all other freestanding on-premises signs located on the same side of the freeway that are visible from the freeway.

  - Billboards shall have a minimum setback of two feet from the freeway right of way.
  - No billboard shall contain more than one sign panel facing the same direction of traffic, nor contain more than two sign panels.
  - Light rays of a billboard shall be cast directly upon the billboard and shall not be directly visible to motorists on the freeway or to nearby buildings.
  - No billboard sign shall exceed 672 square feet in area, 14 feet in width, and 48 feet in length.
  - Irregularly shaped sign extensions shall not exceed four percent of the area of a sign panel.

- Temporary pennants, flags, or banners may be permitted in any business zone for no more than 30 days without a permit.

Norton Shores Ordinances

The City of Norton Shores is located immediately west of the Muskegon Site. As this is in close proximity to the Muskegon Site, aesthetic-related ordinances are listed below:

- Prohibit signs that will, by reason of their size, location, construction, or manner of display, endanger life and limb, confuse or mislead traffic, obstruct vision necessary for traffic safety or otherwise endanger the public morals, health, or safety.
- Retard visual blights and prevent such signs from causing annoyance or disturbance to the citizens and residents of the city.
- The site plan shall provide reasonable visual privacy for all dwelling units located therein or nearby. Fences, walks, barriers, and landscaping shall be used, as appropriate, for the protection and enhancement of property and the privacy of its occupants.

Custer Site (Alternative D)

The Custer Site is located on land that is currently held in federal trust for the benefit of the Tribe and is therefore not subject to any local or regional land use regulations. The Tribe has jurisdictional authority over aesthetic matters within its trust lands.

Although local ordinances do not apply to the Custer Site, the Mason County Zoning Ordinances applies to land surrounding the Custer Site not within the Tribe's trust land. The Mason County Zoning Ordinance promotes enhancement of the visual environment by utilizing landscaping, greenbelts, and screening as necessary. The purpose of this ordinance is to preserve natural features, improve property values, and alleviate the visual impact related to intensive uses. One way to achieve this is with evergreen screening, which provides a visual barrier at least 8 feet above ground level within 5 years of planting.

SECTION 4.0

ENVIRONMENTAL CONSEQUENCES

SECTION 4.0
ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This section describes the environmental consequences that would result from the development of each alternative described in **Section 2.0**. The analysis presented in this section has been prepared in accordance with the Council on Environmental Quality's (CEQ's) National Environmental Policy Act (NEPA) Regulations §1502.16. The direct environmental effects of each alternative are provided for each resource described in **Section 3.0** and listed below. This section also provides analysis of growth-inducing and indirect effects in **Section 4.14**, as well as cumulative effects in **Section 4.15**.

Section	Resource Area/Issue
4.2	Geology and Soils
4.3	Water Resources
4.4	Air Quality
4.5	Biological Resources
4.6	Cultural and Paleontological Resources
4.7	Socioeconomics Conditions
4.8	Transportation/Circulation
4.9	Land Use
4.10	Public Services
4.11	Noise
4.12	Hazardous Materials
4.13	Aesthetics
4.14	Indirect and Growth-Inducing Effects
4.15	Cumulative Effects

4.2 GEOLOGY AND SOILS

This section assesses the significance of the direct effects associated with geology and soils that would result from the development of each alternative described in **Section 2.0**. Effects are measured against the environmental baseline presented in **Section 3.2**. Indirect effects associated with off-site construction and growth-inducement are identified in **Section 4.14**. Cumulative effects are identified in **Section 4.15**. Measures to mitigate for adverse effects identified in this section are presented in **Section 5.2**.

Assessment Criteria

Each alternative is analyzed to determine if construction or operation would result in direct significant impacts to the proposed site topography, soils, or mineral resources; or if geological hazards associated with the existing setting would pose limitations to the development of each alternative.

4.2.1 ALTERNATIVE A – PROPOSED PROJECT

Topography

As described in **Section 2.3.3**, construction of Alternative A would involve grading and excavation for building pads, parking lots, and utilities. This would result in the alteration of topographic features of the Muskegon Site. The preliminary grading plan for Alternative A is included in **Appendix F**. Grading would consist primarily of excavating for the drainage basins and filling both where cut slopes necessitate additional leveling and to prevent spillover of the drainage basins. As discussed in the Grading and Drainage Study (Fleis & Vandenbrink, 2016b; **Appendix F**), Alternative A would balance cut and fill to the extent possible, with the exception of imported topsoil to support landscaping around the buildings. The total earthwork estimated for Alternative A is approximately 146,000 cubic yards of cut and approximately 130,000 cubic yards of fill. The excess soil from grading during construction would be stockpiled on site and landscaped along the western border of the casino resort to provide a visual barrier between Harvey Street and the back of the casino resort (**Figure 2-5**). Although this would constitute a change in the topography of the site, the stockpiles will not be tall or steep enough to result in any damages from slope failure (landslide). Additionally, the vegetation proposed to landscape the stockpiles would aid in preventing slope failure. Therefore, the development of Alternative A would not create an adverse effect on topographic characteristics of the Muskegon Site. No mitigation is required.

Soils/Geology

Alternative A could temporarily adversely affect soils due to erosion during construction from activities such as clearing, grading, trenching, and backfilling. The soils on the Muskegon Site have minimal erosion susceptibility based on soil type and slope gradients. Construction of Alternative A would disturb more than one acre; therefore the Tribe is required by the CWA to obtain coverage under and comply with the terms of the NPDES General Construction Permit (#MIS310000) for construction activities on the Muskegon Site. This would apply both to the fee-to-trust parcel (60 acres) and the parcel remaining in fee (26.5 acres). Additionally, local rules and regulations would still apply to the parcel remaining in fee.

Additionally, the fee parcel would be subject to local rules and regulations dictating the width and placement requirements of site access driveways, such as that shown in **Figure 2-5**. These requirements are provided in **Section 3.2**, and would necessitate the approval of the planning commission for the site driveway plans (see **Table 1-1**).

Mitigation measures, including NPDES General Construction Permit requirements, are presented in **Section 5.2** to reduce any potential adverse effects to less-than-significant levels. With regulatory requirements and Best Management Practices (BMPs) described therein, effects from implementation of Alternative A on soils and geology would be minimal and, therefore, less than significant.

Seismicity

Construction of the casino and associated facilities proposed under Alternative A would not be significantly affected by potential seismic conditions because there is low seismic risk in the State of Michigan. Since no known fault traces are mapped in the vicinity of the Muskegon Site, the potential for surface rupturing along an on-site fault trace is low and should not be considered a constraint for Alternative A. Additionally, the Tribe has committed in its Municipal Services Agreement (MSA; **Appendix B**) to develop its buildings in compliance with applicable building codes in effect in the State. Impacts from seismicity under Alternative A would be less than significant and no mitigation is required.

Mineral Resources

Alternative A would not adversely affect known or recorded mineral resources. Alteration of the land use would not result in a loss of economically viable aggregate rock or diminish the extraction of important ores or minerals. Because there are no known or mapped mineral resources within the Muskegon Site, development and use of the land would not affect such resources (MDNR, 2016a). There are no abandoned mines, shafts, or tailings that would affect development or public safety (MTU, 2008). Project-related impacts to mineral resources under Alternative A are less than significant. No mitigation is required.

4.2.2 ALTERNATIVE B – REDUCED INTENSITY ALTERNATIVE

Topography

As with Alternative A, Alternative B would involve substantial grading and excavation for building pads, parking lots, and utilities. This would result in the alteration of topographic features of the Muskegon Site. Grading would consist primarily of excavating for the drainage basins and filling both where cut slopes necessitate additional leveling and to prevent spillover of the drainage basins. As discussed in the Grading and Drainage Study (**Appendix F**), Alternative B would balance on-site cut and fill to the extent feasible, with the exception of imported topsoil to support landscaping around the buildings. The total earthwork for Alternative B is approximately 139,000 cubic yards of cut and approximately 132,000 cubic yards of fill. The excess soil would be stockpiled on site and landscaped along the western border of the casino resort to provide a visual barrier between Harvey Street and the back of the casino (**Figure 2-8**). Although this would constitute a change in the topography of the site, the stockpiles will not be tall or steep enough to result in any damages from slope failure (landslide). Therefore, development of

Alternative B would not create an adverse effect on topographic characteristics of the Muskegon Site. No mitigation is required.

Soils/Geology

Alternative B could temporarily adversely affect soils due to erosion during constructionfrom activities such as clearing, grading, trenching, and backfilling. The majority of the soils at the Muskegon Site have a slight erosion potential based on soil type and slope gradients.

As with Alternative A, Alternative B would also require compliance with the terms of the NPDES General Construction Permit for sediment control and erosion prevention into navigable (surface) Waters of the U.S. As part of the General Construction NPDES Permit, a SWPPP must be prepared and implemented and include provisions for erosion prevention and sediment control and control of other potential pollutants. This would apply both to the fee-to-trust parcel (60 acres) and the parcel remaining in fee (26.5 acres). Additionally, local rules and regulations would still apply to the parcel remaining in fee.

Additionally, the fee parcel would be subject to local rules and regulations dictating the width and placement requirements of site access driveways, such as that shown in **Figure 2-5**. These requirements are provided in **Section 3.2**, and would necessitate the approval of the planning commission for the site driveway plans (see **Table 1-1**).

Mitigation measures are presented in **Section 5.2** to reduce any potential impacts to less than significant. With incorporation of the regulatory requirements and BMPs described therein, effects from implementation of Alternative B on soils and geology would be minimal and, therefore, less than significant.

Seismicity

Impacts due to seismic hazards would be the same for Alternative B as Alternative A, as both would be located on the same site, with development occurring in similar locations on the Muskegon Site. Additionally, the Tribe has committed in its MSA (**Appendix B**) to develop its buildings in compliance with applicable building codes in effect in the State. Impacts from seismicity under Alternative B would be less than significant. No mitigation is required.

Mineral Resources

Impacts to mineral resources would be the same for Alternative B as Alternative A, as both would be located on the Muskegon Site, with development occurring in similar locations on the site. Project-related impacts to mineral resources under Alternative B are less than significant. No mitigation is required.

4.2.3 ALTERNATIVE C – NON-GAMING ALTERNATIVE

Topography

As with Alternative A, Alternative C would involve grading and excavation for building pads, parking lots, and utilities. This would result in the alteration of topographic features of the Muskegon Site. Grading would consist primarily of excavating for the drainage basins and filling both where cut slopes necessitate additional leveling and to prevent spillover of the drainage basins. As discussed in the Grading and Drainage Study (**Appendix F**), Alternative C would balance on-site cut and fill to the extent feasible. The preliminary grading plan for Alternative C is included in **Appendix F**. The total earthwork estimated for Alternative C is approximately 142,500 cubic yards of cut and approximately 132,500 cubic yards of fill. The excess soil from grading during construction would be stockpiled on site and landscaped along the western border of the commercial development to provide a visual barrier between Harvey Street and the back of the commercial development (**Figure 2-10**). Although this would constitute a change in the topography of the site, the stockpiles will not be tall or steep enough to result in any damages from slope failure (landslide). Additionally, the vegetation proposed to landscape the stockpiles would further prevent slope failure. Therefore, development of Alternative C would not create an adverse effect on topographic characteristics of the Muskegon Site. No mitigation is required.

Soils/Geology

Alternative C could temporarily adversely affect soils due to erosion during constructionfrom activities such as clearing, grading, trenching, and backfilling. The majority of the soils at the Muskegon Site have a slight erosion potential based on soil type and slope gradients.

As with Alternatives A and B, Alternative C would require an NPDES Permit from the USEPA for sediment control and erosion prevention into navigable (surface) Waters of the U.S. As part of the NPDES General Construction Permit, a SWPPP must be prepared and implemented and include provisions for erosion prevention and sediment control and control of other potential pollutants. This would apply both to the fee-to-trust parcel (60 acres) and the parcel remaining in fee (26.5 acres). Additionally, local rules and regulations would still apply to the parcel remaining in fee.

Additionally, the fee parcel would be subject to local rules and regulations dictating the width and placement requirements of site access driveways, such as that shown in **Figure 2-5**. These requirements are provided in **Section 3.2**, and would necessitate the approval of the planning commission for the site driveway plans (see **Table 1-1**).

Mitigation measures are presented in **Section 5.2** to reduce any potential impacts to less-than-significant levels. With incorporation of regulatory requirements and BMPs described therein, effects from implementation of Alternative C on soils and geology would be minimal and, therefore, less than significant.

Seismicity

Impacts due to seismic hazards would be the same for Alternative C as Alternative A and B, as all would be located on the Muskegon Site, with development occurring in similar locations on the site. Impacts from seismicity under Alternative C would be less than significant and no mitigation is required.

Mineral Resources

Impacts to mineral resources would be the same for Alternative C as Alternative A and B, as all would be located on the Muskegon Site, with development occurring in similar locations on the site. Project-related impacts to mineral resources under Alternative C are less than significant. No mitigation is required.

4.2.4 ALTERNATIVE D – CUSTER SITE ALTERNATIVE

Topography

As described in **Section 2.6.1**, construction of Alternative D would involve grading and excavation for building pads, parking lots, and utilities. This would result in the alteration of topographic features of the Custer Site. The preliminary grading plan for Alternative D is included in **Appendix F**. Grading would consist primarily of excavating soil for project components and filling where cut slopes necessitate additional leveling. As discussed in the Grading and Drainage Study (Fleis and Vandenbrink, 2016b; **Appendix F**), Alternative D would use the on-site earth resources to the maximum extent possible. The total earthwork estimated for Alternative D is approximately 45,500 cubic yards of cut and approximately 40,000 cubic yards of fill. The excess soil from grading during construction would be aesthetically placed on the site and landscaped. Should the soil be stockpiled on site, this would constitute a change in the topography of the site. However, the stockpiles will not be tall or steep enough to result in any damages from slope failure (landslide). Additionally, the vegetation proposed to landscape the stockpiles would further prevent slope failure.

Therefore, development of Alternative D would not adversely affect the topographic characteristics of the Custer Site. No mitigation is required.

Soils/Geology

Alternative D could temporarily adversely affect soils due to erosion during constructionfrom activities such as clearing, grading, trenching, and backfilling. Soils on the Custer Site have only slight erosion susceptibility based on soil type and slope gradients.

Sediment discharge into navigable (surface) Waters of the U.S. is regulated by the CWA (1972, with modifications in 1977, 1981, and 1987), which establishes water quality goals for sediment control and erosion prevention. One of the mechanisms for achieving the goals of the CWA is the NPDES permitting program, administered by the USEPA. As part of the NPDES General Construction Permit, a SWPPP must be prepared and implemented. The SWPPP must make provisions for erosion prevention and sediment control and control of other potential pollutants. Construction of Alternative D would disturb more than one acre of land; therefore the Tribe is required by the CWA to obtain coverage under, and

comply with the terms of the NPDES General Construction Permit (#MIS210000) for construction activities on the Custer Site.

Mitigation measures, including NPDES General Construction Permit requirements, are presented in **Section 5.2** to reduce any potential adverse effects to less-than-significant levels. With regulatory requirements and BMPs described therein, effects from implementation of Alternative D on soils and geology would be minimal and, therefore, less than significant.

Seismicity

Construction of the casino and associated facilities proposed under Alternative D would not be significantly affected by potential seismic conditions because the State of Michigan is an area of low seismic risk. Since no known fault traces are mapped in the vicinity of the Custer Site, the potential for surface rupturing along an on-site fault trace is low and should not be considered a constraint for Alternative D. Impacts from seismicity under Alternative D would be less than significant and no mitigation is required.

Mineral Resources

Alternative D would not adversely affect known or recorded mineral resources. Alteration in the land use would not result in a loss of economically viable aggregate rock or diminish the extraction of important ores or minerals. Because there are no known or mapped mineral resources within the Custer Site, development and use of the land would not affect such resources (MDNR, 2016d). There are no abandoned mines, shafts, or tailings that would affect development or public safety (MTU, 2008). Project-related impacts to mineral resources under Alternative D are less than significant. No mitigation is required.

4.2.5 ALTERNATIVE E – NO ACTION/NO DEVELOPMENT ALTERNATIVE

Under the No Action/No Development alternative, the 60-acre parcel would not be taken into trust and no development would occur on either alternative site. Topographic features and soils would remain undisturbed. No significant landform, soil, or seismic effects would occur as a result of the No Action/No Development Alternative.

4.3 WATER RESOURCES

This section assesses the significance of the direct effects to water resources anticipated to result from the development of each alternative described in **Section 2.0**. Effects are measured against the environmental baseline presented in **Section 3.3**. Indirect effects associated with off-site construction and growth-inducement are identified in **Section 4.14**. Cumulative effects are identified in **Section 4.15**. Measures to mitigate for potentially adverse effects identified in this section are presented in **Section 5.0**.

Assessment Criteria

For surface water resources, each alternative is analyzed to determine if either construction or operation would result in significant impacts to drainage patterns, floodplain management, and/or water quality. For groundwater resources, each alternative is analyzed to determine if either construction or operation would result in significant impacts to groundwater levels and/or groundwater quality.

4.3.1 ALTERNATIVE A – PROPOSED PROJECT

Surface Water

Flooding

The Muskegon Site is located outside the 100-year and 500-year floodplains; therefore, Alternative A would be in compliance with Executive Order (EO) 11988. Alternative A would not impede or redirect flood flows, alter floodplain elevations, or affect floodplain management. No impacts related to flooding would occur as a result of Alternative A.

Construction Impacts

Alternative A construction activities would include clearing and grubbing, grading, and excavation, which could lead to erosion of topsoil. Erosion from construction sites can increase sediment discharge to surface waters during storm events thereby degrading downstream water quality. Construction activities would also include the routine use of potentially hazardous construction materials such as concrete washings, oil, and grease, which may spill onto the ground and be carried in stormwater. Discharges of pollutants, which include grease, oil, fuel, and sediments, to surface waters from construction activities and accidents are a potentially significant impact. Implementation of mitigation measures presented in **Section 5.2** (as noted in **Section 5.3**) would reduce or prevent adverse effects to the local and regional watershed from construction activities. Therefore impacts associated with water quality from construction of Alternative A would be less than significant with mitigation.

Stormwater Runoff

Stormwater discharges from commercial areas may be of concern in managing surface water quality. Pollutants that accumulate in dry periods, such as oil and grease, asbestos, pesticides, and herbicides, may cause water quality impacts due to their presence in high concentrations during the first major storm event of the season. Development of Alternative A would generate increased runoff during rain events due to an increase in impervious surfaces on the site. Stormwater runoff under Alternative A would be directed into on-site water retention ponds sized to accommodate excess water draining from impervious surfaces.

Runoff from the buildings and parking lots would be routed through bioswales and/or rain gardens wherever practical for treatment before flowing into the retention ponds. The concentrated flows would initially be routed to the southern retention pond which would act as a forebay to capture sediment prior to being outlet to the larger northerly pond which would be hydraulically connected. Pursuant to Section 2.8 of the Municipal Services Agreement (MSA), stormwater drainage facilities would be constructed pursuant to and in accordance with the standards of the State of Michigan Drain Code, as updated and as enforced by the Muskegon County Drain Commissioner. During a 100-year, 24-hour storm event the surface elevation of the ponds would increase by approximately 2.8 feet. The ponds would empty by infiltration to groundwater; however, the ponds would have an emergency overflow near the inlet of an existing off-site culvert which transports runoff from the west side of Interstate 96 (I-96; **Appendix F**).

As described above, Alternative A would utilize bioswales, rain gardens, and retention ponds to treat and retain stormwater on site for infiltration into groundwater. No discharge to Waters of the U.S. is proposed, either through non-point source stormwater runoff or through point source discharge of stormwater from a culvert or outfall. Additionally, BMPs provided in **Section 2.3.3** would minimize potential effects to stormwater runoff and water quality. Therefore, Alternative A would not contribute to the exceedance of established Total Maximum Daily Loads (TMDLs), resulting in a less-than-significant impacts to surface waters.

Groundwater Levels

The construction of impervious surfaces on the site could reduce groundwater recharge in areas where surface percolation accounts for a large percentage of natural recharge, resulting in the lowering of groundwater levels. Although the development of Alternative A would introduce large areas of impermeable surfaces, the use of retention ponds for storing stormwater would allow collected stormwater to percolate into the groundwater over time, subject to soil permeability, weather, and depth to the water table. Therefore, the introduction of impermeable surfaces on the Muskegon Site would not have a significant adverse impact on groundwater levels.

Municipal Water Connection (Water Supply Option 1)

Under Water Supply Option 1, water would be provided pursuant to a services agreement with Section 2.4 of the MSA between the Tribe, the Fruitport Township (Township), and County (see **Appendix B**). The Township obtains its primary water supply from Lake Michigan surface water. As discussed in detail of **Appendix D**, Alternative A would require approximately 144,250 gallons per day (GPD; or 100 gallons per minute [GPM]) of potable water at full buildout. The Township has agreed to provide potable water service to the project and has indicated that there is sufficient capacity available for this service. Alternative A would not have significant impacts to aquifers under Water Supply Option 1, as no groundwater would be used for the project.

On-site Supply (Water Supply Option 2)

Under the Water Supply Option 2, on-site wells would supply the project with water for domestic use, emergency supply, and fire protection. Additionally, BMPs provided in **Section 2.3.3** requiring a test well be drilled and groundwater testing be conducted would minimize potential effects to water resources. Due to the high static water levels of nearby wells and the lack of significant groundwater use in the area

by others, impacts to groundwater levels as the result of Alternative A under Water Supply Option 2 would be less than significant.

Groundwater Quality

Runoff from Alternative A could flush trash, debris, oil, sediment, and grease that accumulate on impervious surfaces into stormwater runoff. Fertilizers used in landscaped areas could also accumulate in stormwater if over applied. Although stormwater would not normally flow off site and impact surface water quality, the retention ponds would percolate the accumulated stormwater into the shallow unconfined alluvial aquifer, potentially transporting chemical contaminants into the groundwater. As noted above and in **Appendix D**, several features designed to filter surface runoff have been incorporated into the project design. These features include the use of rain gardens and bioswales to remove suspended solids such as trash, sediment, and other potential materials that could degrade water quality. Additionally, BMPs provided in **Section 2.3.3** would minimize potential effects to water resources. Therefore, the impact to groundwater quality from stormwater runoff would be less than significant.

Municipal Treatment and Disposal (Wastewater Treatment Option 1)

Under Wastewater Treatment Option 1, wastewater generated by Alternative A would be collected by the Township's wastewater collection system and treated off site by the Muskegon County Wastewater Management System (MCWMS) as discussed in **Section 2.3.1**. The MCWMS includes a pre-aeration tank, two complete-mix 42-million gallon (MG) extended aeration cells with a retention time of one day each, two aerated 100-MG settling lagoons with a retention time of two days, two 850-acre storage lagoons with 5.1 billion gallons of storage capacity, 5,100 acres irrigated crop land for final treatment, and 200 miles of underdrains to return the clean water to local rivers and lakes (**Appendix D**). The MCWMS would continue to operate in accordance with its National Pollutant Discharge Elimination System (NPDES) Permit (Permit No. MI0027391) issued by the Michigan Department of Environmental Quality (MDEQ). Therefore, the impact to groundwater quality from wastewater under Wastewater Treatment Option 1 would be less than significant.

On-Site Treatment and Disposal (Wastewater Treatment Option 2)

Under Wastewater Treatment Option 2, Alternative A would include the development of an on-site packaged wastewater treatment system. On-site disposal of wastewater would be accomplished through an approximately 100,000-square foot (sf) leach field that would allow treated wastewater to drain into the soil. As the on-site wastewater treatment system would be located on trust land, treatment requirements with respect to wastewater effluent quality for on-site disposal would be regulated by the United States Environmental Protection Agency (USEPA). USEPA requirements are typically based on local groundwater conditions. The disposal of wastewater on site via subsurface drainage would be regulated by the USEPA within the Underground Injection Control (UIC) program. The subsurface drainage system would constitute a Class V injection well and would be registered with USEPA as such. Wastewater effluent that reaches groundwater would be of sufficient quality and would not contribute to groundwater quality issues in the vicinity of the Muskegon Site. Therefore, effects to groundwater associated with Alternative A Wastewater Treatment Option 2 would be less than significant.

4.3.2 ALTERNATIVE B – REDUCED INTENSITY ALTERNATIVE

Surface Water

Impacts to surface water, including flooding, construction impacts, and stormwater runoff as a result of the development of Alternative B would be similar to those of Alternative A as both alternatives are similar in design and the stormwater retention basins and runoff control structures would be similar for both alternatives. However, Alternative B has a smaller development footprint than Alternative A resulting in a reduced amount of runoff during storm events. Proposed drainage improvements would ensure that impacts to stormwater quality would be less than significant. BMPs provided in **Section 2.3.3** and mitigation measures presented in **Section 5.2** (as noted in **Section 5.3**) would reduce construction impacts and further reduce operational impacts to water quality, ensuring they remain less than significant.

Groundwater

Impacts to groundwater supply and quality as a result of the development of Alternative B would be similar to those of Alternative A as both alternatives are similar in design and would be provided water and wastewater services by either local municipalities or on-site infrastructure. As with Alternative A, Alternative B would increase impervious surfaces on site, thereby decreasing direct recharge to groundwater on the Muskegon Site. However, stormwater would be collected on site and would percolate into the groundwater through retention basins, therefore returning the overall groundwater recharge of the Muskegon Site to pre-development levels. Alternative B would require approximately 50 percent less potable water than Alternative A, therefore Alternative B would have a lesser impact than Alternative A on groundwater levels under Water Supply Option 2. As with Alternative A, the operation of Alternative B would have a less-than-significant effect on groundwater levels and quality. BMPs provided in **Section 2.3.3** would ensure impacts to groundwater levels and quality from stormwater recharge remain less than significant.

4.3.3 ALTERNATIVE C – NON-GAMING ALTERNATIVE

Surface Water

Impacts to surface water, including flooding, construction impacts, and stormwater runoff as a result of the development of Alternative C would be similar to those of Alternative A as both alternatives are similar in design and the stormwater retention basins and runoff control structures would be similar for both alternatives. However, Alternative C has a smaller development footprint than Alternative A, resulting in a reduced amount of runoff during storm events. Proposed drainage improvements would ensure that impacts to stormwater quality would be less than significant. BMPs provided in **Section 2.3.3** and mitigation measures presented in **Section 5.2** (as noted in **Section 5.3**) would both reduce construction impacts and further reduce stormwater runoff impacts to water quality, ensuring impacts remain less than significant.

Groundwater

Impacts to groundwater supply and quality as a result of the development of Alternative C would be similar to those of Alternative A as both alternatives are similar in design and would be provided water

and wastewater services by either local municipalities or on-site infrastructure. As with Alternative A, Alternative C would increase impervious surfaces, thereby decreasing direct recharge to groundwater on the Muskegon Site. However, stormwater would be collected on site and percolated into groundwater through retention basins, therefore returning groundwater recharge on site to pre-development levels. Alternative C would require approximately 90 percent less potable water than Alternative A, therefore Alternative C would have a lesser impact than Alternative A on groundwater levels under Water Supply Option 2. As with Alternative A, the operation of Alternative C would have a less-than-significant effect on groundwater levels and quality. BMPs provided in **Section 2.3.3** would ensure impacts to groundwater levels and quality from stormwater recharge and on-site water supply and wastewater treatment infrastructure remain less than significant.

4.3.4 ALTERNATIVE D – CUSTER SITE ALTERNATIVE

Surface Water

Flooding

The Custer Site is located outside the 100-year and 500-year floodplains; therefore, the Proposed Project would be in compliance with EO 11988. Alternative D would not impede or redirect flood flows, alter floodplain elevations, or affect floodplain management. No impacts related to flooding would occur as a result of Alternative D.

Construction Impacts

Alternative D construction activities would include clearing and grubbing, mass grading, and excavation, which could lead to erosion of topsoil. Alternative D would require approximately 45,500 cubic yards of cut and approximately 40,000 cubic yards of fill which could contribute to construction-related impacts as further discussed in **Section 4.2**, **Geology and Soils**. Implementation of mitigation measures presented in **Section 5.2** (as noted in **Section 5.3**) would reduce or prevent adverse effects to the local and regional watershed from construction activities. Therefore, impacts associated with water quality from construction of Alternative D would be less than significant with mitigation.

Stormwater Runoff

Stormwater discharge from commercial areas may be of concern in managing surface water quality. Pollutants that accumulate in dry periods such as oil and grease, asbestos, pesticides, and herbicides, may create water quality problems due to their presence in high concentrations during the first major storm event of the season. Development of the casino and parking lots, would generate increased runoff during rain events due to an increase in impervious surfaces on the Custer Site which would increase stormwater runoff. Stormwater runoff under Alternative D would be collected and directed into on-site rain gardens or bioswales for treatment before flowing into the proposed detention basin. The detention basin has been sized to reduce peak flows from a 100-year rain event under fully developed conditions to the flow rate produced by the current undeveloped site during a 20-year rain event (approximately 3.01 cubic feet per second). Similar reductions have been provided for less intensive event. The outlet of the detention basin would extended to a suitable location south of the detention basin or spread out to produce non-erosive velocities. Additionally, BMPs provided in **Section 2.3.3** would minimize potential effects to stormwater runoff and water quality. With the development of the proposed stormwater facilities, there would be

less-than-significant impacts to surface waters, and Alternative D would not contribute to the exceedance of established TMDLs.

Groundwater Levels

The construction of impervious surfaces on the site could reduce groundwater recharge in areas where surface percolation accounts for a large percentage of natural recharge, resulting in the lowering of the groundwater. Although the development of Alternative D would introduce large areas of impermeable surfaces, the use of detention ponds for storing stormwater would allow collected stormwater to percolate into the groundwater table. Therefore, the introduction of impermeable surfaces on the Custer Site would not have a significant adverse impact on groundwater levels.

Municipal Water Connection (Water Supply Option 1)

Under Water Supply Option 1, potable water would be provided by the City of Scottville. As described in **Section 3.10**, the City of Scottville relies on Lake Michigan surface water purchased from the City of Ludington and treated in the Ludington Water Treatment Plant (LWTP; Fleis & Vandenbrink, 2016d; **Appendix D**). As discussed in detail of **Appendix D**, Alternative D would require approximately 37,536 GPD of potable water at full buildout. Alternative D would not have significant impacts to aquifers under Water Supply Option 1, as no groundwater would be used for the project.

On-site Water Supply (Water Supply Option 2)

Under the Water Supply Option 2, on-site wells would supply the project with water for domestic use, emergency supply, and fire protection. As described above, Alternative D would require approximately 37,536 GPD of potable water at full buildout. Additionally, BMPs provided in **Section 2.3.3** would minimize potential effects to water resources. Due to the high static water levels in the aquifer, and the lack of other groundwater users in the area, impacts to groundwater levels as the result of Alternative D under Water Supply Option 2 would be less than significant.

Groundwater Quality

Runoff from project facilities could flush trash, debris, oil, sediment, and grease that accumulate on impervious surfaces into stormwater runoff. Fertilizers used in landscaped areas could also accumulate in stormwater if over applied. The detention basins would percolate some of the accumulated stormwater into the shallow aquifer, potentially transporting chemical contaminants into the groundwater. As noted in **Appendix D**, several features designed to filter surface runoff have been incorporated into the project design. These features include the use of rain gardens and bioswales to remove suspended solids such as trash, sediment, and other potential materials that could degrade water quality. Additionally, BMPs provided in **Section 2.3.3** would minimize potential effects to water resources. Therefore, the impact to groundwater quality from stormwater runoff would be less than significant.

Municipal Treatment and Disposal (Wastewater Treatment Option 1)

Under Wastewater Treatment Option 1, wastewater generated by Alternative D would be treated at the Ludington Wastewater Treatment Plant (LWWTP), which treats approximately 2.5 MGD, and has a

capacity of 3.5 MGD. The LWWTP has 31 acres of aerated lagoons, which have a capacity of 90 MG. Lagoon effluent enters the plant's clarifiers and is treated, disinfected, and discharged into the Pere Marquette River. The LWWTP would continue to operate in accordance with its NPDES Permit (Permit No. MI00221334) issued by the MDEQ. Therefore, the impact to ground water quality from wastewater under Wastewater Treatment Option 1 would be less than significant.

On-Site Treatment and Disposal (Wastewater Treatment Option 2)

Under Wastewater Treatment Option 2, Alternative D would include the development of an on-site packaged wastewater treatment system. On-site disposal of wastewater would be accomplished through an approximately 25,000-sf leach field that would allow treated wastewater to drain into the soil. The exact size, depth, and configuration of the leach field would be subject to final engineering design based on depth to groundwater and soil permeability. As the on-site wastewater treatment system would be located on trust land, treatment requirements with respect to wastewater effluent quality for on-site disposal would be regulated by the USEPA. USEPA requirements are typically based on local groundwater conditions. The disposal of wastewater on site via subsurface drainage would be regulated by the USEPA within the UIC program. The subsurface drainage system would constitute a Class V injection well and would be registered with USEPA as such. Wastewater effluent that reaches groundwater would be of sufficient quality and would not contribute to groundwater quality issues in the vicinity of the Custer Site. Therefore, effects to groundwater associated with Alternative D under Wastewater Treatment Option 2 would be less than significant.

4.3.5 ALTERNATIVE E – NO ACTION/NO DEVELOPMENT ALTERNATIVE

Under the No Action/No Development Alternative, no development would occur on the alternative sites. No change in land use is proposed, and the sites would remain in their current state. Surface water would continue to runoff in sheet flow towards existing depressions on site, and no impervious surfaces would be added. Groundwater would not be affected by percolation of storm water, and no groundwater would be extracted to serve the project. No mitigation is required.

4.4 AIR QUALITY

This section assesses the significance of the direct effects to air quality that would result from the development of each alternative described in **Section 2.0**. Effects are measured against the environmental baseline presented in **Section 3.4**. Indirect effects associated with off-site construction and growth-inducement are identified in **Section 4.14**. Cumulative effects are identified in **Section 4.15**.

Assessment Criteria

Significant effects to ambient air quality could result if either construction or operation would result in violations of provisions of the Clean Air Act (CAA), or if emissions would impede a state's ability to meet National Ambient Air Quality Standards (NAAQS).

4.4.1 METHODOLOGY

One criterion for determining the significance of impacts to air quality is compliance with a number of federal regulations. Another criterion is whether the alternatives are protective of public health and safety. Development and operation of the alternatives would emit criteria air pollutants (CAPs), hazardous air pollutants (HAPs), and greenhouse gases (GHGs). During construction, CAP, HAP, and GHG emissions from earth-moving activities, diesel-fueled trucks, and construction equipment would occur. During operation, CAP, HAP, and GHG emissions from patron, worker, and delivery vehicles and on-site stationary sources (i.e. boilers and stoves) would occur. This section presents the methodology used to assess the affected environment and to evaluate the potential air quality effects of the proposed alternatives.

Construction Analysis

Construction would entail mass earthwork, fine grading, building, road, and parking lot construction. A mixture of trucks, scrapers, excavators, and graders would be used to complete each phase. Effects on air quality during construction were evaluated by estimating the amount of pollutants that would be emitted over the duration of the construction period (for each phase of construction where applicable). Fugitive particulate matter 10 and 2.5 micrometers in diameter (PM_{10} and $PM_{2.5}$, respectively) is the primary pollutant of concern resulting from earth-moving activities.

Reactive organic gases (ROGs), oxides of nitrogen (NO_x), sulfur dioxide (SO_2), carbon monoxide (CO), and diesel particulate matter (DPM) emissions from the construction of the development alternatives (Alternatives A, B, C, and D) would primarily be produced by diesel-fueled equipment use. The majority of these emissions would be from on and off-road construction equipment and truck use at the alternative sites. Emissions from diesel-fueled trucks and construction equipment were calculated using United States Environmental Protection Agency (USEPA) approved emission factors from the 2007 Off-Road air quality model (Off-Road, 2007). A detailed list of the proposed equipment and emissions resulting from the equipment is in **Appendix O**.

The majority of fugitive PM_{10} and $PM_{2.5}$ emissions would be generated during earth-moving activities, such as site preparation and grading. Air Quality Model 2011 Emission Factors (EMFAC) were used to

estimate PM_{10} and $PM_{2.5}$ project-related emissions. EMFAC's PM_{10} emissions factor is 38.2 pounds per acre-day and the $PM_{2.5}$ emissions factor is based on 28 percent of the PM_{10}'s emission factor. Actual particulate matter emissions from dust generation can vary day to day, depending on level of activity, specific operations, mitigation measures, and weather conditions. Emissions were estimated assuming that construction would begin in 2018 and continue at an average rate of 24 days per month for all alternatives. Alternatives A, B, C, and D total construction durations were estimated to be 18, 16, 16, and 12 months, respectively. Emissions results are summarized below and included in **Appendix O**.

Operational Analysis

Analysis was also completed to calculate the air quality impacts of day-to-day operations. Impacts from patron vehicle use were estimated for January and July (winter and summer) using emission factors of grams per vehicle miles traveled (g/vmt) from USEPA's Motor Vehicle Emission Simulator Version 2014 (MOVES) model (USEPA, 2014b). MOVES calculates emissions for gasoline-fueled and diesel-fueled light-duty vehicles, trucks, heavy-duty vehicles, and motorcycles. The model accounts for progressively more stringent tailpipe emission standards over the vehicle model years evaluated. MOVES model input data is site specific and the output data is provided in **Appendix O**.

Mobile Source Emissions

Emissions of PM_{10}, NO_x, SO_2, CO, volatile organic compounds (VOCs), and CO_2 from vehicles traveling to, from, and within the alternative sites were calculated for each alternative. Calculations were based on emission factors derived from the USEPA's MOVES air quality model, trip estimations developed using the Institute of Transportation Engineers (ITE) Trip Generation Manual, and estimated number of patrons for the project alternatives. Emissions factors for SO_2 were derived from the USEPA's AP-42 and used to estimate project related SO_2 emissions (USEPA, 1995).

Stationary Source Emissions

For each of the project alternatives, natural gas would be used as fuel for hot water boilers, space heating, domestic water heaters, steam boilers for food service, cooking equipment, laundry equipment, and swimming pool heaters. Based on the USEPA's Energy Use by Property Type report, annual gas usage for Alternative A, is estimated at 27.63 million standard cubic feet (MMscf). Alternative B natural gas use is estimated to be 2.73 MMscf per year, Alternative C natural gas use is estimated at 13.40 MMscf, and Alternative D natural gas use is estimated at 2.29 MMscf (USEPA, 2016e).

Carbon Monoxide Hot Spot Analysis

Implementation of each of the project alternatives would result in emissions of CO. CO disperses rapidly with increased distance from the source, and therefore emissions of CO are considered localized pollutants of concern rather than regional pollutants, and can be evaluated by Hot Spot Analysis. In accordance with 40 Code of Federal Regulations (CFR) 93.123, quantitative analysis is required to be conducted if the following criteria are met:

- For projects in or affecting locations, areas, or categories of sites which are identified in the applicable implementation plan as sites of violation or possible violation;

- For projects affecting intersections that are at level of service (LOS) D, E, or F, or those that will change to LOS D, E, or F because of increased traffic volumes related to the project;
- For any project affecting one or more of the top three intersections in the nonattainment or maintenance area with highest traffic volumes, as identified in the applicable implementation plan; and
- For any project affecting one or more of the top three intersections in the nonattainment or maintenance area with the worst LOS, as identified in the applicable implementation plan.

Neither the Muskegon Site nor Custer Site is in an affected location, area, or category of site which has been identified in the state implementation plan (USEPA, 2016d). As shown in the Traffic Impact Study (TIS), provided as **Appendix J** four intersections in the vicinity of the Muskegon Site are currently operating at LOS D, E, or F. After mitigation, no intersection in the study area would operate at LOS D, E, or F. No intersections are currently operating at LOS D, E, or F would worsen due to project-related traffic at the Custer Site. The development alternatives are not located in a nonattainment or maintenance area. Therefore, no quantitative hot spot analysis is required.

Pollutants of Concern

This EIS considers whether project emissions have individual or cumulative effects on greenhouse gas (GHG) emissions to address comments received during scoping. Given the global nature of GHG impacts, individual project impacts are most appropriately addressed in terms of the incremental contribution to a global cumulative impact (provided in **Section 4.15**). Therefore, refer to **Section 4.15** for a discussion and analysis of cumulative impacts related to GHG emissions.

4.4.2 ALTERNATIVE A – PROPOSED PROJECT

Construction Emissions

Construction of Alternative A would emit PM_{10}, NO_x, SO_2, CO, VOC, GHGs, and HAPs (primarily in the form of DPM) from the use of construction equipment and grading activities. Emissions from construction equipment have the potential to increase the concentration of DPM in the close vicinity (within approximately 500 feet) of the construction site, if control measures are not implemented.

Construction is anticipated to begin in 2018 and last approximately 18 months. Construction is assumed to occur eight hours a day, six days a week. The construction emission totals for the Alternative A are shown in **Table 4.4-1**.

Muskegon County is in attainment for all criteria pollutants; therefore, in accordance with 40 CFR §93, the intermittent construction emissions of Alternative A would not significantly impact an area exceeding the NAAQS. Best Management Practices (BMPs) provided in **Section 2.3.3** would minimize construction related emissions of criteria pollutants. Specifically, **Air Quality BMP (B)(2)** would reduce DPM emissions from construction equipment by approximately 85 percent, avoiding potentially adverse effects to nearby sensitive receptors. Therefore, construction of Alternative A would not result in significant adverse effects associated with the regional air quality environment. Alternative A is compliant with mandates for construction emissions.

TABLE 4.4-1
CONSTRUCTION EMISSIONS – ALTERNATIVE A[1]

Construction Year	Criteria Pollutants					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Tons Per Year					
2018	2	31	9	4	36	5
2019	3	15	11	2	1	1
Maximum Year Emissions	**3**	**31**	**11**	**4**	**36**	**5**
De Minimis Level	N/A	N/A	N/A	N/A	N/A	N/A

Notes: N/A = Not Applicable; *de minimis* levels are not applicable due to attainment status (refer to **Section 3.4**); units rounded to nearest ton.
1 - Refer to **Appendix O**, Table 1

Operational Vehicle and Stationary Emissions

Buildout of Alternative A would result in the generation of mobile emissions from patron, employee, and delivery vehicles, as well as stationary emissions from combustion of natural gas in boilers, stoves, heating units, and other equipment on the Muskegon Site. Estimated mobile and stationary emissions from operation of Alternative A are provided in **Table 4.4-2**. Detailed calculations of vehicle and area emissions are included as **Appendix O**.

TABLE 4.4-2
OPERATION EMISSIONS – ALTERNATIVE A[1]

Sources	Criteria Pollutants					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Tons Per Year					
Stationary	0	2	1	0	0	0
Mobile	17	94	388	1	10	4
Total Emissions	**17**	**96**	**389**	**1**	**10**	**4**
De Minimis Level	N/A	N/A	N/A	N/A	N/A	N/A

Notes: N/A = Not Applicable; *de minimis* levels are not applicable due to attainment status (refer to **Section 3.4**).
1 - Refer to **Appendix O**, Table 9

The Muskegon Site is in a region of attainment for all criteria pollutants. Under the federal CAA 40 CFR §93, if a region is in attainment for all criteria pollutants, then the region meets the NAAQS and there are no *de minimis* levels applicable to Alternative A. Within attainment areas, stationary source operations at non-industrial facilities have a threshold of 250 tons per year (tpy) of any regulated pollutant to prevent significant deterioration of the area with an attainment designation. As shown in **Table 4.4-2**, the stationary source emissions are order of magnitudes below the Prevention of Significant Deterioration (PSD) program thresholds. In addition, operational emissions from stationary sources would not exceed the minor new source review (NSR) thresholds and, therefore, an associated minor NSR permit would not likely be required. BMPs provided in **Section 2.3.3** would minimize CAP emissions from operation of Alternative A. With these BMPs, Alternative A would not result in significant adverse effects associated

with the regional air quality environment. Alternative A is compliant with mandates for operational vehicle and area emissions.

General Conformity Determination

Conformity regulations apply to federal actions that would cause emissions of CAPs above certain levels to occur in locations designated as non-attainment or maintenance areas for the emitted pollutants. If project-related emissions from a federal action occurs in a location designated as attainment or unclassified, then the general conformity regulation does not apply to the proposed project; however, if project-related emissions occur in a nonattainment or maintenance area then general conformity regulation would apply. Since project-related indirect emissions from vehicle and direct on-site area emissions would not occur in a maintenance or nonattainment area, a general conformity analysis is not warranted.

Tribal Minor New Source Review

The Tribe would be required to apply for a permit under the minor NSR requirements of the CAA if stationary source operational allowable emissions of regulated pollutants would exceed the thresholds presented in 40 CFR §49.153, Table 1. Allowable emissions are the maximum rated capacity of stationary source, unless the source is subject to federally-enforceable limits restricting the operating rate and/or hours. The emergency generator is not federally regulated and, therefore, will be assessed not on anticipated emissions from the few times a year the generator is likely to be operated, but its full capacity. As shown in **Table 3.4-2**, Table 1 of 40 CFR §49.153 provides the following applicable emission thresholds for stationary sources in an attainment area: 10 tpy CO; 10 tpy NO_x; 10 tpy sulfur oxide gases (SO_x); 5 tpy VOC; 5 tpy PM_{10}; and 3 tpy $PM_{2.5}$. It is likely that the allowable emissions from the emergency generator will exceed these standards and a Minor NSR Permit will be required.

4.4.3 ALTERNATIVE B – REDUCED INTENSITY ALTERNATIVE

Construction Emissions

Construction emissions for Alternative B would be from the same sources as Alternative A. Alternative B construction is anticipated to begin in 2018 and last approximately 16 months. Construction emission totals for the Alternative B are shown in **Table 4.4-3**.

The Muskegon Site is in a region of attainment for all CAPs; therefore, in accordance with 40 CFR §93, the intermittent construction emissions of Alternative A would not significantly impact an area exceeding the NAAQS. BMPs provided in **Section 2.3.3** would minimize construction-related emissions of criteria pollutants. Specifically, **Air Quality BMP (B)(2)** would reduce DPM emissions from construction equipment by approximately 85 percent, avoiding potentially adverse effects to nearby sensitive receptors. Therefore, with mitigation, construction of Alternative B would not result in significant adverse effects associated with the regional air quality environment. Alternative B is compliant with mandates for construction emissions.

TABLE 4.4-3
CONSTRUCTION EMISSIONS – ALTERNATIVE B[1]

Construction Year	Criteria Pollutants					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Tons Per Year					
2018	2	31	9	4	33	5
2019	2	8	8	1	1	1
Maximum Years Emissions	**2**	**31**	**9**	**4**	**33**	**5**
De Minimis Level	N/A	N/A	N/A	N/A	N/A	N/A

Notes: N/A = Not Applicable; *de minimis* levels are not applicable due to attainment status (refer to **Section 3.4**).
1 - Refer to **Appendix O**, Table 2

Operational Vehicle and Area Emissions

Buildout of Alternative B would result in the generation of mobile emissions from patron, employee, and delivery vehicles, as well as stationary emissions from combustion of natural gas in boilers and other equipment on the Muskegon Site. Estimated mobile and stationary emissions from operation of Alternative B are provided in **Table 4.4-4**. Detailed calculations of vehicle and area emissions are included as **Appendix O**.

TABLE 4.4-4
OPERATION EMISSIONS – ALTERNATIVE B[1]

Sources	Criteria Pollutants					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Tons Per Year					
Stationary	0	2	1	0	0	0
Mobile	10	56	231	0	6	3
Total Emissions	**10**	**58**	**232**	**0**	**6**	**3**
De Minimis Level	N/A	N/A	N/A	N/A	N/A	N/A

Notes: N/A = Not Applicable; *de minimis* levels are not applicable due to attainment status (refer to **Section 3.4**).
1 - Refer to **Appendix O**, Table 9

The Muskegon Site is in a region of attainment for all criteria pollutants. Under the federal CAA 40 CFR §93, if a region is in attainment for all criteria pollutants, then the region meets the NAAQS and there are no *de minimis* levels applicable to Alternative B. Within attainment areas, stationary source operations at non-industrial facilities have a threshold of 250 tpy of any regulated pollutant to prevent significant deterioration of the area with an attainment designation. As shown in **Table 4.4-4**, the stationary source emissions are order of magnitudes below the PSD program thresholds. In addition, operational emissions from stationary sources would not exceed the minor NSR thresholds and therefore, an associated Minor NSR Permit would not likely be required. BMPs provided in **Section 2.3.3** would minimize CAP emissions from operation of Alternative B. With these BMPs, Alternative B would not result in significant adverse effects associated with the regional air quality environment. Alternative B is compliant with mandates for operational vehicle and area emissions.

General Conformity Determination

As described above, conformity regulations apply to federal actions that would cause emissions of CAPs above certain levels to occur in locations designated as non-attainment or maintenance areas for the emitted pollutants. If project-related emissions from a federal action occurs in a location designated as attainment or unclassified, then the general conformity regulation does not apply to the project; however, if project-related emissions occur in a nonattainment or maintenance area then general conformity regulation would apply. Since project-related indirect emissions from vehicle and direct on-site area emissions would not occur in a maintenance or nonattainment area, a general conformity analysis is not warranted under Alternative B.

Tribal Minor New Source Review

The Tribe would be required to apply for a permit under the minor NSR requirements of the CAA if stationary source operational allowable emissions of regulated pollutants would exceed the thresholds presented in 40 CFR §49.153, Table 1. Allowable emissions are the maximum rated capacity of stationary source, unless the source is subject to federally-enforceable limits restricting the operating rate and/or hours. The emergency generator is not federally regulated and, therefore, will be assessed not on anticipated emissions from the few times a year the generator is likely to be operated, but its full capacity. As shown in **Table 3.4-2**, Table 1 of 40 CFR §49.153 provides the following applicable emission thresholds for stationary sources in an attainment area: 10 tpy CO; 10 tpy NO_x; 10 tpy SO_x; 5 tpy VOC; 5 tpy PM_{10}; and 3 tpy $PM_{2.5}$. It is likely that the allowable emissions from the emergency generator will exceed these standards and a Minor NSR Permit will be required.

4.4.4 ALTERNATIVE C – NON-GAMING ALTERNATIVE

Construction Emissions

Construction of Alternative C would be less intensive than construction of Alternative A or B. Refer to **Section 4.4.2**. Alternative C construction is anticipated to begin in 2018 and last approximately 16 months. Construction for Alternative C is assumed to occur eight hours a day, six days a week. Construction emission totals for the Alternative C are shown in **Table 4.4-5**.

TABLE 4.4-5
CONSTRUCTION EMISSIONS – ALTERNATIVE C[1]

Construction Year	Criteria Pollutants					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Tons Per Year					
2018	2	31	9	4	33	5
2019	1	7	6	1	1	1
Maximum Years Emissions	**2**	**31**	**9**	**4**	**33**	**5**
De Minimis Level	N/A	N/A	N/A	N/A	N/A	N/A

Notes: N/A = Not Applicable; *de minimis* levels are not applicable due to attainment status (refer to **Section 3.4**).
1 - Refer to **Appendix O**, Table 3.

The Muskegon Site is in a region of attainment for all criteria pollutants; therefore, in accordance with 40 CFR §93, the intermittent construction emissions of Alternative C would not significantly impact an area exceeding the NAAQS. BMPs provided in **Section 2.3.3** would minimize construction related emissions of criteria pollutants. Specifically, **Air Quality BMP (B)(2)** would reduce DPM emissions from construction equipment by approximately 85 percent, avoiding potentially adverse effects to nearby sensitive receptors. Therefore, with mitigation, construction of Alternative C would not result in significant adverse effects associated with the regional air quality environment. Alternative C is compliant with mandates for construction emissions.

Operational Vehicle and Area Emissions

Buildout of Alternative C would result in the generation of mobile emissions from patron, employee, and delivery vehicles, as well as stationary emissions from combustion of natural gas in boilers and other equipment on the Muskegon Site. Estimated mobile and stationary emissions from operation of Alternative C are provided in **Table 4.4-6**. Detailed calculations of vehicle and area emissions are included as **Appendix O**.

TABLE 4.4-6
OPERATION EMISSIONS – ALTERNATIVE C[1]

Sources	Criteria Pollutants					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Tons Per Year					
Stationary	0	2	1	0	0	0
Mobile	6	21	101	0	2	1
Total Emissions	**6**	**23**	**102**	**0**	**2**	**1**
De Minimis Level	N/A	N/A	N/A	N/A	N/A	N/A

Notes: N/A = Not Applicable; *de minimis* levels are not applicable due to attainment status (refer to **Section 3.4**).
1 - Refer to **Appendix O**, Table 9

The Muskegon Site is in a region of attainment for all criteria pollutants. Under the federal CAA 40 CFR §93, if a region is in attainment for all criteria pollutants, then the region meets the NAAQS and there are no *de minimis* levels applicable to Alternative C. Within attainment areas, stationary source operations at non-industrial facilities have a threshold of 250 tpy of any regulated pollutant to prevent significant deterioration of the area with an attainment designation. As shown in **Table 4.4-6**, the stationary source emissions are order of magnitudes below the PSD program thresholds. In addition, operational emissions from stationary sources would not exceed the minor NSR thresholds and therefore, an associated Minor NSR Permit would not likely be required. Alternative C is compliant with mandates for operational vehicle and area emissions.

General Conformity Determination

Conformity regulations apply to federal actions that would cause emissions of CAPs above certain levels to occur in locations designated as non-attainment or maintenance areas for the emitted pollutants. If project-related emissions from a federal action occurs in a location designated as attainment or

unclassified, then the general conformity regulation does not apply to the project. However, if project-related emissions occur in a nonattainment or maintenance area then the general conformity regulation would apply. Since project-related indirect emissions from vehicle and direct on-site area emissions would not occur in a maintenance or nonattainment area, a general conformity analysis is not warranted under Alternative C.

Tribal Minor New Source Review

The Tribe would be required to apply for a permit under the minor NSR requirements of the CAA if stationary source operational allowable emissions of regulated pollutants would exceed the thresholds presented in 40 CFR §49.153, Table 1. Allowable emissions are the maximum rated capacity of stationary source, unless the source is subject to federally-enforceable limits restricting the operating rate and/or hours. The emergency generator is not federally regulated, and therefore will be assessed not on anticipated emissions from the few times a year the generator is likely to be operated, but its full capacity. As shown in **Table 3.4-2**, Table 1 of 40 CFR §49.153 provides the following applicable emission thresholds for stationary sources in an attainment area: 10 tpy CO; 10 tpy NO_x; 10 tpy SO_x; 5 tpy VOC; 5 tpy PM_{10}; and 3 tpy $PM_{2.5}$. It is likely that the allowable emissions from the emergency generator will exceed these standards and a Minor NSR Permit will be required.

4.4.5 ALTERNATIVE D – CUSTER SITE ALTERNATIVE

Construction Emissions

Construction emissions for Alternative D would be from the same sources as Alternative A. Alternative D construction is anticipated to begin in 2018 and last approximately 12 months. Construction emission totals for the Alternative D are shown in **Table 4.4-7**.

TABLE 4.4-7
CONSTRUCTION EMISSIONS – ALTERNATIVE D[1]

Construction Year	Criteria Pollutants					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Tons Per Year					
2018	1	5	3	1	2	1
2019	1	2	2	0	0	0
Maximum Years Emissions	**1**	**5**	**3**	**1**	**2**	**1**
De Minimis Level	N/A	N/A	N/A	N/A	N/A	N/A

Notes: N/A = Not Applicable; *de minimis* levels are not applicable due to attainment status (refer to **Section 3.4**).
1 - Refer to **Appendix O**, Table 4.

The Custer Site is in a region of attainment for all criteria pollutants; therefore, in accordance with 40 CFR §93, intermittent construction emissions of the Alternative D would not significantly impact an area exceeding the NAAQS. BMPs provided in **Section 2.3.3** would minimize construction-related emissions of criteria pollutants. Specifically, **Air Quality BMP (B)(2)** would reduce DPM emissions from construction equipment by approximately 85 percent, avoiding potentially adverse effects to nearby sensitive receptors. Therefore, with mitigation, construction of Alternative D would not result in

significant adverse effects associated with the regional air quality environment. Alternative D is compliant with mandates for construction emissions.

Operational Vehicle and Area Emissions

Buildout of Alternative D would result in the generation of mobile emissions from patron, employee, and delivery vehicles, as well as stationary emissions from combustion of natural gas in boilers and other equipment on the Custer Site. Estimated mobile and stationary emissions from operation of Alternative D are provided in **Table 4.4-8**. Detailed calculations of vehicle and area emissions are included as **Appendix O**.

TABLE 4.4-8
OPERATION EMISSIONS – ALTERNATIVE D[1]

Sources	Criteria Pollutants					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Tons Per Year					
Stationary	0	2	1	0	0	0
Mobile	3	13	57	0	1	1
Total Emissions	**3**	**15**	**58**	**0**	**1**	**1**
De Minimis Level	N/A	N/A	N/A	N/A	N/A	N/A

Notes: N/A = Not Applicable; *de minimis* levels are not applicable due to attainment status (refer to **Section 3.4**).
1 - Refer to **Appendix O**, Table 9

The Custer Site is in a region of attainment for all CAPs. Under the federal CAA 40 CFR §93, if a region is in attainment for all CAPs, then the region meets the NAAQS and there are no *de minimis* levels applicable to Alternative D. Within attainment areas, stationary source operations at non-industrial facilities have a threshold of 250 tpy of any regulated pollutant to prevent significant deterioration of the area with an attainment designation. As shown in **Table 4.4-8**, the stationary source emissions are order of magnitudes below the PSD program thresholds. In addition, operational emissions from stationary sources would not exceed the minor NSR thresholds and therefore, an associated Minor NSR Permit would not likely be required. Alternative D is compliant with mandates for operational vehicle and area emissions.

General Conformity Determination

Conformity regulations apply to federal actions that would cause emissions of CAPs above certain levels to occur in locations designated as non-attainment or maintenance areas for the emitted pollutants. If project-related emissions from a federal action occurs in a location designated as attainment or unclassified, then the general conformity regulation does not apply to the project. However, if project-related emissions occur in a nonattainment or maintenance area then general conformity regulation would apply. Since project-related indirect emissions from vehicle and direct on-site area emissions would not occur in a maintenance or nonattainment area, a general conformity analysis is not warranted under Alternative D.

Tribal Minor New Source Review

The Tribe would be required to apply for a permit under the minor NSR requirements of the CAA if stationary source operational allowable emissions of regulated pollutants would exceed the thresholds presented in 40 CFR §49.153, Table 1. Allowable emissions are the maximum rated capacity of stationary source, unless the source is subject to federally-enforceable limits restricting the operating rate and/or hours. The emergency generator is not federally regulated, and therefore will be assessed not on anticipated emissions from the few times a year the generator is likely to be operated, but its full capacity. As shown in **Table 3.4-2**, Table 1 of 40 CFR §49.153 provides the following applicable emission thresholds for stationary sources in an attainment area: 10 tpy CO; 10 tpy NO_x; 10 tpy SO_x; 5 tpy VOC; 5 tpy PM_{10}; and 3 tpy $PM_{2.5}$. It is likely that the allowable emissions from the emergency generator will exceed these standards and a Minor NSR Permit will be required.

4.4.6 ALTERNATIVE E – NO ACTION/NO DEVELOPMENT ALTERNATIVE

Under the No Action/No Development Alternative, no development would occur on the alternative sites. No construction or operational mobile or stationary criteria pollutants or DPM emissions would be generated under this alternative; therefore, no adverse effects are anticipated to occur.

4.5 BIOLOGICAL RESOURCES

This section assesses the significance of the effects to biological resources that would result from the development of each alternative described in **Section 2.0**. Effects are measured against the environmental baselines presented in **Section 3.5**. Cumulative and indirect effects are identified in **Section 4.15** and **Section 4.14**, respectively. Measures to mitigate adverse effects identified in this section are presented in **Section 5.0**.

Assessment Criteria

This section evaluates the following potential effects to biological resources and considers that a project alternative would have a significant impact on biological resources if it:

- Has a substantial adverse effect on habitat necessary for the future survival of such species, including areas designated as critical habitat by the United States Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (NMFS) and areas designated as Essential Fish Habitat (EFH) by the NMFS;
- Has a substantial adverse effect on special-status species pursuant to the Federal Endangered Species Act (FESA);
- Results in take of migratory bird species as defined by the Migratory Bird Treaty Act (MBTA) (16 United States Code [USC] §703-712); or
- Has a substantial adverse direct or indirect effect on federally-protected wetlands as defined by Section 404 of the federal Clean Water Act (CWA) through direct removal, filling, hydrological interruption, or by other means.

4.5.1 ALTERNATIVE A – PROPOSED PROJECT

No Potential Effects to Habitats

Table 4.5-1 provides a summary of the acreage of each habitat type that would be affected under Alternative A. As shown in this table, Alternative A would affect approximately 86.5 acres of mostly ruderal/developed habitat within the Muskegon Site. None of the habitats that would be affected by the implementation of Alternative A are considered sensitive biological communities; therefore, no significant adverse effects would occur.

TABLE 4.5-1
ANTICIPATED EFFECTS TO HABITAT TYPES – ALTERNATIVE A

Habitat Type	Acres
Ruderal/Developed	82.4
Detention Basins	4.05
Roadside Ditch	0.05
Total	**86.5**

There are likely no jurisdictional wetlands or other Waters of the U.S. located within the Muskegon Site. The five existing detention basins and roadside ditch are man-made features designed to capture runoff from impervious surfaces within the Muskegon Site. These features appear to be excavated from upland habitat and isolated from any traditionally navigable waters or other Waters of the U.S. and therefore, none would be subject to United States Army Corps of Engineers (USACE) jurisdiction under Section 404 of the CWA.

Potential Effects to Federally-Listed Species

Three federally-listed wildlife species have the potential to occur within the Muskegon Site: the federally-threatened northern long-eared bat (*Myotis septentrionalis*), the federally-endangered Indiana bat (*Myotis sodalis*), and the eastern massasauga rattlesnake (*Sistrurus catenatus*), a federally-threatened species.

The northern long-eared bat was not observed during the 2013 or 2015 biological assessments; however, suitable roosting habitat was observed. Alternative A could impact the northern long-eared bat through demolition or removal of roosting habitat; therefore, **Mitigation Measure 5.5(C)** would ensure demolition or removal of potential roosting habitat occurs outside of the summer roosting season.

The Indiana bat was not observed during the 2013 or 2015 Summer Habitat Assessment Surveys; however, marginally suitable roosting habitat was observed. Alternative A could impact the Indiana bat through demolition or removal of roosting habitat; therefore, **Mitigation Measure 5.5(C)** would ensure demolition or removal of potential roosting habitat occurs outside of the summer roosting season.

The eastern massasauga rattlesnake was not observed during the 2013 or 2015 biological assessments; however, marginally suitable upland habitat was observed. Alternative A could impact the eastern massasauga through direct mortality; therefore, **Mitigation Measure 5.5(B)** would require pre-construction surveys to ensure the eastern massasauga rattlesnake is either not present, or is relocated and/or avoided during construction.

Therefore, Alternative A has the potential to impact federally-listed wildlife species. However, with the implementation of the mitigation measures identified in **Section 5.5**, Alternative A would have a less-than-significant impact.

No Potential Effects to State-Listed Species

Alternative A is a federal fee-to-trust project and therefore, state-listed species are generally not afforded protection under FESA. However, state-listed species were considered during the biological resources assessment survey of the Muskegon Site because a portion of the Muskegon Site will remain in fee simple and, therefore, be subject to State and local laws. As described in **Section 3.5.3**, due to the overall low quality of habitat on the Muskegon Site, none of the state-listed species that have the potential to occur in the area would be expected to occur within the site. Therefore, Alternative A would have no effect on state-listed plants or wildlife species.

No Potential Effects to Migratory Birds

Migratory birds and other birds of prey protected under the MBTA (50 Code of Federal Regulations [CFR] §10) have the potential to nest within and in the vicinity of the Muskegon Site. If active nests are present in these areas, tree removal and other construction activities associated with Alternative A could result in impacts to these species. Implementation of mitigation identified in **Section 5.5**, including conducting a pre-construction survey and establishing buffers should active nests be observed, would reduce the potential for the Alternative A to significantly adversely affect active nests of migratory birds and other birds of prey within the Muskegon Site, compliant with the MBTA. Therefore, this impact is less than significant with mitigation.

No Potential Effects to Wetlands and/or Waters of the U.S.

There are likely no jurisdictional wetlands or other Waters of the U.S. located within the Muskegon Site. The five existing detention basins and roadside ditch are man-made features designed to capture runoff from impervious surfaces within the Muskegon Site. These features appear to be excavated from upland habitat and are isolated from any traditionally navigable waters or other Waters of the U.S. Prior to disturbing these areas, confirmation from the USACE that they are not jurisdictional shall be obtained. Implementation of mitigation identified in **Section 5.2**, including erosion and siltation controls around ground disturbing activities, and the mitigation identified in **Section 5.5**, including a wetland delineation, would ensure that Alternative A would not result in significant effects to federally-regulated Waters of the U.S.

4.5.2 ALTERNATIVE B – REDUCED INTENSITY ALTERNATIVE

No Potential Effects to Habitats

Similar to Alternative A, Alternative B would affect ruderal/developed habitat within the Muskegon Site. None of the habitats that would be affected by the implementation of Alternative B are considered sensitive biological communities; therefore, no adverse effects would occur.

Potential Effects to Federally-Listed Species

Similar to Alternative A, Alternative B has the potential to impact the federally-threatened northern long-eared bat (*Myotis septentrionalis*), the federally-endangered Indiana bat (*Myotis sodalis*), and the federally-threatened eastern massasauga rattlesnake (*Sistrurus catenatus*). Refer to **Section 4.5.1**. However, with the implementation of the mitigation measures identified in **Section 5.5**, Alternative B would have a less-than-significant impact.

No Potential Effects to State-Listed Species

Similar to Alternative A, no state-listed plants or wildlife species are expected to occur within the Muskegon Site due to lack of suitable habitat. Therefore, Alternative B would also result in no effect on state-listed plants or wildlife species.

No Potential Effects to Migratory Birds

Similar to Alternative A, Alternative B has the potential to impact nesting birds within the Muskegon Site. However, with the implementation of the mitigation measures identified in **Section 5.5**, the impacts to potentially occurring nesting birds would be less than significant.

No Potential Effects to Wetlands and/or Waters of the U.S.

Similar to Alternative A, there are likely no wetlands or other Waters of the U.S. located within the Muskegon Site. Prior to disturbing aquatic features such as the 5 existing detention basins, confirmation from the USACE that they are not jurisdictional shall be obtained. Implementation of mitigation identified in **Section 5.2**, including erosion and siltation controls around all ground disturbing activities, and the mitigation identified in **Section 5.5**, including a wetland delineation, would ensure that Alternative B would result in no significant effects to federally-regulated Waters of the U.S.

4.5.3 ALTERNATIVE C – NON-GAMING ALTERNATIVE

No Potential Effects to Habitats

Similar to Alternatives A and B, Alternative C would affect ruderal/developed habitat within the Muskegon Site. None of the habitats that would be affected by the implementation of Alternative C are considered sensitive biological communities; therefore, no adverse effects are expected to occur.

Potential Effects to Federally-Listed Species

Similar to Alternatives A and B, Alternative C has the potential to impact the federally-threatened northern long-eared bat (*Myotis sepentrionalis*), the federally-endangered Indiana bat (*Myotis sodalis*), and the Eastern massasauga rattlesnake (*Sistrurus catenatus*), a federally-threatened species. Refer to **Section 4.5.1**. However, with the implementation of the mitigation measures identified in **Section 5.5**, Alternative C would have a less-than-significant impact.

No Potential Effects to State-Listed Species

Similar to Alternatives A and B, no state-listed plants or wildlife species are expected to occur within the Muskegon Site due to lack of suitable habitat. Therefore, Alternative C would also result in no effect to state-listed plants or wildlife species.

No Potential Effects to Migratory Birds

Similar to Alternatives A and B, Alternative C has the potential to impact nesting birds within the Muskegon Site. However, with the implementation of the mitigation measures identified in **Section 5.5** for Alternative A, the impacts to potentially occurring nesting birds would be less than significant.

No Potential Effects to Wetlands and/or Waters of the U.S.

Similar to Alternatives A and B, there are likely no wetlands or other Waters of the U.S. located within the Muskegon Site. Prior to disturbing aquatic features such as the 5 existing detention basins,

confirmation from the USACE that they are not jurisdictional shall be obtained. Implementation of mitigation identified in **Section 5.2**, including erosion and siltation controls around all ground disturbing activities, and the mitigation identified in **Section 5.5**, including a wetland delineation, would ensure that Alternative C would result in no significant effects to federally-regulated Waters of the U.S.

4.5.4 ALTERNATIVE D – CUSTER SITE ALTERNATIVE

No Potential Effects to Habitats

Table 4.5-2 provides a summary of the acreage of each habitat type that would be affected under Alternative D. As shown in this table, Alternative D would affect approximately 45.27 acres of woodland and pastureland habitat within the Custer Site. None of the habitats that would be affected by the implementation of Alternative D are considered sensitive biological communities; therefore, no significant adverse effects would occur.

TABLE 4.5-2
ANTICIPATED EFFECTS TO HABITAT TYPES – ALTERNATIVE D

Habitat Type	Acres
Pastureland	30.05
Mixed Hardwood/Conifer Woodlands	12.98
Spruce Plantation	2.24
Total	**45.27**

Potential Effects to Federally-Listed Species

Three federally-listed wildlife species have the potential to occur within the Custer Site: the federally-threatened northern long-eared bat (*Myotis septentrionalis*), the federally-endangered Indiana bat (*Myotis sodalis*), and the eastern massasauga rattlesnake (*Sistrurus catenatus*), a federally-threatened species. The Custer Site possesses high quality roosting habitat for the two bat species. Therefore, Alternative D has the potential to impact federally-listed wildlife species. **Mitigation Measures 5.5(B)** and **5.5(D)** would require both pre-construction surveys to ensure the eastern massasauga rattlesnake is either not present, or is relocated and/or avoided during construction; and pre-construction surveys for the northern long-eared bat and Indiana bat. However, with the implementation of the mitigation measures identified in **Section 5.5**, Alternative D would have a less-than-significant impact on federally-listed species.

No Potential Effects to State-Listed Species

The Alternative D is in trust with the federal government and, therefore, state-listed species are not required to be analyzed. However, state-listed species were considered during the biological resources assessment survey of the Custer Site. As described in **Section 3.5.3**, in addition to the previously discussed federally-listed species, there is the potential for 10 plant species, 8 bird species, 4 reptile species, and 2 invertebrates species to occur on the Custer Site. Development of Alternative D may impact state-listed species; however, mitigation for reducing potential impacts on state-listed species is not warranted because the site is held in trust by the federal government and is not subject to the Michigan Natural Resources and Environmental Protection Act.

No Potential Effects to Migratory Birds

Alternative D has the potential to impact nesting birds within the Custer Site. However, with the implementation of the mitigation measures identified in in **Section 5.5**, the impacts to potentially occurring nesting birds would be less than significant.

No Potential Effects to Wetlands and/or Waters of the U.S.

Figure 3.5-3 shows potential wetlands within the Custer Site. These wetlands, if verified to be present, would be protected under Section 404 of the CWA. Implementation of mitigation identified in **Section 5.5**, including a formal wetland delineation and additional follow-up measures, as well as the mitigation proposed in **Section 5.2**, would ensure that Alternative D would result in no significant effects to federally-regulated Waters of the U.S.

4.5.5 ALTERNATIVE E – NO ACTION/NO DEVELOPMENT ALTERNATIVE

Under Alternative E, no project-related activities would occur within the alternative sites. Therefore, the No Action/No Development Alternative would have no effect on habitats, federally- or state-listed plants or wildlife, migratory birds, or jurisdictional Waters of the U.S.

4.6 CULTURAL AND PALEONTOLOGICAL RESOURCES

This section assesses the significance of the direct effects to cultural resources that would result from the development of each alternative described in **Section 2.0**. Effects are measured against the environmental baseline presented in **Section 3.6**. Indirect effects associated with off-site construction and growth-inducement are identified in **Section 4.14**. Cumulative effects are identified in **Section 4.15**. Measures to mitigate for adverse effects identified in this section are presented in **Section 5.6**.

Assessment Criteria

In accordance with Section 106 of the National Historic Preservation Act (NHPA; 40 Code of Federal Regulations [CFR] §1508.27 [b][8]) and the Antiquities Act of 1906 (PL 59-209; 16 United States Code [USC] §431 *et seq.*; 34 Stat. 225), a significant adverse impact would result if implementation of one of the alternatives resulted in one of the following effects to existing cultural resources:

- Physical destruction of or damage to all or part of a resource;
- Alteration of a resource;
- Removal of a resource from its historic location;
- Change of the character of a resource's use or of physical features within the resource's setting that contribute to its historic significance;
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the resource's significant historic features; or
- Neglect of a resource that causes its deterioration.

4.6.1 ALTERNATIVE A – PROPOSED PROJECT

Cultural Resources

As described in **Section 3.6**, an archaeological investigation of the Area of Potential Effects (APE; **Appendix H**) revealed no cultural resources within the Muskegon Site. Given the absence of pre-contact or historic properties, there will be no direct adverse effects to known National Register of Historic Places (NRHP)-eligible or listed properties as a result of the proposed actions of Alternative A. Therefore, Alternative A is in compliance with Section 106 of the NHPA.

There is a slight possibility that previously unknown cultural resources could be encountered during ground disturbing activities. This would be a potentially adverse effect. Mitigation measures are presented in **Section 5.6** for the treatment of unanticipated archaeological discoveries. Therefore, the project will not result in significant adverse effects to unknown archaeological resources.

Paleontological Resources

No paleontological resources have been reported or observed on or in the vicinity of the Muskegon Site. Therefore, Alternative A would not result in significant adverse effects to known paleontological resources.

There is a slight possibility that previously unknown paleontological resources could be discovered during earthmoving activities. Mitigation measures are presented in **Section 5.6** for the treatment of unanticipated paleontological discoveries which would ensure that Alternative A would not result in significant adverse effects to previously unknown paleontological resources.

4.6.2 ALTERNATIVE B – REDUCED INTENSITY ALTERNATIVE

Cultural Resources

As described in **Section 3.6**, an archaeological investigation of the APE (**Appendix H**) revealed no cultural resources within the Muskegon Site. Therefore, Alternative B will not result in significant adverse effects to historic properties, as discussed in **Section 4.6.1**. Mitigation measures for Alternative B are the same as those presented in **Section 5.6** for Alternative A for the treatment of unanticipated cultural resources discovered during project-related construction. With the implementation of these mitigations measures, Alternative B would not result in significant adverse effects to previously unknown cultural resources.

Paleontological Resources

As described in **Section 3.6**, no paleontological resources have been reported or observed on or in the vicinity of the Muskegon Site. Therefore, Alternative B will not result in significant adverse effects to known paleontological resources. Mitigation measures are presented in **Section 5.6** for the treatment of unanticipated paleontological discoveries. With the implementation of these mitigation measures, Alternative B would not result in significant adverse effects on previously unknown paleontological resources.

4.6.3 ALTERNATIVE C – NON-GAMING ALTERNATIVE

Cultural Resources

As described in **Section 3.6**, an archaeological investigation of the APE (**Appendix H**) revealed no cultural resources within the Muskegon Site. Therefore, Alternative C will not result in significant adverse effects to historic properties, as discussed in **Section 4.6.1**. Mitigation measures for Alternative C are the same as those presented in **Section 5.6** for Alternative A for the treatment of unanticipated cultural resources discovered during project related construction. With the implementation of these mitigations measures, Alternative C would not result in significant adverse effects to previously unknown cultural resources.

Paleontological Resources

As described in **Section 3.6**, no paleontological resources have been reported or observed on or in the vicinity of the Muskegon Site. Therefore, Alternative C would not result in significant adverse effects to previously known paleontological resources. Mitigation measures are presented in **Section 5.6** for the treatment of unanticipated paleontological discoveries. With the implementation of these mitigation measures, Alternative C would not result in significant adverse effects on previously unknown paleontological resources.

4.6.4 ALTERNATIVE D – CUSTER SITE ALTERNATIVE

Cultural Resources

As described in **Section 3.6**, a 2002 archaeological survey of the Custer Site (ACR, 2003) identified a total of 60 sites within the 1,087-acre Little River trust land, 52 prehistoric locations and 8 historic-era sites. Of those, only 20MN230, a historic-era site, is located in the Custer Site and could be affected by the construction of Alternative D. 20MN230 was a farmstead that included a barn, silo, shed, and residence. Shovel testing produced a few artifacts, such as round nails, hinges, screws, bolts, nuts, undecorated white ware, window glass, clear vessel glass, brick, shingles, and boards. The artifacts suggested an occupation date for the farm from approximately 1900 to 1950. This estimate is supported by period maps (ACR, 2003). The Andrews Cultural Resources (ACR) report (2003) suggested that the site does not require further study and therefore, at least indirectly, that the site is not recommended as eligible for listing on the National Register of Historic Places (NRHP). Therefore, Alternative D would not result in significant adverse effects to known historic properties.

Mitigation measures for Alternative D are the same as those presented in **Section 5.6** for Alternative A for the treatment of unanticipated cultural resources discovered during project-related construction. With the implementation of these mitigations measures, Alternative D would not result in significant adverse effects to previously unknown cultural resources.

Paleontological Resources

No paleontological resources have been reported or observed on or in the vicinity of the Custer Site. Therefore, Alternative D would not result in significant adverse effects to known paleontological resources.

There is a slight possibility that previously unknown paleontological resources would be discovered during earthmoving activities. Mitigation measures are presented in **Section 5.6** for the treatment of unanticipated paleontological discoveries which would ensure that Alternative D would not result in significant adverse effects to previously unknown paleontological resources.

4.6.5 ALTERNATIVE E – NO ACTION/NO DEVELOPMENT ALTERNATIVE

The No Action/No Development Alternative would not result in any ground disturbance and therefore will not result in significant adverse effects to cultural or paleontological resources.

4.7 SOCIOECONOMIC CONDITIONS

This section identifies socioeconomic effects anticipated to result from the development of each alternative described in **Section 2.0**. Effects are measured against the environmental baseline presented in **Section 3.7**. Indirect effects associated with off-site construction and growth-inducement are identified in **Section 4.14**. Cumulative effects are identified in **Section 4.15**. Measures to mitigate for significant adverse effects identified in this section are presented in **Section 5.7**.

Assessment Criteria

Socioeconomic Impacts

To determine the potential effects of the alternatives associated with socioeconomic conditions, the economic effects of temporary construction and ongoing operational activities of each alternative were estimated. Because socioeconomic effects would be most pronounced in the vicinity of the alternative sites, the scope of analysis focuses on impacts to the site and surrounding Muskegon County (Alternatives A, B, and C) and Mason County (Alternative D). Impacts from construction would be a one-time occurrence, while those from operation would be generated continuously after opening. An adverse economic, fiscal, or social impact would occur if the effect of the project were to negatively alter the ability of governments to perform at existing levels, or alter the ability of people to obtain public health and safety services. Much of the analysis presented herein relies on data presented in the Economic Impact Analysis for the Little River Casino Resort (LRCR) at Fruitport (Innovation Group, 2015; **Appendix I**). Economic effects in this analysis are quantified for Muskegon and Mason County using the Impact Analysis for Planning (IMPLAN) model.

Environmental Justice Impacts

To determine the impacts of the alternatives on environmental justice, the location and status of minority and low-income communities of concern, as identified in **Section 3.7**, are compared to the effect and nature of an alternative's impacts. An adverse environmental justice impact would result if any impact within the scope of this document disproportionately affected an identified minority or low-income community or Native American tribe. *Final Guidance for Incorporating Environmental Justice Concerns in United States Environmental Protection Agency's* (*USEPA's*) *National Environmental Policy Act* (*NEPA*) *Compliance Analyses* provides the direction on how to analyze the impacts of actions on low-income and minority populations. Under NEPA, the identification of a disproportionately high and adverse human health or environmental effect on a low-income population, minority population, or Indian tribe does not preclude a proposed agency action from going forward, nor does it necessarily compel a conclusion that a proposed action is environmentally unsatisfactory. Rather, the identification of such an effect should heighten agency attention to alternatives (including alternative sites), mitigation strategies, monitoring needs, and preferences expressed by the affected community or population (USEPA, 1998).

4.7.1 ALTERNATIVE A – PROPOSED PROJECT

Economic Effects

Expenditures on goods and services for construction and operational activities would generate substantial direct economic output, as well as indirect and induced economic output. Output is defined as the total

value of all goods and services produced at the establishment or Muskegon Site. Direct output would result from money spent on activities for construction and operational activities of the project. Indirect output would result from expenditures on goods and services by businesses that receive funds directly from the construction and operation of Alternative A. Induced output would result from expenditures on goods and services by employees directly generated from construction and operation of Alternative A.

Construction

Expenditures on goods and services from the construction of Alternative A were calculated from estimated costs for construction, investment in furniture, fixture and equipment, various business and consulting fees, and pre-opening expenses. Alternative A would be developed in one phase with construction activities occurring over a period of approximately 18 months. Under Alternative A, construction activities are estimated to cost approximately $179.6 million, which is expected to generate a one-time output of approximately $209.8 million within Muskegon County, as shown in **Table 4.7-1**. Direct output is estimated to total approximately $148.3 million, while indirect and induced outputs were estimated at $25.8 million and $35.7 million, respectively. Indirect and induced output would be dispersed and distributed among a variety of different industries and businesses throughout Muskegon County.

TABLE 4.7-1
COUNTYWIDE ONE-TIME CONSTRUCTION ECONOMIC IMPACT (MILLIONS)

Construction	Alternative			
	A	B	C	D
Output				
Direct	$148.3	$63.8	$37.4	$20.5
Indirect	$25.8	$11.2	$6.6	$4.2
Induced	$35.7	$18.0	$9.2	$3.7
Total Output	**$209.8**	**$93.0**	**$53.2**	**$28.4**

Notes: Impacts in table are for Muskegon County under Alternatives A, B, and C and Mason County under Alternative D. Due to rounding, numbers may not add up to equal the number given in the Total.
Source: Innovation Group, 2015 (**Appendix I**).

Construction of Alternative A would generate substantial output to a variety of businesses in Muskegon County. Output received by area businesses would in turn increase their spending, and labor demand, thereby further stimulating the local economy. This would be considered a beneficial impact. No mitigation is required.

Operation

As shown in **Table 4.7-2**, new spending from the Alternative A is expected to generate a net annual total output of approximately $136.7 million within Muskegon County. Direct output is estimated to total approximately $86.3 million, while indirect and induced outputs were estimated to total $18.0 million and $32.4 million, respectively. Indirect and induced output would be dispersed and distributed among a variety of different industries and businesses throughout Muskegon County.

TABLE 4.7-2
COUNTYWIDE ANNUAL OPERATIONAL ECONOMIC IMPACT (MILLIONS)

Operation	Alternative			
	A	B	C	D
Output				
Direct	$86.3	$62.4	$14.6	$18.8
Indirect	$18.0	$13.4	$2.2	$4.8
Induced	$32.4	$23.6	$4.1	$8.1
Total Output	**$136.7**	**$99.4**	**$20.9**	**$31.7**

Notes: Impacts in table are for Muskegon County under Alternatives A, B, and C and Mason County under Alternative D. Due to rounding, numbers may not add up to equal the number given in the Total.
Source: Innovation Group, 2015 (**Appendix I**).

Similar to construction, operation of Alternative A would generate increased revenues for a variety of businesses in Muskegon County as a result of increased economic activities. Output received by Muskegon County businesses would in turn increase their spending, and labor demand, thereby further stimulating the local economy. This would be considered a beneficial impact. No mitigation is required.

Substitution Effects

Potential substitution effects (the loss of customers at existing commercial businesses to the new business) of a tribal casino on existing restaurant, recreation, and retail establishments are considered when attempting to determine the true magnitude of the casino's impact on the economy. The magnitude of the substitution effect can generally be expected to vary greatly by specific location and according to a number of variables. That is, how much of the casino's revenue comes at the expense of other business establishments in the area depends on how many and what type of other establishments are within the same market area as the casino, disposable income levels of local residents and their spending habits, as well as other economic and psychological factors affecting the consumption decisions of local residents.

Existing Casino Gaming Market Substitution Effects

An analysis of the potential substitution effects of Alternative A on other gaming facilities based on the gaming market and the distance, size, and quality of nearby facilities was conducted and included in **Appendix I**. The analysis included collecting background information and developing a gaming market gravity model. The gravity model is based on an assessment of overall gaming revenues supported by population, incomes, typical win per visit and casino gaming participation both nationally and in the regional market area.

Whenever a new casino opens in a new market area, a certain amount of market substitution is to be expected. Alternative A is projected to cause an estimated decline in revenue of competing facilities, as shown below in **Table 4.7-3** for competitive facilities within approximately a 120-minute drive of the Muskegon Site (**Appendix I**; Innovation Group, 2015).

TABLE 4.7-3
IMPACT ON 2018 REVENUES OF PRIMARY COMPETITORS

Revenue Source	Alternatives		
	A	B	D
Gun Lake	-21%	-17%	-1%
Hartford	-14%	-11%	-0.6%
Four Winds	-7%	-6%	-0.4%
Dowagiac	-6%	-5%	-0.3%
Soaring Eagle	-8%	-7%	-1%
Fire Keepers	-8%	-6%	-0.6%
Eagles Landing	-2%	-2%	-0.8%
Turtle Creek	-1%	-1%	-1%
Blue Chip	-1%	-1%	0%
Source: Innovation Group, 2015 (**Appendix I**).			

Only two existing gaming facilities, Gun Lake and Hartford, are expected to experience a substitution effect that could be greater than 10 percent of their projected gaming revenue in 2018. A typical properly managed facility should have the ability to streamline operations to absorb the impacts described in **Table 4.7-3** and remain operational (**Appendix I**; Innovation Group, 2015).

Estimated substitution effects are anticipated to diminish after the first year of Alternative A's operation because local residents will have experienced the casino and will gradually return to more typical and more diverse spending patterns. Substitution effects also tend to diminish after the first full year of operations because, over time, growth in the total population and economic growth tend to increase the dollar value of demand for particular goods and services.

Although the substitution effects resulting from Alternative A to competing gaming facility revenues may significantly impact the operations of these casinos, they are not anticipated to cause their closure. Therefore, it is anticipated that under Alternative A, the above-listed facilities would continue to operate and generate a certain level of profit that would be utilized by the tribal governments that own them to provide services to their respective memberships. No physical environmental effects would occur. As upheld by the United States District Court for the Eastern District of California, "competition…is not sufficient, in and of itself, to conclude [there would be] a detrimental impact on" a tribe (Citizens for a Better Way, et al. v. United States Department of the Interior, E.D. Cal., 2015).

In addition to tribal gaming venues, certain local non-profit organizations host bingo nights and other gaming and gaming-like events for fundraising purposes. The majority of the attendees of these fundraising events are supporters of the non-profit organizations. It is anticipated that Alternative A would not cause the closure of these organizations or significantly reduce their ability to raise funds.

Non-Gaming Substitution Effects

Numerous studies have been conducted to estimate the substitution effects of gaming venues on existing retail business in the surrounding communities. The results of these studies are inconclusive, but

collectively imply that newly introduced gaming venues do not typically have negative or adverse substitution effects on surrounding retail establishments. These studies include one published in 2008 by Barrow and Hirschy, which discussed the trends in Atlantic City (Barrow and Hirschy, 2008), and a 2008 study conducted by the Center for Policy Analysis of the University of Massachusetts Dartmouth (Center for Policy Analysis, 2008). These studies suggest that any substitution effect is counteracted by increased activity at local retail businesses that are attributable to casino patrons other than local residents. This conclusion is substantiated by the dominance of the gaming component of Alternative A. Similarly, the hotel component of Alternative A would not result in a substantial substitution effect on existing hotels in the vicinity of the Muskegon Site. This is because the retail and hotel elements of Alternative A exist to complement the gaming component. Those who patronize the retail stores and hotel components do so as part of their overall gaming experience. These customers are a different market segment from persons who patronize other local retail establishments and who stay at the existing non-gaming hotels in the area. Consequently, non-gaming substitution effects would be less than significant. No mitigation is required.

Fiscal Effects

Alternative A would result in a variety of fiscal impacts. The Little River Band of Ottawa Indians (Tribe) would not pay corporate income taxes on revenue or property taxes on tribal land. The Tribe would also not pay sales or occupancy taxes under Alternative A. Alternative A would increase demand for public services, resulting in increased costs for local governments to provide these services. Tax revenues would be generated for federal, state, and local governments from activities including secondary economic activity generated by tribal gaming (i.e., the indirect and induced effects of the economic impact analysis). The taxes on secondary economic activity include: corporate profits tax, income tax, sales tax, excise tax, property tax, and personal non-taxes, such as motor vehicle licensing fees, fishing/hunting license fees, other fees, and fines.

As described in **Section 2.3.1**, Alternative A would include transfer of Assessor's Parcel Number (APN) 15-115-300-0026-00 from fee status into federal trust for the benefit of the Tribe, resulting in the loss of local property taxes. APN 15-115-300-0011-10 would remain in fee and be subject to taxation. During the 2016 tax year, the taxable value of the fee-to-trust parcel within the Muskegon Site was $1,431,600 (Muskegon County, 2016). Because property in trust is not subject to property taxes, tax revenue from this parcel would be lost to state and local governments. Lost property tax would be more than offset by tax revenues generated for state and local governments from economic activity associated with the construction and operation of Alternative A.

These estimated tax revenues, which vary by operational year, are shown in **Table 4.7-4**, which shows estimated state and local fiscal impacts for the second full-year of operations of the development alternatives. Year Two is presented in this table because, pursuant to Section 3.2 (d) and (e) of the Municipal Services Agreement (MSA) with Muskegon County, it is the first year in which the General Community Benefits Fund is scheduled to receive payments (payments consist of 1 percent of net slot revenue in Years Two and Three and 2 percent beginning in Year Four). These payments are to be allocated 25 percent to Fruitport Township, 25 percent to Muskegon County, and 50 percent to an entity or fund established by the Muskegon County Community Foundation. These revenue sharing payments attributed to Alternative A are estimated to be approximately $10.8 million in Year Two. Local revenue sharing payments, per Section 3.2(a) of the MSA, are 2 percent of net wins on slot revenue, which is

anticipated to be approximately $3.2 million. The local (County) portion of the Accommodations tax (5 percent) will apply to hotel room revenue paid by patrons, and these funds will accrue to the County's Convention and Visitors Bureau for tourism promotion. See **Appendix I** for additional details on how the fiscal impacts change over the years.

TABLE 4.7-4
FISCAL IMPACTS

Type	Alternative			
	A	B	C	D
New Revenue				
State (Net)	$10,809,411	$7,823,066	$3,444,141[1]	$1,574,334
Local Revenue Sharing (2% Net Win)	$3,161,882	$2,455,766	--	$524,778
Municipal Service Agreement	$1,580,941	$1,227,883	--	--
Accommodations Tax (County)[2]	$232,031	--	--	--
Total New Revenue	**$15,784,265**	**$11,506,715**	**$3,444,141**	**$2,099,113**
Lost Property Taxes[3]	$136,727	$136,727	$136,727	--
Net Revenues	**$15,647,538**	**$11,369,988**	**$3,307,414**	**$2,099,113**

Notes: As the MSA payments do not begin immediately, Year Two fiscal impacts shown in this table.
1 - Assumes Michigan state sales tax rate of 6 percent.
2 - Only applicable to Alternative A, as the other alternatives do not include a hotel component.
3 - Property taxes from 2016, see **Section 3.7.2**.
Source: Innovation Group, 2015 (**Appendix I**).

Property Values

The construction of a casino resort may result in changes to local property values, which could impact local tax assessor rolls and in turn, local property tax revenues. Changes in appreciation rates of adjacent properties could also impact future property tax revenues. Changes in property value can be affected by a number of factors, including the proximity of the casino to other properties in the vicinity, the mix of properties surrounding the casino, whether the casino stimulates additional development and whether or not the casino is located in an urban area. Impacts to surrounding commercial and industrial property values would probably be neutral to positive because a casino development would bring increased economic activity and because such a project may stimulate additional commercial development in the vicinity of the site.

While the Muskegon Site itself is zoned for a shopping center, there are residences located within a half-mile of the site. There have been numerous studies seeking to ascertain the impact casino development has on surrounding housing values. One useful analysis of this subject was a 2013 meta-analysis performed by the National Association of Realtors (NAR) Research Group, referred to as the "NAR Report" (NAR, 2013). The report includes an analysis of eight previous studies on the topic of housing prices. Analyzed collectively, the results of the NAR Report and the studies it cites show an inconclusive link between casino development and property values. Consequently, it is reasonable to conclude that the development of Alternative A would have a less-than-significant impact on surrounding housing property values.

Summary of Economic Effects

Construction and operation of Alternative A would generate substantial economic output for a variety of businesses in Muskegon County. Additionally, Alternative A would generate substantial tax revenues for State, County, and local governments. Potential effects due to the loss of State and federal tax revenues resulting from the operation as a sovereign nation on trust land would be offset by increased local, state, and federal tax revenues resulting from construction and operation of Alternative A as well as payments made pursuant to the MSA. Overall, Alternative A would result in a beneficial impact to the local governments in Muskegon County.

Employment

Investment in construction and operational activities would generate substantial direct employment opportunities and wages, as well as indirect and induced employment opportunities and wages. The IMPLAN model was used to estimate employment opportunities generated by Alternative A, as described in **Appendix I** (Innovation Group, 2015).

Construction

As shown in **Table 4.7-5**, for full buildout under Alternative A, investment in construction activities would generate a one-time total of approximately 1,763 employment positions within the County. The number of employment positions is given in a headcount, equivalent to the total number of jobs, both full and part time. Because "headcount" includes part-time employees, it is higher than a full-time equivalent (FTE) measure of employment.

TABLE 4.7-5
COUNTYWIDE ONE-TIME CONSTRUCTION EMPLOYMENT AND WAGE IMPACTS

Construction Impact	Alternative			
	A	B	C	D
Employment (Person-Years)				
Direct	1,211	672	357	204
Indirect	236	108	63	36
Induced	316	167	86	32
Total Jobs	1,763	947	506	272
Wages (Millions)				
Direct	$56.05	$28.98	$14.61	$6.11
Indirect	$7.97	$3.49	$2.03	$1.23
Induced	$10.72	$5.44	$2.79	$1.04
Total Wages	$74.74	$37.90	$19.44	$8.38

Notes: Impacts in table are for Muskegon County under Alternatives A, B, and C and Mason County under Alternative D. Due to rounding, numbers may not add up to equal the number given in the Total.
Source: Innovation Group, 2015 (**Appendix I**).

Employment opportunities generated from construction of Alternative A would result in wage generation. Wage totals include hourly and salary payments as well as benefits including health and life insurance and

retirement payments. Under Alternative A, investment in construction activities would generate one-time total wages of approximately $74.7 million within Muskegon County (**Table 4.7-4**). Direct wages were estimated to total approximately $56.1 million. The generation of employment and wages during the construction phase is considered a beneficial effect of Alternative A.

Operation

Employment opportunities generated from the operation of Alternative A would include entry-level, mid-level, and management positions. Examples of employment opportunities typically offered by tribal casino resort facilities are listed in **Table 4.7-6**. Average salaries offered are expected to be consistent with those of other tribal gaming facilities and competitive in the local labor market.

TABLE 4.7-6
TYPICAL TRIBAL CASINO EMPLOYMENT OPPORTUNITIES

Casino slot operations	Hotel management	Food & beverage operations	Financial services
Table games	Hotel facilities	Restaurant services	Support services
Entertainment operations	Hotel marketing	Culinary services	Security services
Casino credit	Housekeeping services	Human resources	Surveillance
Casino administration	Hotel administration	Casino services	Hotel services

As calculated through IMPLAN and shown in **Table 4.7-7**, operation activities associated with Alternative A would generate an annual total of approximately 1,624 employment positions to be captured within Muskegon County. Direct employment impacts were estimated to total approximately 1,201 job opportunities, while indirect and induced employment opportunities were estimated to total 150 and 273, respectively, and would be dispersed and distributed among a variety of different industries and businesses throughout Muskegon County (**Appendix I**; Innovation Group, 2015).

TABLE 4.7-7
COUNTYWIDE ANNUAL OPERATIONAL EMPLOYMENT AND WAGE IMPACTS

Operational Impact	Alternative			
	A	B	C	D
Employment (Person-Years)				
Direct	1,201	818	261	279
Indirect	150	112	19	41
Induced	273	199	38	67
Total Jobs	1,624	1,128	318	387
Wages (Millions)				
Direct	$52.6	$38.3	$6.9	$14.8
Indirect	$5.2	$3.9	$0.6	$1.3
Induced	$9.7	$7.0	$1.3	$2.3
Total Wages	$67.5	$49.2	$8.7	$18.3

Notes: Impacts in table are for Muskegon County under Alternatives A, B, and C and Mason County under Alternative D. Due to rounding, numbers may not add up to equal the number given in the Total.
Source: Innovation Group, 2015 (**Appendix I**).

Operation activities associated with Alternative A would generate annual total wages of approximately $67.5 million within Muskegon County (**Table 4.7-7**). Direct wages were estimated to total approximately $52.6 million, while indirect and induced wages were estimated to total $5.2 million and $9.7 million, respectively, and would be dispersed and distributed among a variety of different industries and businesses throughout Muskegon County. The generation of employment and wages during the operation phase is considered a beneficial effect of Alternative A.

Summary of Employment Effects

Construction and operation of Alternative A would generate substantial temporary and ongoing employment opportunities and wages that would be primarily filled by the available labor force in Muskegon County. Specifically, Alternative A is projected to create a total of 1,763 one-time construction related jobs and 1,624 permanent operations jobs. As shown on **Table 3.7-6**; it is anticipated that there would be approximately 5,000 unemployed people in the workforce in Muskegon County. Therefore, Muskegon County is anticipated to be able to be able to accommodate almost all of the increased demand for labor during the operation of Alternative A. This would result in employment and wages for persons previously unemployed and would contribute to the alleviation of poverty among lower income households. This is considered a beneficial effect.

Housing

Based on the information presented in **Section 3.7.2**, the 2014 Muskegon County housing market was comprised of an estimated 73,966 total units, and the number of housing units in the County is projected to increase to 74,141 by the year 2019 (**Table 3.7-3**). Based on the commuting patterns and employment statistics of the Muskegon County population (**Appendix I**; Innovation Group, 2015), it is estimated that approximately 185 new workers will relocate to the area to take a job at Alternative A. As new workers are likely to bring their families with them, some of whom may also work at the casino, 1.1 jobs at Alternative A per new household was assumed. Therefore, Alternative A is estimated to increase housing demand by 168 units, or 0.2 percent of the projected 74,141 housing units in Muskegon County in 2019 (**Appendix I**; Innovation Group, 2015). Approximately 11.6 percent of housing stock in Muskegon County was vacant during 2014 (U.S. Census, 2016e), which is more than sufficient to accommodate any employees who might relocate to the area to accept a position at the casino facility. Alternative A would not significantly stimulate regional housing development, or cause a significant adverse impact to the housing market. Potential indirect effects resulting from growth inducement are discussed further in **Section 4.14**.

Social Effects

Problem and Pathological Gambling

The American Psychiatric Association and National Research Council (NRC) define a pathological gambler as a person who features a continuous or periodic loss of control over gambling, who illustrates a progression, in gambling frequency and amounts wagered, in the preoccupation with gambling and in obtaining monies with which to gamble, irrational thinking, and a continuing of the behavior despite adverse consequences. However, problem gambling is a more loosely defined term and is commonly associated with gaming-related difficulties that are considered less serious than those of a pathological

gambler. Problem gambling is comprised of a pattern of gambling behavior that compromise, disrupt or damage personal, family or vocational pursuits. The NRC characterizes problem gambling as an urge to gamble despite harmful negative consequences or a desire to stop, often defined by whether harm is experienced by the gambler or others, such as the gambler's family, significant other, spouse, friends, or coworkers (**Appendix I**; Innovation Group, 2015).

Pathological gambling often occurs in conjunction with other behavioral problems, including substance abuse, mood disorders, and personality disorders. Even if it were possible to isolate the effects of problem gambling on people who suffer from co-morbidity (concurrent disorders within an individual), it is difficult to then isolate the effects of casino gambling from other forms of gambling. As discussed in **Appendix I**, casino gambling is already available in the area, as there are nine casinos within a 120-minute drive (refer to **Table 4.7-3**). Given the existing availability of gaming, the addition of gaming in Muskegon County under Alternative A is not expected to lead to a significant increase in prevalence rates of problem gaming in the local area (**Appendix I**; Innovation Group, 2015).

According to Welte et al. (2004), the probability of being a problem or pathological gambler roughly doubles for those living within 10 miles of a casino compared with those who do not (7.2 percent and 3.1 percent, respectively). Notwithstanding the fact that there are two casinos within a 70-mile radius of the Muskegon Site (**Appendix I**; Innovation Group, 2015), there may be a slight increase in problem gambling prevalence rates in the local area because the existing casinos are located more than ten miles from the Muskegon Site. BMPs are described in **Section 2.3.3**, and include provisions requiring the Tribe to maintain programs and policies similar to those currently in effect at the LRCR in Manistee. The MSA between the Tribe, Fruitport Township, and Muskegon County includes a recurring contribution to "mitigate the cost of the impact of gambling on the community" (**Appendix I**; Innovation Group, 2015). Section 3.2 (b)(ii) states that "the County [of Muskegon] will provide the necessary mental health services, which services will be provided by the employees of the Muskegon County Community Mental Health Department (the "Department") based on an annual grant received by the Department from the Tribe in the amount of $25,000.00, for training purposes only… in order that [employees of the Department] will obtain the necessary expertise to respond to problems that may arise as a result of gambling addictions" (**Appendix B**). This payment is included as **Mitigation Measure 5.7(A)**. Consequently, potential impacts associated with an increase in problem gambling as a result of Alternative A would be less than significant with the implementation of this mitigation.

Crime

There is a commonly held opinion that the introduction of legalized gambling in a community will increase crime within that community because of the belief that gambling may attract unsavory businesses and because problem or pathological gamblers may commit crime in order to fund their habit. Another commonly held belief is that legalized gaming reduces crime because it eliminates incentives for illegal gambling and because it improves the local economy. Both these impressions are based more on anecdotal rather than empirical evidence (**Appendix I**; Innovation Group, 2015). Gaming facilities can increase the volume of people entering a given area. Whenever large volumes of people are introduced into an area, the volume of crime would also be expected to increase; thus, the while the number of reported crimes can increase, as with any commercial development that attracts visitors, casino gaming

has not been show to lead to an increase in crime rates. Refer to Appendix B, Casinos and Crime, of **Appendix I** for additional information and a review of research findings.

Alternative A would introduce patrons and employees into the community on a daily basis. As a result, under Alternative A, criminal incidents could increase the vicinity of the Muskegon Site, as would be expected with a large development of any type. Potential impacts to law enforcement services are addressed in **Section 4.10**, **Public Services**. The MSA provides for payments to the Muskegon Police Department for costs incurred in conjunction with providing necessary law enforcement improvements to serve Alternative A (see **Section 1.5.2**). Social effects associated with crime would be less than significant after implementation of BMPs described in **Section 2.3.3**, and mitigation described in **Section 5.7** and **Section 5.10**.

Community Impacts

Schools

Employees that relocate to the project area to accept a position at the Muskegon Site may increase the number of kindergarten through high school students enrolled in the Fruitport Community School District and Muskegon County schools. However, only 185 people (168 new households) are expected to relocate to Muskegon County to accept a job at Alternative A (**Appendix I**; Innovation Group, 2015). This would result in an estimated addition of 74 students to the local school district is projected under Alternative A, which is 0.25 percent of the Muskegon County school enrollment (**Appendix I**; Innovation Group, 2015). Given that in the past four years, school district enrollment has decreased approximately 1.4 percent (**Table 3.7-10**). Schools in Muskegon County would be able to absorb the additional 74 students with a limited impact on local schools (**Appendix I**; Innovation Group, 2015). Additionally, given that any anticipated new students would be distributed across all grade levels between kindergarten through high school, any new students that may enroll in the school district as a result of Alternative A would be considered a less-than-significant impact on the district. Further, the Fruitport Community School District would likely collect additional tax revenue from the families of new students and would use these taxes to hire additional teachers to meet additional demand, if necessary. Therefore, any potential increased enrollment would have a less-than-significant effect on the ability of the school district to provide education services at existing levels. Alternative A would not result in adverse impacts to schools. No mitigation is required.

Libraries and Parks

Effects to area libraries and parks could occur if the employees or patrons of Alternative A significantly increase the demand on these resources. Due to the limited number of employees (185 people) who are expected to relocate to the project area, as noted in the *Schools* section above, it is expected that these effects would be negligible. Additionally, due to the gaming nature of Alternative A, it is not anticipated that most patrons would frequent local libraries or parks. Therefore, there would be a less-than-significant effect to libraries and parks. No mitigation is required.

Effects to the Little River Band of Ottawa Indians

Alternative A would benefit the Tribe in at least two ways. First, it would generate new income to fund the operation of the tribal government. This income is anticipated to have a beneficial effect on tribal quality of life and culture by funding tribal programs that serve tribal members, including education, health care, housing, social services, and tribally-sponsored cultural events, and by supporting tribal self-sufficiency and self-determination. As indicated in **Section 1.2** and the 2015 Unmet Needs of the Little River Tribe report, essential governmental and social services that would be funded by the revenue generated under Alternative A include housing educational, judicial, environmental, health, safety, and emergency programs (**Appendix I**; Innovation Group, 2015). Second, tribal members would have access to new jobs created on the Muskegon Site. Employment generated by this Alternative would not only allow tribal members to enjoy a better standard of living, but would also provide an opportunity for tribal members to reduce or end their dependence on government funding. Therefore, the creation of employment opportunities is expected to benefit tribal members as well as non-tribal residents of Muskegon County.

The casino is projected to generate millions of dollars annually for the Tribe. According to the Indian Gaming Regulatory Act (IGRA) 25 United States Code (USC) §2710 (b)(2)(B):

> …net revenues from any tribal gaming are not to be used for purposes other than (i) to fund tribal government operations or programs; (ii) to provide for the general welfare of the Indian tribe and its members; (iii) to promote tribal economic development; (iv) to donate to charitable organizations; or (v) to help fund operations of local government agencies.

IGRA also requires that the Tribe develop a plan to use gaming revenues for these purposes, which must be approved by the Secretary of the Interior, before making any distributions to individual tribal members.

Environmental Justice: Minority and Low-Income Communities

Section 3.7.3 describes local populations near the Muskegon Site that could be affected by development of Alternative A to determine if any minority or low-income populations exist. No low-income communities were identified in the vicinity of the Muskegon Site, and the Census Tract Muskegon 4.02, was identified as a minority community, nearly 3 miles from the site. Additionally, the Tribe is considered a minority community affected by Alternative A, and effects to the Tribe are discussed above. Increased economic development and opportunities for employment would positively affect the minority community in the vicinity of the Muskegon Site. For example, as discussed above, Alternative A is expected to result in 1,624 employment positions for the operations of the casino resort. Most of these positions will be filled by Muskegon County residents, some of whom are either unemployed or underemployed. Similarly, Alternative A would have beneficial impacts to the minority community in the Muskegon 4.02 Census Tract. Therefore, Alternative A would not result in significant adverse effects to minority or low-income communities.

4.7.2 ALTERNATIVE B – REDUCED INTENSITY ALTERNATIVE

Economic Effects

The direct economic effects for both construction and operation of Alternative B are comparable to those described for Alternative A, but to a lesser scale since Alternative B is reduced in size and scope.

Construction

Under Alternative B, construction activities are estimated to cost approximately $84.5 million, which is expected to generate a one-time total output of approximately $93.0 million within Muskegon County (**Table 4.7-1**). Direct output was estimated to total approximately $63.8 million, while indirect and induced outputs were estimated at $11.2 million and $18.0 million, respectively. Indirect and induced output would be dispersed and distributed among a variety of different industries and businesses throughout the County.

Construction of Alternative B would generate substantial output to a variety of businesses in Muskegon County in a variety of industries, including construction, manufacturing, professional services, and trade. Output received by area businesses would in turn increase their spending, and labor demand, thereby further stimulating the local economy. This would be considered a beneficial impact.

Operation

New spending from Alternative B is expected to generate a net annual total output of approximately $99.4 million within Muskegon County (**Table 4.7-2**). Direct output is estimated to total approximately $62.4 million, while indirect and induced outputs were estimated to total $13.4 million and $23.6 million, respectively. Indirect and induced output would be dispersed and distributed among a variety of different industries and businesses throughout the local area.

Operation of Alternative B would generate increased revenues for a variety of businesses in Muskegon County as a result of increased economic activities. Output received by area businesses would in turn increase their spending, and labor demand, thereby further stimulating the local economy. This would be considered a beneficial impact.

Substitution Effects

Existing Tribal Casino Gaming Market Substitution Effects

As shown in **Table 4.7-3**, substitution effects of Alternative B are similar to, but smaller than, those of Alternative A. Refer to **Section 4.7.1**. As with Alternative A, only two existing gaming facilities, Gun Lake and Hartford, are expected to experience a substitution effect that could be greater than 10 percent of their projected gaming revenue in 2018. Estimated substitution effects are anticipated to diminish after the first year of the project's operation because local residents will have experienced the casino and will gradually return to more typical and more diverse spending patterns. Substitution effects also tend to diminish after the first full year of operations because, over time, growth in the total population and economic growth tend to increase the dollar value of demand for particular goods and services. Although the substitution effects resulting from Alternative B to competing gaming facility revenues may significantly impact the operations of these casinos, they are not anticipated to cause their closure.

Therefore, it is anticipated that under Alternative B, the above-listed facilities would continue to operate and generate a certain level of profit that would be utilized by the tribal governments that own them to provide services to their respective memberships. No physical environmental effects would occur.

Non-Gaming Substitution Effects

Effects would be similar to those for Alternative A. This is because such impacts are in proportion to the amount of non-gaming revenue, and such revenue under Alternative B is similar to that under Alternative A. Potential non-gaming substitution effects, should they occur, represent a negligible portion of the total economic activity that would be generated by Alternative B. Additionally, as Alternative B does not include a hotel component, there is no potential for effects on the existing hotels in the area. See Alternative A analysis is **Section 4.7-1**. Non-gaming substitution effects would be less than significant.

Fiscal Effects

As shown in **Table 4.7-4**, the fiscal effects of Alternative B would be similar to, but less than, those of Alternative A. Refer to **Section 4.7.1**. Alternative B would generate substantial tax revenues for state, County, and local governments. Potential effects due to the loss of state and federal tax revenues resulting from the operation as a sovereign nation on trust land would be offset by increased local, State, and federal tax revenues resulting from construction and operation of Alternative B (see **Table 4.7-4**). Overall, Alternative B would result in a beneficial impact to the local governments in Muskegon County.

Property Values

As described in **Section 4.7.1** above, the construction of a casino may result in changes to local property values, which could impact local tax assessor rolls and in turn, local property tax revenues. These changes can be affected by a number of factors, including the proximity of the casino to other properties in the vicinity, the mix of properties surrounding the casino, whether the casino stimulates additional development and whether or not the casino is located in an urban area. As with Alternative A, impacts to surrounding commercial and industrial uses would probably be neutral to positive because a casino development would bring increased economic activity and because such a project may stimulate additional commercial development in the vicinity of the site. Consistent with Alternative A, Alternative B is also projected to have a less-than-significant impact on surrounding housing property values.

Employment

Investment in construction and operational activities would generate substantial direct employment opportunities and wages, as well as indirect and induced employment opportunities and wages. The IMPLAN model was used to estimate employment opportunities generated by Alternative B.

Construction

As shown in **Table 4.7-5**, employment effects from the construction of Alternative B are similar to, but almost half of, those of Alternative A. Refer to **Section 4.7.1**. The generation of employment and wages during the construction phase is considered a beneficial effect of Alternative B.

Operation

As shown in **Table 4.7-7**, employment effects from the operation of Alternative B are similar to, but less than, those of Alternative A. Refer to **Section 4.7.1**. The generation of employment and wages during the operation phase is considered a beneficial effect of Alternative B.

Summary of Employment Effects

Construction and operation of Alternative B would generate substantial temporary and ongoing employment opportunities and wages that would be primarily filled by the available labor force in Muskegon County. Specifically, Alternative B is projected to create a total of 947 one-time construction-related jobs and 1,128 permanent operations jobs. These jobs would result in employment and wages for persons previously unemployed and would contribute to the alleviation of poverty among lower income households. This is considered a beneficial effect.

Housing

Because Alternative B is smaller in scope and would have fewer employees than Alternative A, impacts to housing under Alternative B will be less than those under Alternative A, as discussed in **Section 4.7.1**. Available vacant housing stock in Muskegon County is more than sufficient to accommodate the vast majority of employees who might relocate to the area to accept a position at the casino facility. Vacant housing stock would accommodate such persons who migrate into the County to work at the casino. Therefore, Alternative B would not significantly stimulate regional housing development, or cause a significant adverse impact to the housing market. Potential indirect effects resulting from growth inducement are discussed further in **Section 4.14**.

Social Effects

Social impacts, including problem gambling, of Alternative B would be comparable to but less than those of Alternative A, because Alternative B is reduced in size and scope. BMPs are described in **Section 2.3.3**, and include provisions requiring the Tribe to maintain programs and policies similar to those currently in effect at the LRCR in Manistee. Additionally, mitigation measures are recommended in **Section 5.7** to reduce impacts to less-than-significant levels. Alternative B would introduce new patrons and employees into the vicinity of the Muskegon Site on a daily basis. As a result, under Alternative B, criminal incidents could increase in the vicinity of the Muskegon Site, as would be expected with new development of any type. Potential impacts to law enforcement services are addressed in **Section 4.10**, **Public Services**. The MSA provides for payments to the Muskegon Police Department for costs incurred in conjunction with providing necessary law enforcement improvements to serve Alternative A. Social effects associated with crime would be less than significant after implementation of BMPs described in **Section 2.3.3**, and mitigation described in **Section 5.7** and **Section 5.10**.

Community Impacts

Schools

Effects to schools would be similar to, but less than, those described under Alternative A because Alternative B is reduced in size and scope. This would be a less-than-significant impact. No mitigation is required.

Libraries and Parks

Effects to parks and libraries would be similar to, but less than, those described under Alternative A and, therefore, less than significant. No mitigation is required.

Effects to the Little River Band of Ottawa Indians

Effects to the Tribe under Alternative B would be similar to, but lesser than, those under Alternative A and would provide substantial benefits to the Tribe. This is considered a beneficial impact of Alternative B.

Environmental Justice: Minority and Low-Income Communities

Effects to local minority and low-income communities would be similar to those under Alternative A. As Alternative B would involve a smaller casino and fewer associated facilities, the overall impact of Alternative B would be less than under Alternative A. Effects to the Tribe are described above. The beneficial impacts to local communities would be similar as Alternative A, although to a lesser extent. Alternative B would not result in significant adverse effects to minority populations or low-income communities.

4.7.3 ALTERNATIVE C – NON-GAMING ALTERNATIVE

Economic Effects

Construction

Under Alternative C, construction activities are estimated to cost approximately $38.4 million, which is expected to generate a one-time total output of approximately $53.2 million within Muskegon County (**Table 4.7-1**). Direct output is estimated to total approximately $37.4 million, while indirect and induced outputs were estimated at $6.6 million and $9.2 million, respectively. Indirect and induced output would be dispersed and distributed among a variety of different industries and businesses throughout the area.

Construction of Alternative C would generate substantial output to a variety of businesses in the County. Output received by area businesses would in turn increase their spending, and labor demand, thereby further stimulating the local economy. This would be a beneficial impact.

Operation

New spending from Alternative C is expected to generate a new annual total output of approximately $20.9 million within Muskegon County (**Table 4.7-2**). Direct output is estimated to total approximately $14.6 million, while indirect and induced outputs were estimated to total $2.2 million and $4.1 million,

respectively. Indirect and induced output would be dispersed and distributed among a variety of different industries and businesses throughout the County.

Operation of Alternative C would generate substantial output to a variety of businesses in the County. Output received by local businesses would in turn increase their spending, and labor demand, thereby further stimulating the local economy. This would be a beneficial impact.

Substitution Effects

Existing Tribal Casino Gaming Market Substitution Effects

Substitution effects to existing gaming venues are not applicable because Alternative C does not have a gaming component.

Non-Gaming Substitution Effects

A retail market analysis included within **Appendix I** analyzed retail development opportunities for the Muskegon Site (**Appendix I**; Innovation Group, 2015). **Table 4.7-8** shows the results of this analysis, which indicates there is unmet retail demand within the market area. According to **Appendix I**, Alternative C would not be expected to materially impact existing retailers.

TABLE 4.7-8
RETAIL GAP ANALYSIS – 20 MILE RADIUS (IN THOUSANDS)

Store Type	Demand	Supply	Opportunity
Total Retail Sales Including Eating and Drinking Places	**$4,128,533**	**$2,697,270**	**$1,431,263**
Motor Vehicle and Parts Dealers	$757,286	$402,033	$355,253
Furniture and Home Furnishings Stores	$75,780	$34,606	$41,174
Electronics and Appliance Stores	$70,774	$32,341	$38,433
Building Material, Garden Equip Stores	$428,505	$348,732	$79,773
Food and Beverage Stores	$548,890	$177,565	$371,325
Health and Personal Care Stores	$246,946	$155,697	$91,249
Gasoline Stations	$406,060	$487,123	-$81,063
Clothing and Clothing Accessories Stores	$172,132	$62,291	$109,841
Sporting Goods, Hobby, Book, Music Stores	$73,314	$43,945	$29,369
General Merchandise Stores	$480,812	$504,056	-$23,244
Non-Store Retailers	$352,486	$46,080	$306,406
Foodservice and Drinking Places	$404,093	$356,560	$47,533

Source: Innovation Group, 2015 (**Appendix I**).

Fiscal Effects

As shown in **Table 4.7-4**, the fiscal effects of Alternative C may generate state sales tax, depending on the lease structure for businesses that would be on tribal trust land. Potential effects due to the loss of property tax revenues would be offset by increased tax revenue generated from economic activity associated with the construction and operation of Alternative C. Overall, Alternative C would result in a beneficial impact to the local economy in Muskegon County.

Property Values

Impacts to the values of properties in the vicinity of the Muskegon Site would be similar to the impacts under Alternative A. Although Alternative C is a retail project and not a casino resort, both retail and gaming developments are considered "commercial" properties. Consequently, the resulting impacts on property values are likely to be similar to, though smaller, than those that would occur under Alternative A.

Employment

Investment in construction and operational activities would generate substantial direct employment opportunities and wages, as well as indirect and induced employment opportunities and wages. The IMPLAN model was used to estimate employment opportunities generated by Alternative C.

Construction

As shown in **Table 4.7-5**, employment effects from the construction of Alternative C are substantially less than those of Alternative A. Refer to **Section 4.7.1**. The generation of employment and wages during the construction phase is considered a beneficial effect of Alternative C.

Operation

As shown in **Table 4.7-7**, employment effects from the operation of Alternative C are substantially less than those of Alternative A. Refer to **Section 4.7.1**. The generation of employment and wages during the operation phase is considered a beneficial effect of Alternative C.

Summary of Employment Effects

Construction and operation of Alternative C would generate substantial temporary and ongoing employment opportunities and wages that would be primarily filled by the available labor force in Muskegon County. Specifically, Alternative C is projected to create a total of 506 one-time construction-related jobs and 318 permanent operations jobs. These jobs would result in employment and wages for persons previously unemployed and would contribute to the alleviation of poverty among lower income households. This is considered a beneficial effect.

Housing

The housing market in Muskegon County as discussed under Alternative A in **Section 4.7.1**. There are anticipated to be more than enough residents of Muskegon County available for work to staff Alternative C. Alternative C would not cause a significant adverse impact to the housing market. Potential indirect effects resulting from growth inducement are discussed further in **Section 4.14**.

Social Effects

Social impacts, with the exception of problem gambling, of Alternative C would be comparable to Alternative A. Alternative C would introduce new customers and employees into the vicinity of the Muskegon Site on a daily basis. As a result, under Alternative C, criminal incidents could increase in the

vicinity of the Muskegon Site, as would be expected with new development of any type. Potential impacts to law enforcement services are addressed in **Section 4.10**, **Public Services**. Therefore, with incorporation of the mitigation in **Section 5.10**, social effects associated with crime would be less than significant.

Community Impacts

Schools

Effects to schools would be similar to, but less than those described under Alternative A because Alternative C is reduced in size and scope. This would be a less-than-significant impact. No mitigation is required.

Libraries and Parks

Effects to parks and libraries would be similar to those described under Alternative A and would, therefore, be less than significant. No mitigation is required.

Effects to the Little River Band of Ottawa Indians

The revenues generated by the proposed retail establishment would not be collected directly by the Tribe; however, the Tribe would collect revenues from leases signed by retailers. Beneficial effects to the Tribe under Alternative C would be substantially less than those under Alternative A.

Environmental Justice: Minority and Low-Income Communities

Effects to local minority and low-income communities would be similar to those under Alternative A. Effects to the Tribe are described above. The beneficial impacts to local communities would be similar as Alternative A, although to a lesser extent. Alternative C would not result in significant adverse effects to minority populations or low-income communities.

4.7.4 ALTERNATIVE D – CUSTER SITE ALTERNATIVE

Economic Effects

The direct economic effects for both construction and operation of Alternative D are comparable to those described for Alternative A, though benefits would accrue in Mason County instead of Muskegon County, and the scope of Alternative D is substantially smaller than that of Alternate A.

Construction

Under Alternative D, construction and development activities are estimated to cost approximately $29.7 million, which is expected to generate a one-time total output of approximately $28.4 million within Mason County (**Table 4.7-1**). Direct output is estimated to total approximately $20.5 million, while indirect and induced outputs are estimated to total $4.2 million and $3.7 million, respectively. Indirect and induced output would be dispersed and distributed among a variety of different industries and businesses throughout Mason County.

Construction of Alternative D would generate substantial output to a variety of businesses in Mason County in a variety of industries, including construction, manufacturing, professional services, and trade. Output received by area businesses would in turn increase their spending, and labor demand, thereby further stimulating the local economy. This would be considered a beneficial impact.

Operation

New spending from Alternative D is expected to generate a new annual total output of approximately $31.7 million within Mason County (**Table 4.7-2**). Direct output is estimated to total approximately $18.8 million, while indirect and induced outputs were estimated to total $4.8 million and $8.1 million, respectively. Indirect and induced output would be dispersed and distributed among a variety of different industries and businesses throughout the local area.

Operation of Alternative D would generate increased revenues for a variety of businesses in Mason County as a result of increased economic activities. Output received by area businesses would in turn increase their spending, and labor demand, thereby further stimulating the local economy. This would be considered a beneficial impact.

Substitution Effects

Existing Casino Gaming Market Substitution Effects

As shown in **Table 4.7-3**, substitution effects of Alternative D are much smaller than those of Alternative A. No gaming facilities are expected to experience a substitution effect equal or greater to 2 percent of their projected 2018 gaming revenue. Additionally, estimated substitution effects are anticipated to diminish after the first year of operation because local residents will have experienced the casino and will gradually return to more typical and diverse spending patterns. Substitution effects also tend to diminish after the first full year of operations because, over time, growth in the total population and economic growth tend to increase the dollar value of demand for particular goods and services. Therefore, substitution effects resulting from Alternative D to competing gaming facility revenues would be less than significant.

Non-Gaming Substitution Effects

Effects would be similar, though lesser, compared to those for Alternative A. This is because such impacts are in proportion to the amount of non-gaming revenue. Potential non-gaming substitution effects, should they occur, represent a negligible portion of the total economic activity that would be generated by Alternative D. Additionally, as Alternative D does not include a hotel component, there is no potential for effects on the existing hotels in the area. See Alternative A analysis is **Section 4.7.1**. Non-gaming substitution effects would be less than significant.

Fiscal Effects

As shown in **Table 4.7-4**, the fiscal effects of Alternative D would be similar to, but substantially less than, those of Alternative A. Pursuant to the terms of the Tribal-State Gaming Compact, payments to Michigan State would occur under Alternative D. However, as shown in **Table 4.7-4**, Alternative D does not include payments to local governments because the MSA only applies to the Muskegon Site. Refer to

Section 4.7.1 for additional information. Alternative D would generate tax revenues for state, County, and local governments. Overall, Alternative D would result in a beneficial impact to the local governments.

Property Values

The mix of existing land uses in the vicinity of the Custer Site differs from the land uses in the vicinity of the Muskegon Site. Specifically, the land uses in the vicinity of the Custer Site have a larger agricultural component, and residential developments are of lower density than those near the Muskegon Site. Although the land uses of the Custer Site constitute a different mix than the Muskegon Site, the effects of a casino development on property values would be similar to those under Alternative A. Consequently, Alternative D is anticipated to have a less-than-significant impact on surrounding property values.

Employment

Investment in construction and operational activities would generate substantial direct employment opportunities and wages, as well as indirect and induced employment opportunities and wages. The IMPLAN model was used to estimate employment opportunities generated by Alternative D.

Construction

As shown in **Table 4.7-5**, employment effects from the construction of Alternative D are substantially less than those of Alternative A. However, the generation of employment and wages during the construction phase is considered a beneficial effect of Alternative D (refer to **Section 4.7.1**).

Operation

As shown in **Table 4.7-7**, employment effects from the operation of Alternative D are substantially less than those of Alternative A. However, the generation of employment and wages during the operation phase is considered a beneficial effect of Alternative D (refer to **Section 4.7.1**).

Summary of Employment Effects

Construction and operation of Alternative D would generate substantial temporary and ongoing employment opportunities and wages that would be primarily filled by the available labor force within the County. Specifically, Alternative D is projected to create a total of 272 one-time construction-related jobs and 387 permanent operations jobs. These jobs would result in employment and wages for persons previously unemployed and would contribute to the alleviation of poverty among lower income households. This is considered a beneficial effect.

Housing

Based on the information presented in **Section 3.7.2**, the 2014 Mason County housing market was comprised of an estimated 17,406 total units, and the number of housing units in the County is projected to increase by the year 2019 (**Table 3.7-3**). Based on the commuting patterns and employment statistics of the Mason County population (**Appendix I**; Innovation Group, 2015), 13 new workers will relocate to the area to take a job at Alternative D. As new workers are likely to bring their families with them, some

of whom may also work at the casino, 1.1 jobs at Alternative D per new household was assumed. Therefore, Alternative D is estimated to increase housing demand by 12 units, or 0.1 percent of the projected 17,509 housing units in Mason County in 2019 (**Appendix I**; Innovation Group, 2015). Approximately 29.7 percent of housing stock in Mason County (U.S. Census, 2016e) was vacant during 2014, which is more than sufficient to accommodate any employees who might relocate to the area to accept a position at the casino facility. Alternative D would not significantly stimulate regional housing development, or cause a significant adverse impact to the housing market. Potential indirect effects resulting from growth inducement are discussed further in **Section 4.14**.

Social Effects

Social impacts, including problem gambling, under Alternative D would be a fraction of to those under Alternative A. BMPs are provided in **Section 2.3.3** to reduce effects associated with problem gambling. Alternative D would introduce new patrons and employees into the vicinity of the Custer Site on a daily basis. As a result, under Alternative D, criminal incidents could increase in the vicinity of the Custer Site, as would be expected with new development of any type. Potential impacts to law enforcement services are addressed in **Section 4.10**, **Public Services**. This is a potentially significant effect. With the implementation of mitigation recommended in **Section 5.10** in addition to BMPs provided in **Section 2.3.3**, social effects associated with crime would be less than significant.

Community Impacts

Schools

Employees that relocate to the project area to accept a position at the Custer Site may increase the number of kindergarten through high school students enrolled in the Mason County Eastern School District. However, only 13 people (12 new households) are expected to relocate to Mason County to accept a job at Alternative D (**Appendix I**; Innovation Group, 2015). An addition of 4 students to the local school district is projected under Alternative D, which represents 0.05 percent of the Mason County school enrollment (**Appendix I**; Innovation Group, 2015). Given that in the past few years the enrollment of the school district has decreased, schools in Mason County would be able to absorb the additional students with a limited impact on local schools (**Appendix I**; Innovation Group, 2015). Additionally, given that any anticipated new students would be distributed across all grade levels between kindergarten through high school, any new students that may enroll in the school district as a result of Alternative D would be a less-than-significant impact on the district. Further, the Mason County Eastern School District would likely collect additional tax revenue from the families of new students and would use these taxes to hire additional teachers to meet additional demand, if necessary. Therefore, any potential increased enrollment would have a less-than-significant effect on the ability of the school district to provide education services at existing levels. Alternative D would not result in adverse impacts to schools. No mitigation is required.

Libraries and Parks

Effects to area libraries and parks could occur if the employees or patrons of Alternative D significantly increase the demand on these resources. Due to the very limited number of employees expected to relocate due to Alternative D, as noted in the **Housing** subsection above, it is expected that these effects

would be negligible. Additionally, due to the relatively isolated location of Alternative D, it is not anticipated that patrons would frequent local libraries or parks. Therefore, there would be a less-than-significant effect to libraries and parks. No mitigation is required.

Effects to the Little River Band of Ottawa Indians

Beneficial effects to the Tribe under Alternative D would be substantially less than those under Alternative A; however, there would still be a beneficial impact from Alternative D.

Environmental Justice: Minority and Low-Income Communities

No minority communities or low-income communities were identified through review of the demographics of Census tracts in the vicinity of the Custer Site (refer to **Section 3.7.3**). In addition, the Tribe is considered a minority community that would be impacted by Alternative D. Effects to the Tribe would be positive, although less so than Alternative A, and are discussed above. Therefore, Alternative D would not result in significant adverse effects to minority or low-income communities.

4.7.5 ALTERNATIVE E – NO ACTION/NO DEVELOPMENT ALTERNATIVE

Under the No Action/No Development Alternative, none of the development alternatives considered within the EIS would be implemented. The No Action/No Development Alternative assumes that existing uses on the alternative sites would not change in the near term. Under this alternative, the Bureau of Indian Affairs (BIA) would not take any action. None of the effects identified for Alternatives A through D would occur.

4.8 TRANSPORTATION/CIRCULATION

This section assesses the significance of the direct effects to transportation and circulation that would result from the development of each alternative described in **Section 2.0**. Effects are measured against the environmental baseline presented in **Section 3.8**. Indirect effects associated with off-site construction and growth-inducement are identified in **Section 4.14**. Cumulative effects are identified in **Section 4.15**. Measures to mitigate for adverse effects identified in this section are presented in **Section 5.8**.

Assessment Criteria

The potential for adverse effects as a result of project-related traffic was determined based on acceptable level of service (LOS) and density or volume-to-capacity ratios (V/C) standards. Applicable standards are discussed in **Section 3.8.2** and **Section 4.8.1** below.

4.8.1 ANALYSIS METHODOLOGY

The development of the alternative sites would result in the addition of vehicle traffic on local intersections. A Traffic Impact Study (TIS) was prepared for development associated with Alternatives A through D. The TIS, prepared by Fleis & Vandenbrink is provided in **Appendix J**.

This section incorporates the results of the TIS and describes the number of trips that would be generated by each alternative and any potential adverse LOS effects that would occur to intersections within the study area. Traffic effects resulting from Alternatives A through D were analyzed using trip generation rates for similar casino developments and Fleis & Vandenbrink professional judgment, as well as rates provided by the Institute of Transportation Engineers (ITE) *Trip Generation Manual* 9th Edition, 2012 (ITE Manual; **Appendix J**).

Consultation

In order to determine the appropriate study area and analysis methodologies for the project alternatives, Fleis & Vandenbrink obtained input from the Federal Highway Administration (FHWA), Michigan Department of Transportation (MDOT), Muskegon County Road Commission (MCRC), Mason County Road Commission, City of Norton Shores, and City of Muskegon.

Study Area

To assess changes in traffic conditions, 29 intersections, 7 roadway segments, and 51 freeway facilities and ramps were studied for the Muskegon Site, and 9 intersections, 4 roadway segments, and 2 freeway facilities and ramps were studied for the Custer Site. Detailed descriptions of the study areas are included in **Section 3.8** and **Appendix J**.

Methodologies

The analysis provided in the TIS is in accordance with the Transportation Research Board (TRB) 2010 Highway Capacity Manual (HCM) and complies with standard practices for traffic studies within the region.

Evening or PM Peak Hour

Traffic conditions were assessed for Friday PM peak hour conditions. The Friday PM peak was selected because it was determined to have the highest traffic volumes when compared to weekday PM peak and Saturday PM peak. Therefore, Friday PM peak hour is considered the worst case scenario due to the existing traffic volumes at the study intersections. As stated in **Section 3.8.3**, weekday traffic counts were assessed by Fleis & Vandenbrink subconsultant Traffic Data Collection, Inc. (TDC) in 15-minute intervals on Friday, December 4 and 11, 2015, between the hours of 4:00 pm to 6:00 pm. Traffic count data sheets are provided in the TIS (**Appendix J**).

Seasonal Adjustments

During the summer months, travelers to destinations along Lake Michigan add a large amount of recreational trips to the surrounding highways. Fleis & Vandenbrink reviewed historic traffic volumes along United States Highway 31 (US-31) to determine a seasonal adjustment factor to account for these recreational trips. The results of the analysis indicated that over the last four years, Friday traffic volumes during a non-holiday week in August were approximately 22 percent higher for the northbound (NB) direction on Friday as compared to Friday in December; however there was no change for the southbound (SB) traffic on Friday in August as compared to a Friday in December. Therefore, the US-31 NB ramp and mainline traffic volumes were adjusted by 22 percent. MDOT provided a seasonal adjustment factor of 15 percent for both east and westbound (WB) Interstate 96 (I-96) to adjust the counts to Friday in August.

Trip Generation Rates

The PM peak hour trip generation was calculated for each project alternative. Trip generation rates were based on information from similar casino developments as well as information published in the ITE Manual. The ITE Manual provides empirical data, based on field observations for trip generation characteristics of similar land uses. The ITE Manual does not provide a trip generation rate for the land use category of Indian Casinos or event space; therefore, alternative methodologies were used as explained below.

Casino/Ancillary Components (Alternatives A and B)

Trip generation for the casino was developed based on a review of trip generation data from five casino developments: St. Charles Casino (St. Louis, Missouri); Sugarhouse Casino (Philadelphia, Pennsylvania); Rivers Casino (Pittsburgh, Pennsylvania); Firekeepers Casino (Battle Creek, Missouri); and Four Winds Casino (New Buffalo, Missouri). Research indicates that the best predictor of traffic volumes is the size of the gaming component of casino as measured by the gaming positions. Individual trip generation rates for the five casinos were calculated by dividing the total number of peak hour vehicle trips generated by each casino by their existing number of gaming positions provided. The individual trip rates were then

used to determine the weighted average trip rate for all casinos consistent with ITE methodology. The results of the analysis indicated a trip generation rate of 0.34 trips per gaming position.

In addition to the gaming components, the proposed casino under Alternative A also includes ancillary components such as restaurants and retail. Because these uses are also present at the casinos used to determine trip generation rates, they are already accounted for in the trip generation rate. Therefore, separate calculations for the non-casino functions (excluding hotel and convention areas) are not necessary. Excluding the restaurants and other ancillary uses does not suggest that they do not generate trips; rather it is a statement that the methodology already incorporates the trips in the calculated rates above.

Hotel

Under Alternative A, trip generation rates for the proposed hotel were forecast based on ITE Manual data. It was assumed that a portion of the hotel trips would be generated by patrons of the casino and would not represent added trips to the roadway network. Therefore, based on engineering judgments, a 50 percent internal reduction factor was applied to the hotel trip generation (**Appendix J**).

Convention Center

Trips associated with the 38,790-square foot (sf) convention center were also generated separately. The ITE *Trip Generation, 9th Edition* does not contain a specific land use code for event space which will be used for a variety of events, such as conventions, concerts, parties, and performances. Based on traditional space-planning practices for event spaces, the estimated capacity of the convention center is calculated to be approximately 2,155 seats. An 85th percentile event was utilized for trip generation purposes, which represents an event with attendance equal or greater than 85 percent of all events held during the year. This results in an event attendance of 1,832 people.

Auto occupancy rates and arrival patterns of various events were used to develop expected vehicle trip generation rates for the convention center. The majority of trips generated by the convention center are expected to occur outside the PM peak hour, as most events will have a start time of 7:00 pm or later. For the trip generation calculations it was assumed that 15 percent of trips would arrive during the PM peak hour with vehicle occupancy of 2.2 persons per vehicle. Based on these estimates, approximately 125 vehicle trips would be expected during the PM peak hour of which all are anticipated to be inbound.

Significance Assessment Criteria

The potential for adverse effects as a result of project-related traffic was determined based on acceptable LOS standards consistent with other traffic studies that have been prepared for projects within these jurisdictions and throughout the State of Michigan.

An alternative would result in a significant transportation impact if it would:

- Cause an intersection, freeway facility, ramp, or roadway segment operating at LOS D or better without the project, to degrade to LOS E or worse during the Friday PM peak hour.

- Degrade the LOS or increase the vehicular delay at an intersection, freeway facility, ramp, or roadway segment operating at LOS E or worse without the project.

2020 Buildout Year Conditions

To assess project related impacts, baseline traffic conditions were estimated for the year 2020, which correspond to the timing of anticipated buildout of the project alternatives. Traffic conditions for the 2020 Buildout Year were estimated using growth rates provided by MDOT and historical traffic volumes in the area. Traffic volumes were estimated by applying a background annual growth rate of 0.65 percent and 0.42 percent to all existing volumes for the Muskegon Site and Custer Site, respectively, to represent the increase of traffic from 2015 existing conditions. See **Appendix J** for a detailed discussion of background operations.

Muskegon Site

Under 2020 Buildout Year conditions, all study intersections are projected to operate acceptably at LOS D or better without the addition of project traffic except for the following:

- The NB right turn movement at the signalized intersection of Harvey Street & Hile Road;
- The SB through movement and all left turn movements at the signalized intersection of Harvey Street & Sternberg Road;
- The stop controlled WB I-96 off-ramp approach to Airline Highway;
- The stop controlled eastbound (EB) I-96 off-ramp left turn movement to Hile Road;
- The stop controlled NB US-31 off-ramp approach to Sternberg Road;
- The all way stop controlled (AWSC) intersection of Pontaluna Road with the NB US-31 ramps; and
- The stop controlled SB US-31 off-ramp left turn movement to Pontaluna Road.

Under 2020 Buildout Year conditions, all study roadway segments and freeway facilities are projected to operate acceptably at LOS D or better without the addition of project traffic.

Custer Site

Under 2020 Buildout Year conditions, all study intersections, roadway segments, and freeway facilities are projected to operate acceptably at LOS D or better without the addition of Alternative D traffic.

2025 Future Year Conditions

To further assess project related impacts, baseline traffic conditions were estimated for the year 2025, which correspond to 5 years of operation of the project alternatives. Traffic conditions for the 2025 Future Year were estimated using growth rates provided by MDOT and historical traffic volumes in the area. Traffic volumes were estimated by applying a background annual growth rate of 0.21 percent and 0.24 percent to all 2020 Buildout Year baseline traffic volumes for the Muskegon Site and Custer Site, respectively, to represent the increase of traffic from 2020 Background Year conditions. See **Appendix J** for a detailed discussion of background operations.

Muskegon Site

Under 2025 Future Year conditions, all study intersections are projected to operate acceptably at LOS D or better without the addition of project traffic except for the following:

- The NB right turn movement at the signalized intersection of Harvey Street & Hile Road;
- The SB through movement and all left turn movements at the signalized intersection of Harvey Street & Sternberg Road;
- The stop controlled WB I-96 off-ramp approach to Airline Highway;
- The stop controlled NB US-31 off-ramp approach to Sternberg Road;
- The AWSC intersection of Pontaluna Road with the NB US-31 ramps; and
- The stop controlled SB US-31 off-ramp left turn movement to Pontaluna Road.

Under 2025 Future Year conditions, all study roadway segments and freeway facilities are projected to operate acceptably at LOS D or better without the addition of project traffic.

Custer Site

Under 2025 Future Year conditions, all study intersections, roadway segments, and freeway facilities are projected to operate acceptably at LOS D or better without the addition of project traffic.

4.8.2 ALTERNATIVE A – PROPOSED PROJECT

Site Access

Public access to the Muskegon Site under Alternative A would be provided via the expansion of one driveway located along Harvey Street and the construction of one driveway located along East Ellis Road, with the main driveway being the Harvey Street entrance. Four additional service driveways for employee parking and one additional service truck driveway would also be located along East Ellis Road. These service driveways will be clearly marked to dissuade public use. Installation of a traffic signal and a right turn taper at the main driveway is recommended in the TIS (**Appendix J**) to manage safe ingress and egress of traffic at the Muskegon Site and is included as mitigation in **Section 5.8**. Indirect effects as a result of the access driveway mitigation are discussed in **Section 4.14**.

Construction Traffic

Construction of Alternative A would require truck trips for delivery of equipment and material, and daily construction workers trips. Traffic impacts resulting from the construction of Alternative A would be temporary and intermittent in nature and would generally occur during off-peak traffic hours. Construction related traffic volumes would be concentrated on Harvey Street, East Hile Road, East Ellis Road, and I-96 in the immediate vicinity of the Muskegon Site, and would include temporary traffic delays due to slower moving construction trucks and the increase in worker vehicles on area roadways. Because construction traffic would be temporary, occur outside of peak hours, and therefore not create LOS impacts at study transportation facilities, no significant effects would occur to from Alternative A related construction traffic. Mitigation is included in **Section 5.8** to further reduce any impacts from construction traffic.

Project Traffic

Trip Generation

The projected vehicle trip generation resulting from Alternative A is shown in **Table 4.8-1**. Methodology used to determine trip generation and trip distribution is described above under **Section 4.8.1**.

TABLE 4.8-1
ALTERNATIVE A FRIDAY PM PEAK HOUR TRIP GENERATION

Land Use	ITE Code	Amount	Units	Average Daily Traffic	Friday PM Peak Hour		
					In	Out	Total
Casino	N/A	1,945	Gaming Positions	9,511	357	304	661
Convention Center	N/A	2,155	Seats	1,959	125	0	125
Hotel	310	220	Rooms	1,596	67	65	132
Internal Capture[1]	*50%*			*-798*	*-34*	*-32*	*-66*
			Total	**12,268**	**515**	**337**	**852**

Notes: 1 - The internal capture reduction was only applied to the hotel land use.
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

Trip Distribution

The vehicle trips that would be generated by Alternative A were assigned to the study road network based on existing traffic patterns, population densities within a one hour travel time to the Muskegon Site, and the proposed site access locations. Traffic to and from the Muskegon Site is expected to be distributed in the manner shown on Figures 5-1 and 5-2 of the TIS (**Appendix J**).

Traffic Conditions with Alternative A

To assess the impacts of Alternative A on transportation facilities in the study area, the projected number of trips generated by Alternative A was added to 2020 Buildout Year and 2025 Future Year baseline traffic volumes (refer to **Section 4.8.1**).

Intersection Analysis

Tables 4.8-2 and **4.8-3** show the Friday PM peak hour intersection delay and LOS for each of the study intersections with the addition of Alternative A traffic under 2020 Buildout Year and 2025 Future Year conditions, respectively.

With the addition of Alternative A-related traffic, the following study intersection movements are projected to operate at an unacceptable LOS under 2020 Buildout Year and 2025 Future Year conditions:

- Signalized intersection of Harvey Street & Hile Road;
- NB left turn movement at the signalized intersection of Harvey Street & Independence Drive;
- WB approach and EB left turn movement at the signalized intersection of Harvey Street & Sternberg Road;
- Stop controlled WB I-96 Off-Ramp approach to Airline Highway;
- Stop controlled East Lake Road approach at WB I-96 Off-Ramp to Airline Highway;

- Stop controlled left turn movement from the SB US-31 Off-Ramp approach to Airline Highway;
- Stop controlled left turn movement from the EB I-96 Off-Ramp approach to Hile Road;
- Stop controlled NB US-31 Off-Ramp approach to Sternberg Road;
- AWSC intersection of Pontaluna Road with the NB US-31 ramps;
- Stop controlled left turn movement from the SB US-31 Off-Ramp left turn movement to Pontaluna Road; and
- Stop controlled casino site driveway approach to Harvey Street.

TABLE 4.8-2
2020 BUILDOUT YEAR PLUS ALTERNATIVE A INTERSECTION DELAY AND LOS

Intersection	Control	Approach	2020 Buildout		2020 Buildout Plus Alternative A	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. Airline Highway & Airport Road	Signalized	Overall	21.3	C	22.5	C
2. Airline Highway & Hile Road	Signalized	Overall	15.8	B	17.1	B
3. Harvey Street & Hile Road	Signalized	Overall	26.9	C	201.1	F
4. Grand Haven Road & Hile Road	Signalized	Overall	13.5	B	13.7	B
5. Harvey Street & East Ellis Road	Signalized	Overall	10.7	B	10.9	B
6. Harvey Street & Independence Drive	Signalized	Overall	36.3	D	39.6	D
7. Harvey Street & Sternberg Road	Signalized	Overall	48.4	D	51.9	D
8. Grand Haven Road & Sternberg Road	Signalized	Overall	29.5	C	29.6	C
9. Harvey Street & Mount Garfield Road	Signalized	Overall	24.0	C	24.0	C
10. Harvey Street & Pontaluna Road	Signalized	Overall	31.2	C	32.4	C
11. Grand Haven Road & Pontaluna Road	Signalized	Overall	27.7	C	27.7	C
12. Airline Highway & Sternberg Road	Signalized	Overall	17.6	B	17.9	B
13. Airline Highway & Farr Road	Signalized	Overall	16.2	B	16.6	B
14. Airport Road & NB BR US-31 On-Ramp	Free-Flow	EB LT	8.7	A	8.7	A
15. Airline Highway & WB I-96 Off-Ramp	SSSC	NB	35.3	E	146.4	F
		SB	26.7	D	107.8	F
16. Airline Highway & SB US-31 Ramps	SSSC	SB	19.4	C	69.7	F
17. Airline Highway & NB US-31 On-Ramp	Free-Flow	EB LT	8.1	A	8.1	A
18. Hile Road & EB I-96 Ramps	SSSC	NB	35.7	E	336.8	F
19. Hile Road & NB US-31 Off-Ramp	SSSC	NB	11.7	B	12.9	B
20. Sternberg Road & NB US-31 Ramps	SSSC	NB	173.6	F	225.3	F
21. Sternberg Road & NB US-31 Off-Ramp to WB Sternberg Road	SSSC	SB	11.8	B	12.3	B
22. Sternberg Road & SB US-31 Ramps	SSSC	SB	12.9	B	12.9	B
23. Pontaluna Road & NB US-31 Ramps	AWSC	Overall	43.8	E	45.4	E
24. Pontaluna Road & SB US-31 Off-Ramp	SSSC	SB	39.7	E	39.7	E
25. Pontaluna Road & SB US-31 On-Ramp	Free-Flow	WB LT	10.0	A	10.0	A
26. Farr Road & WB I-96 Off-Ramp	SSSC	NB	12.5	B	13.5	B
27. Farr Road & WB I-96 On-Ramp	Free-Flow	WB LT	7.5	A	7.5	A
28. Airline Highway & EB I-96 Ramps	SSSC	EB	28.9	D	29.9	D
29. Hile Road & Site Drive	SSSC	WB	DOES NOT EXIST		55.6	F

Notes: LT = left turn; SSSC = side-street stope controlled; AWSC = all-way stop controlled
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

TABLE 4.8-3
2025 FUTURE YEAR PLUS ALTERNATIVE A INTERSECTION DELAY AND LOS

Intersection	Control	Approach	2025 Future Year		2025 Future Plus Alternative A	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. Airline Highway & Airport Road	Signalized	Overall	22.0	C	23.3	C
2. Airline Highway & Hile Road	Signalized	Overall	15.9	B	17.3	B
3. Harvey Street & Hile Road	Signalized	Overall	28.4	C	206.6	F
4. Grand Haven Road & Hile Road	Signalized	Overall	13.6	B	13.8	B
5. Harvey Street & East Ellis Road	Signalized	Overall	10.8	B	11.0	B
6. Harvey Street & Independence Drive	Signalized	Overall	38.0	D	41.4	D
7. Harvey Street & Sternberg Road	Signalized	Overall	49.5	D	53.2	D
8. Grand Haven Road & Sternberg Road	Signalized	Overall	29.7	C	29.8	C
9. Harvey Street & Mount Garfield Road	Signalized	Overall	24.1	C	24.1	C
10. Harvey Street & Pontaluna Road	Signalized	Overall	32.0	C	33.4	C
11. Grand Haven Road & Pontaluna Road	Signalized	Overall	28.2	C	28.2	C
12. Airline Highway & Sternberg Road	Signalized	Overall	17.7	B	17.9	B
13. Airline Highway & Farr Road	Signalized	Overall	16.4	B	16.8	B
14. Airport Road & NB BR US-31 On-Ramp	Free-Flow	EB LT	8.7	A	8.7	A
15. Airline Highway & WB I-96 Off-Ramp	SSSC	NB	37.1	E	154.8	F
		SB	27.1	D	116.9	F
16. Airline Highway & SB US-31 Ramps	SSSC	SB	19.8	C	73.3	F
17. Airline Highway & NB US-31 On-Ramp	Free-Flow	EB LT	8.1	A	8.1	A
18. Hile Road & EB I-96 Ramps	SSSC	NB	37.5	E	353.9	F
19. Hile Road & NB US-31 Off-Ramp	SSSC	NB	11.8	B	13.0	B
20. Sternberg Road & NB US-31 Ramps	SSSC	NB	186.6	F	237.6	F
21. Sternberg Road & NB US-31 Off-Ramp to WB Sternberg Road	SSSC	SB	11.9	B	12.3	B
22. Sternberg Road & SB US-31 Ramps	SSSC	SB	13.0	B	13.0	B
23. Pontaluna Road & NB US-31 Ramps	AWSC	Overall	48.9	E	47.5	E
24. Pontaluna Road & SB US-31 Off-Ramp	SSSC	SB	42.2	E	42.2	E
25. Pontaluna Road & SB US-31 On-Ramp	Free-Flow	WB LT	10.0	A	10.0	A
26. Farr Road & WB I-96 Off-Ramp	SSSC	NB	12.6	B	13.6	B
27. Farr Road & WB I-96 On-Ramp	Free-Flow	WB LT	7.5	A	7.5	A
28. Airline Highway & EB I-96 Ramps	SSSC	EB	30.0	D	30.0	D
29. Hile Road & Site Drive	SSSC	WB	DOES NOT EXIST		57.4	F

Notes: LT = left turn; SSSC = side-street stope controlled; AWSC = all-way stop controlled
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

It should be noted that the intersection of Pontaluna Road/US-31 would operate unacceptably with or without the addition of Alternative A, and Alternative A would increase traffic at this intersection by two percent. MDOT has recently completed improvements to this intersection, including the construction of additional left and right turn lanes; however, the SB left turn movement from the SB US-31 off-ramp

would continue to operate at LOS E or F. Further, SimTraffic network simulations indicate acceptable traffic operations and 95th percentile vehicle queue lengths for the WB and SB movements to be 8 and 4 vehicles, respectively, which is not significant. Therefore, impacts at this intersection are less than significant and the Tribe is not required to pay a fair share towards improvements at this intersection.

With the addition of Alternative A-related traffic, the following study intersection movement is projected to operate at an unacceptable LOS under 2025 Future Year conditions only:

- The SB through/right turn movement at the signalized intersection of Harvey Street & Pontaluna Road.

The increase in traffic generated by Alternative A would contribute to or cause unacceptable traffic operations at the study intersections outlined above under 2020 Buildout Year and 2025 Future Year conditions and without mitigation, these intersections would operate below acceptable LOS standards described in **Section 4.8.1**. These unacceptable LOS would create significant effects from the development of Alternative A. Mitigation measures have been recommended within the TIS and included within **Section 5.8** to reduce impacts. Upon implementation of recommended mitigation measures in **Section 5.8**, Alternative A would not contribute towards significant effects on study intersections under 2020 Buildout Year or 2025 Future Year conditions. See Tables 30 and 31 in **Appendix J** for a summary of study intersection delay and LOS after implementation of recommended mitigation measures under 2020 Buildout Year and 2025 Future Year conditions, respectively.

Roadway Segment Analysis

Tables 4.8-4 and **4.8-5** show the Friday PM peak hour V/C ratios and LOS for each of the study roadway segments with the addition of Alternative A traffic under 2020 Buildout Year and 2025 Future Year conditions, respectively.

With the addition of Alternative A-related traffic, the following study roadway segments are projected to operate at an unacceptable LOS under 2020 Buildout Year and 2025 Future Year conditions:

- NB and SB Harvey Street between Hile Road and Ellis Road.

Since the completion of the TIS, Harvey Street has been widened to five lanes between Hile Road and Ellis Road. This, along with mitigation measure provided in **Section 5.8** regarding lane striping and adjustments of signal timing, ensures that Alternative A would not contribute towards significant effects on roadway segments under 2020 Buildout Year or 2025 Future Year conditions.

Freeway Facility Analysis

Tables 4.8-6 and **4.8-7** show the Friday PM peak hour density and LOS for each of the study freeway facilities with the addition of Alternative A traffic under 2020 Buildout Year and 2025 Future Year conditions, respectively.

TABLE 4.8-4
2020 BUILDOUT YEAR PLUS ALTERNATIVE A ROADWAY SEGMENT V/C RATIO AND LOS

Roadway Segment	Direction	2020 Buildout		2020 Buildout Plus Alternative A	
		V/C	LOS	V/C	LOS
1. Harvey Street - Hile Road to East Ellis Road	NB	0.53	D	0.76	E
	SB	0.43	D	0.79	E
2. Harvey Street - East Ellis Road to Independence Drive	NB	0.20	C	0.23	C
	SB	0.19	C	0.22	C
3. Harvey Street - Independence Drive to Sternberg Road	NB	0.37	D	0.40	D
	SB	0.33	D	0.35	D
4. Sternberg Road - Harvey Street to NB US-31	EB	0.39	C	0.39	C
	WB	0.47	D	0.49	D
5. Hile Road - Harvey Street to Airline Highway	EB	0.54	D	0.73	D
	WB	0.34	C	0.58	D
6. Airline Highway - Hile Road to US-31	EB	0.42	D	0.46	D
	WB	0.40	C	0.63	D
7. Airline Highway - US-31 to Airport Road	EB	0.46	D	0.47	D
	WB	0.26	D	0.26	D

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

TABLE 4.8-5
2025 FUTURE YEAR PLUS ALTERNATIVE A ROADWAY SEGMENT V/C RATIO AND LOS

Roadway Segment	Direction	2025 Future		2025 Future Plus Alternative A	
		V/C	LOS	V/C	LOS
1. Harvey Street - Hile Road to East Ellis Road	NB	0.53	D	0.76	E
	SB	0.43	D	0.80	E
2. Harvey Street - East Ellis Road to Independence Drive	NB	0.21	C	0.23	C
	SB	0.19	C	0.22	C
3. Harvey Street - Independence Drive to Sternberg Road	NB	0.37	D	0.40	D
	SB	0.33	D	0.36	D
4. Sternberg Road - Harvey Street to NB US-31	EB	0.39	C	0.40	C
	WB	0.48	D	0.50	D
5. Hile Road - Harvey Street to Airline Highway	EB	0.55	D	0.73	D
	WB	0.34	C	0.58	D
6. Airline Highway - Hile Road to US-31	EB	0.42	D	0.46	D
	WB	0.41	C	0.63	D
7. Airline Highway - US-31 to Airport Road	EB	0.46	D	0.47	D
	WB	0.26	D	0.26	D

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

TABLE 4.8-6
2020 BUILDOUT YEAR PLUS ALTERNATIVE A FREEWAY FACILITY DELAY AND LOS

Freeway Segment / Ramp / Weave Segment	2020 Buildout		2020 Buildout Plus Alternative A	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
NB US-31				
1. South of Pontaluna Road	17.5	B	18.3	C
2. Pontaluna Road Off-Ramp	20.9	C	21.9	C
3. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	13.5	B	14.1	B
4. Pontaluna Road On-Ramp	17.7	B	18.4	B
5. Pontaluna Road On-Ramp to EB Sternberg Road Off-Ramp	15.7	B	16.3	B
6. EB Sternberg Road Off-Ramp	18.5	B	19.3	B
7. EB Sternberg Road Off-Ramp to WB Sternberg Road Off-Ramp	13.8	B	14.2	B
8. WB Sternberg Road Off-Ramp	16.6	B	17.1	B
9. WB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	12.7	B	13.1	B
10. Sternberg Road On-Ramp to Hile Road Off-Ramp	18.2	C	18.6	C
11. Hile Road Off-Ramp to EB US-31 BR On-Ramp *(Weave)*	20.7	C	20.7	C
12. EB US-31 BR On-Ramp to WB US-31 BR Off-Ramp *(Weave)*	17.7	B	17.7	B
13. WB US-31 BR Off-Ramp to WB I-96 / Airline Highway On-Ramps	16.9	B	16.9	B
14. WB I-96 / Airline Highway On-Ramps	24.5	C	24.8	C
NB US-31 FREEWAY FACILITY	**17.1**	**B**	**17.6**	**B**
SB US-31				
1. North of Airline Highway	21.3	C	21.7	C
2. Airline Highway Off-Ramp	25.1	C	25.6	C
3. Airline Highway Off-Ramp to Airline Highway On-Ramp	17.4	B	17.6	B
4. Airline Highway On-Ramp to EB I-96 Off-Ramp *(Weave)*	14.8	B	15.1	B
5. EB I-96 Off-Ramp to EB I-96 On-Ramp *(Weave)*	13.7	B	13.7	B
6. EB I-96 On-Ramp to WB Sternberg Road Off-Ramp	12.8	B	12.9	B
7. WB Sternberg Road Off-Ramp to EB Sternberg Road Off-Ramp	15.3	B	15.4	B
8. EB Sternberg Road Off-Ramp	19.8	B	19.9	B
9. EB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	8.0	A	8.1	A
10. Sternberg Road On-Ramp	11.6	B	12.2	B
11. Sternberg Road On-Ramp to Pontaluna Road Off-Ramp	10.5	A	11.0	A
12. Pontaluna Road Off-Ramp	12.3	B	12.9	B
13. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	8.7	A	9.3	A
14. Pontaluna Road On-Ramp	12.9	B	13.5	B
15. Pontaluna Road On-Ramp to south of Pontaluna Road	11.5	B	12.0	B
SB US-31 FREEWAY FACILITY	**14.4**	**B**	**14.7**	**B**
EB I-96				
1. Grand Haven Road to SB US-31 Off-Ramp	9.2	A	9.5	A
2. SB US-31 Off-Ramp	11.1	B	11.4	B
3. SB US-31 Off-Ramp to SB US-31 On-Ramp	4.4	A	4.7	A
4. SB US-31 On-Ramp to NB US-31 Off-Ramp *(Weave)*	8.3	A	8.7	A

Freeway Segment / Ramp / Weave Segment	2020 Buildout		2020 Buildout Plus Alternative A	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
5. Hile Road Off-Ramp	11.4	B	12.1	B
6. Hile Road Off-Ramp to Hile Road On-Ramp	8.4	A	8.4	A
7. Hile Road On-Ramp	10.5	B	12.1	B
8. Hile Road On-Ramp to Airline Highway Off-Ramp	9.4	A	10.9	B
9. Airline Highway Off-Ramp	11.1	B	12.9	B
10. Airline Highway Off-Ramp to Airline Highway On-Ramp	7.7	A	9.2	A
11. Airline Highway On-Ramp	10.3	B	11.9	B
12. Airline Highway On-Ramp to east of Airline Highway	9.2	A	10.7	A
EB I-96 FREEWAY FACILITY	**9.4**	**A**	**10.6**	**A**
WB I-96				
1. East of Airline Highway to Farr Road / Airline Highway Off-Ramp	10.2	A	12.5	B
2. Farr Road / Airline Highway Off-Ramp	12.1	B	14.8	B
3. Farr Road / Airline Highway Off-Ramp to Farr Road On-Ramp	8.2	A	10.3	A
4. Farr Road / Airline Highway On-Ramp	10.6	B	12.9	B
5. Farr Road / Airline Highway On-Ramp to NB US-31 Off-Ramp	9.6	A	11.7	B
6. NB US-31 Off-Ramp	11.6	B	14.2	B
7. NB US-31 Off-Ramp to NB US-31 On-Ramp	3.3	A	5.4	A
8. NB US-31 On-Ramp to Airline Highway Off-Ramp *(Weave)*	6.6	A	8.6	A
9. Airline Highway Off-Ramp to Airport Road On-Ramp	6.7	A	6.8	A
10. Airport Road On-Ramp	10.4	B	10.5	B
WB I-96 FREEWAY FACILITY	**9.4**	**A**	**11.3**	**B**
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).				

TABLE 4.8-7
2025 FUTURE YEAR PLUS ALTERNATIVE A FREEWAY FACILITY DELAY AND LOS

Freeway Segment / Ramp / Weave Segment	2020 Buildout		2020 Buildout Plus Alternative A	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
NB US-31				
1. South of Pontaluna Road	17.7	B	18.5	C
2. Pontaluna Road Off-Ramp	21.2	C	22.1	C
3. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	13.7	B	14.3	B
4. Pontaluna Road On-Ramp	17.9	B	18.6	B
5. Pontaluna Road On-Ramp to EB Sternberg Road Off-Ramp	15.9	B	16.5	B
6. EB Sternberg Road Off-Ramp	18.7	B	19.5	B
7. EB Sternberg Road Off-Ramp to WB Sternberg Road Off-Ramp	13.9	B	14.3	B
8. WB Sternberg Road Off-Ramp	16.8	B	17.3	B
9. WB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	12.8	B	13.2	B
10. Sternberg Road On-Ramp to Hile Road Off-Ramp	18.4	C	18.8	C

Freeway Segment / Ramp / Weave Segment	2020 Buildout		2020 Buildout Plus Alternative A	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
11. Hile Road Off-Ramp to EB US-31 BR On-Ramp *(Weave)*	21.0	C	21.0	C
12. EB US-31 BR On-Ramp to WB US-31 BR Off-Ramp *(Weave)*	17.9	B	17.9	B
13. WB US-31 BR Off-Ramp to WB I-96 / Airline Highway On-Ramps	17.1	B	17.1	B
14. WB I-96 / Airline Highway On-Ramps	24.8	C	25.1	C
NB US-31 FREEWAY FACILITY	**17.3**	**B**	**17.8**	**B**
SB US-31				
1. North of Airline Highway	21.5	C	22.0	C
2. Airline Highway Off-Ramp	25.4	C	25.9	C
3. Airline Highway Off-Ramp to Airline Highway On-Ramp	17.5	B	17.8	B
4. Airline Highway On-Ramp to EB I-96 Off-Ramp *(Weave)*	15.0	B	15.3	B
5. EB I-96 Off-Ramp to EB I-96 On-Ramp *(Weave)*	13.8	B	13.9	B
6. EB I-96 On-Ramp to WB Sternberg Road Off-Ramp	13.0	B	13.0	B
7. WB Sternberg Road Off-Ramp to EB Sternberg Road Off-Ramp	15.5	B	15.5	B
8. EB Sternberg Road Off-Ramp	20.0	C	20.1	C
9. EB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	8.1	A	8.2	A
10. Sternberg Road On-Ramp	11.7	B	12.3	B
11. Sternberg Road On-Ramp to Pontaluna Road Off-Ramp	10.6	A	11.1	B
12. Pontaluna Road Off-Ramp	12.4	B	13.0	B
13. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	8.8	A	9.4	A
14. Pontaluna Road On-Ramp	13.0	B	13.6	B
15. Pontaluna Road On-Ramp to south of Pontaluna Road	11.6	B	12.2	B
SB US-31 FREEWAY FACILITY	**14.5**	**B**	**14.9**	**B**
EB I-96				
1. Grand Haven Road to SB US-31 Off-Ramp	9.3	A	9.6	A
2. SB US-31 Off-Ramp	11.3	B	11.5	B
3. SB US-31 Off-Ramp to SB US-31 On-Ramp	4.5	A	4.7	A
4. SB US-31 On-Ramp to NB US-31 Off-Ramp *(Weave)*	8.4	A	8.8	A
5. Hile Road Off-Ramp	11.6	B	12.2	B
6. Hile Road Off-Ramp to Hile Road On-Ramp	8.5	A	8.5	A
7. Hile Road On-Ramp	10.6	B	12.3	B
8. Hile Road On-Ramp to Airline Highway Off-Ramp	9.5	A	11.0	A
9. Airline Highway Off-Ramp	11.2	B	13.0	B
10. Airline Highway Off-Ramp to Airline Highway On-Ramp	7.8	A	9.3	A
11. Airline Highway On-Ramp	10.4	B	12.0	B
12. Airline Highway On-Ramp to east of Airline Highway	9.3	A	10.8	B
EB I-96 FREEWAY FACILITY	**9.5**	**A**	**10.7**	**B**
WB I-96				
1. East of Airline Highway to Farr Road / Airline Highway Off-Ramp	10.3	A	12.6	B
2. Farr Road / Airline Highway Off-Ramp	12.2	B	14.9	B
3. Farr Road / Airline Highway Off-Ramp to Farr Road On-Ramp	8.3	A	10.4	A

Freeway Segment / Ramp / Weave Segment	2020 Buildout		2020 Buildout Plus Alternative A	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
4. Farr Road / Airline Highway On-Ramp	10.7	B	13.1	B
5. Farr Road / Airline Highway On-Ramp to NB US-31 Off-Ramp	9.7	A	11.8	B
6. NB US-31 Off-Ramp	11.8	B	14.3	B
7. NB US-31 Off-Ramp to NB US-31 On-Ramp	3.3	A	5.4	A
8. NB US-31 On-Ramp to Airline Highway Off-Ramp *(Weave)*	6.7	A	8.7	A
9. Airline Highway Off-Ramp to Airport Road On-Ramp	6.8	A	6.8	A
10. Airport Road On-Ramp	10.5	B	10.6	B
WB I-96 FREEWAY FACILITY	**9.5**	**A**	**11.4**	**B**
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).				

As shown in **Tables 4.8-6** and **4.8-7**, all study freeway facilities would continue to operate acceptably at LOS D or better during the Friday PM peak hour under 2020 Buildout Year and 2025 Future Year conditions with the addition of Alternative A traffic. Therefore, Alternative A would not contribute towards significant effects on freeway facilities under 2020 Buildout Year or 2025 Future Year conditions.

Transit Facilities

Currently the Muskegon Area Transit System (MATS) Harvey Route provides transit service in the vicinity of the Muskegon Site. The Harvey Route utilizes 35-foot buses which have a capacity of approximately 32 seated riders, as well as some additional standing capacity (Davis, 2016). During the month of April 2016, the Harvey Route provided a total of 38,000 rides (Davis, 2016). Alternative A could potentially effect the Harvey Route due to increased ridership from casino employees and patrons. However, mitigation included in **Section 5.8** would ensure that the Tribe offers to enter into an agreement with MATS to optimize routes and timing, including constructing a bus stop on the Muskegon Site, if requested by MATS. MATS expressed that it would be interested in and willing to work with the Tribe to ensure that adequate transit services are provided (Davis, 2016). With implementation of mitigation in **Section 5.8**, no significant effects would occur to the public transit system.

Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities in the vicinity of the Muskegon Site are limited, with no sidewalk facilities in the vicinity of the Muskegon Site and 4-foot shoulders for cyclists only along Harvey Street. Because sufficient parking is available on site and off-site sidewalk and the only bicycle facilities adjacent to the site are 4-foot shoulders along Harvey Street, no significant effects would occur to the existing pedestrian or bicycle facilities as a result of Alternative A.

4.8.3 ALTERNATIVE B – REDUCED INTENSITY ALTERNATIVE

Site Access

Access to the Muskegon Site under Alternative B would be the same as Alternative A. Refer to **Section 4.8.2**. However, a warrant analysis was performed for right turn lanes at the proposed main driveway and found that neither a right turn lane nor taper are required under Alternative B (**Appendix J**). Therefore, no improvements to the main driveway are necessary under Alternative B.

Construction Traffic

The temporary traffic generated during construction of Alternative B would be less than Alternative A; therefore, Alternative B would result in a less-than-significant effect to traffic and circulation during construction. Mitigation is included in **Section 5.8** to further reduce any impacts from construction traffic.

Project Traffic

Trip Generation

The projected vehicle trip generation resulting from Alternative B is shown in **Table 4.8-8**. Methodology used to determine trip generation and trip distribution is described above under **Section 4.8.1**.

TABLE 4.8-8
ALTERNATIVE B FRIDAY PM PEAK HOUR TRIP GENERATION

Land Use	Amount	Units	Average Daily Traffic	Friday PM Peak Hour		
				In	Out	Total
Casino	1,283	Gaming Positions	6,274	236	201	436
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).						

Trip Distribution

Trip distribution under Alternative B would be the same as under Alternative A. Refer to **Section 4.8.2**.

Traffic Conditions with Alternative B

To assess the impacts of Alternative B on transportation facilities in the study area, the projected number of trips generated by Alternative B was added to 2020 Buildout Year and 2025 Future Year baseline traffic volumes (refer to **Section 4.8.1**).

Intersection Analysis

Tables 4.8-9 and **4.8-10** show the Friday PM peak hour intersection delay and LOS for each of the study intersections with the addition of Alternative B traffic under 2020 Buildout Year and 2025 Future Year conditions, respectively.

TABLE 4.8-9
2020 BUILDOUT YEAR PLUS ALTERNATIVE B INTERSECTION DELAY AND LOS

Intersection	Control	Approach	2020 Buildout		2020 Buildout Plus Alternative B	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. Airline Highway & Airport Road	Signalized	Overall	21.3	C	21.9	C
2. Airline Highway & Hile Road	Signalized	Overall	15.8	B	16.5	B
3. Harvey Street & Hile Road	Signalized	Overall	26.9	C	96.3	F
4. Grand Haven Road & Hile Road	Signalized	Overall	13.5	B	13.6	B
5. Harvey Street & East Ellis Road	Signalized	Overall	10.7	B	10.7	B
6. Harvey Street & Independence Drive	Signalized	Overall	36.3	D	38.3	D
7. Harvey Street & Sternberg Road	Signalized	Overall	48.4	D	50.3	D
8. Grand Haven Road & Sternberg Road	Signalized	Overall	29.5	C	29.6	C
9. Harvey Street & Mount Garfield Road	Signalized	Overall	24.0	C	24.0	C
10. Harvey Street & Pontaluna Road	Signalized	Overall	31.2	D	31.7	C
11. Grand Haven Road & Pontaluna Road	Signalized	Overall	27.7	C	27.7	C
12. Airline Highway & Sternberg Road	Signalized	Overall	17.6	B	17.7	B
13. Airline Highway & Farr Road	Signalized	Overall	16.2	B	16.4	B
14. Airport Road & NB BR US-31 On-Ramp	Free-Flow	EB LT	8.7	A	8.7	A
15. Airline Highway & WB I-96 Off-Ramp	SSSC	NB	35.3	E	62.1	F
		SB	26.7	D	42.0	E
16. Airline Highway & SB US-31 Ramps	SSSC	SB	19.4	C	30.3	D
17. Airline Highway & NB US-31 On-Ramp	Free-Flow	EB LT	8.1	A	8.1	A
18. Hile Road & EB I-96 Ramps	SSSC	NB	35.7	E	100.9	F
19. Hile Road & NB US-31 Off-Ramp	SSSC	NB	11.7	B	12.2	B
20. Sternberg Road & NB US-31 Ramps	SSSC	NB	173.6	F	197.1	F
21. Sternberg Road & NB US-31 Off-Ramp to WB Sternberg Road	SSSC	SB	11.8	B	12.1	B
22. Sternberg Road & SB US-31 Ramps	SSSC	SB	12.9	B	12.9	B
23. Pontaluna Road & NB US-31 Ramps	AWSC	Overall	43.8	E	44.5	E
24. Pontaluna Road & SB US-31 Off-Ramp	SSSC	SB	39.7	E	59.2	F
25. Pontaluna Road & SB US-31 On-Ramp	Free-Flow	WB LT	10.0	A	10.0	A
26. Farr Road & WB I-96 Off-Ramp	SSSC	NB	12.5	B	13.2	B
27. Farr Road & WB I-96 On-Ramp	Free-Flow	WB LT	7.5	A	7.5	A
28. Airline Highway & EB I-96 Ramps	SSSC	EB	28.9	D	28.9	D
29. Hile Road & Site Drive	SSSC	EB	DOES NOT EXIST		22.3	C

Notes: LT = left turn; SSSC = side-street stope controlled; AWSC = all-way stop controlled
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

TABLE 4.8-10
2025 FUTURE YEAR PLUS ALTERNATIVE B INTERSECTION DELAY AND LOS

Intersection	Control	Approach	2020 Future		2020 Future Plus Alternative B	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. Airline Highway & Airport Road	Signalized	Overall	22.0	C	22.6	C
2. Airline Highway & Hile Road	Signalized	Overall	15.9	B	16.6	B
3. Harvey Street & Hile Road	Signalized	Overall	28.4	C	99.8	F
4. Grand Haven Road & Hile Road	Signalized	Overall	13.6	B	13.7	B
5. Harvey Street & East Ellis Road	Signalized	Overall	10.8	B	10.8	B
6. Harvey Street & Independence Drive	Signalized	Overall	38.0	D	40.1	D
7. Harvey Street & Sternberg Road	Signalized	Overall	49.5	D	51.5	D
8. Grand Haven Road & Sternberg Road	Signalized	Overall	29.7	C	29.7	C
9. Harvey Street & Mount Garfield Road	Signalized	Overall	24.1	C	24.1	C
10. Harvey Street & Pontaluna Road	Signalized	Overall	32.0	C	32.6	C
11. Grand Haven Road & Pontaluna Road	Signalized	Overall	28.2	C	28.2	C
12. Airline Highway & Sternberg Road	Signalized	Overall	17.7	B	17.8	B
13. Airline Highway & Farr Road	Signalized	Overall	16.4	B	16.6	B
14. Airport Road & NB BR US-31 On-Ramp	Free-Flow	EB LT	8.7	A	8.7	A
15. Airline Highway & WB I-96 Off-Ramp	SSSC	NB	37.1	E	66.2	F
		SB	27.1	D	42.8	E
16. Airline Highway & SB US-31 Ramps	SSSC	SB	19.8	C	31.7	D
17. Airline Highway & NB US-31 On-Ramp	Free-Flow	EB LT	8.1	A	8.1	A
18. Hile Road & EB I-96 Ramps	SSSC	NB	37.5	E	106.8	F
19. Hile Road & NB US-31 Off-Ramp	SSSC	NB	11.8	B	12.3	B
20. Sternberg Road & NB US-31 Ramps	SSSC	NB	186.6	F	208.8	F
21. Sternberg Road & NB US-31 Off-Ramp to WB Sternberg Road	SSSC	SB	11.9	B	12.1	B
22. Sternberg Road & SB US-31 Ramps	SSSC	SB	13.0	B	13.0	B
23. Pontaluna Road & NB US-31 Ramps	AWSC	Overall	45.9	E	46.7	E
24. Pontaluna Road & SB US-31 Off-Ramp	SSSC	SB	42.2	E	42.2	E
25. Pontaluna Road & SB US-31 On-Ramp	Free-Flow	WB LT	10.0	S	10.0	A
26. Farr Road & WB I-96 Off-Ramp	SSSC	NB	12.6	B	12.8	B
27. Farr Road & WB I-96 On-Ramp	Free-Flow	WB LT	7.5	A	7.5	A
28. Airline Highway & EB I-96 Ramps	SSSC	EB	30.0	D	30.0	D
29. Hile Road & Site Drive	SSSC	EB	DOES NOT EXIST		22.6	C

Notes: LT = left turn; SSSC = side-street stope controlled; AWSC = all-way stop controlled
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

With the addition of Alternative B - related traffic, the following study intersection movements are projected to operate at an unacceptable LOS under 2020 Buildout Year and 2025 Future Year conditions:

- Signalized intersection of Harvey Street & Hile Road;
- NB left turn movement at the signalized intersection of Harvey Street & Independence Drive;
- WB approach and EB left turn movement at the signalized intersection of Harvey Street & Sternberg Road;
- Stop controlled WB I-96 off-ramp approach to Airline Highway;
- Stop controlled East Lake Road approachat WB I-96 Off-Ramp to Airline Highway;
- Stop controlled left turn movement from the SB US-31 Off-Ramp approach to Airline Highway;
- Stop controlled left turn movement from the EB I-96 Off-Ramp approach to Hile Road;
- Stop controlled NB US-31 Off-Ramp approach to Sternberg Road;
- AWSC intersection of Pontaluna Road with the NB US-31 ramps; and
- Stop controlled left turn movement from the SB US-31 Off-Ramp left turn movement to Pontaluna Road.
- Stop controlled EB I-96 Off-Ramp to Airline Highway.

It should be noted that the intersection of Pontaluna Road/US-31 would operate unacceptably with or without the addition of Alternative B, and Alternative B would increase traffic at this intersection by less than one percent. MDOT has recently completed improvements to this intersection, including the construction of additional left and right turn lanes; however, the SB left turn movement from the SB US-31 off-ramp would continue to operate at LOS E or F. Further, SimTraffic network simulations indicate acceptable traffic operations and 95th percentile vehicle queue lengths for the WB and SB movements to be 10 and 4 vehicles, respectively, which is not significant. Therefore, impacts at this intersection is less than significant and the Tribe is not required to pay a fair share towards improvements at this intersection.

The increase in traffic generated by Alternative B would contribute to or cause unacceptable traffic operations at the study intersections outlined above under 2020 Buildout Year and 2025 Future Year conditions and without mitigation, these intersections would operate below acceptable LOS standards described in **Section 4.8.1**. These unacceptable LOS would create significant effects from the development of Alternative B. Mitigation measures have been recommended within the TIS and included within **Section 5.8** to reduce impacts. Upon implementation of recommended mitigation measures in **Section 5.8**, Alternative B would not contribute towards significant effects on study intersections under 2020 Buildout Year or 2025 Future Year conditions. See Tables 50 and 51 in **Appendix J** for a summary of study intersection delay and LOS after implementation of recommended mitigation measures under 2020 Buildout Year and 2025 Future Year conditions, respectively.

Roadway Segment Analysis

Tables 4.8-11 and **4.8-12** show the Friday PM peak hour V/C ratio and LOS for each of the study roadway segments with the addition of Alternative B traffic under 2020 Buildout Year and 2025 Future Year conditions, respectively.

With the addition of Alternative B - related traffic, the following study roadway segment is projected to operate at an unacceptable LOS under 2020 Buildout Year and 2025 Future Year conditions:

- NB Harvey Street between Hile Road and Ellis Road.

TABLE 4.8-11
2020 BUILDOUT YEAR PLUS ALTERNATIVE B ROADWAY SEGMENT V/C RATIO AND LOS

Roadway Segment	Direction	2020 Buildout		2020 Buildout Plus Alternative B	
		V/C	LOS	V/C	LOS
1. Harvey Street - Hile Road to East Ellis Road	NB	0.53	D	0.65	E
	SB	0.43	D	0.58	D
2. Harvey Street - East Ellis Road to Independence Drive	NB	0.20	C	0.22	C
	SB	0.19	C	0.21	C
3. Harvey Street - Independence Drive to Sternberg Road	NB	0.37	D	0.38	D
	SB	0.33	D	0.34	D
4. Sternberg Road - Harvey Street to NB US-31	EB	0.39	C	0.39	C
	WB	0.47	D	0.48	D
5. Hile Road - Harvey Street to Airline Highway	EB	0.54	D	0.57	D
	WB	0.34	C	0.47	D
6. Airline Highway - Hile Road to US-31	EB	0.42	D	0.44	D
	WB	0.40	C	0.51	C
7. Airline Highway - US-31 to Airport Road	EB	0.46	D	0.46	D
	WB	0.26	D	0.26	D

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

TABLE 4.8-12
2025 FUTURE YEAR PLUS ALTERNATIVE B ROADWAY SEGMENT V/C RATIO AND LOS

Roadway Segment	Direction	2025 Future		2025 Future Plus Alternative B	
		V/C	LOS	V/C	LOS
1. Harvey Street - Hile Road to East Ellis Road	NB	0.53	D	0.65	E
	SB	0.43	D	0.58	D
2. Harvey Street - East Ellis Road to Independence Drive	NB	0.21	C	0.22	C
	SB	0.19	C	0.21	C
3. Harvey Street - Independence Drive to Sternberg Road	NB	0.37	D	0.38	D
	SB	0.33	D	0.35	D
4. Sternberg Road - Harvey Street to NB US-31	EB	0.39	C	0.39	C
	WB	0.48	D	0.49	D
5. Hile Road - Harvey Street to Airline Highway	EB	0.55	D	0.57	D
	WB	0.34	C	0.47	D
6. Airline Highway - Hile Road to US-31	EB	0.42	D	0.45	D
	WB	0.41	C	0.51	C
7. Airline Highway - US-31 to Airport Road	EB	0.46	D	0.47	D
	WB	0.26	D	0.26	D

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

Since the completion of the TIS, Harvey Street has been widened to five lanes between Hile Road and Ellis Road. This, along with mitigation measure provided in **Section 5.8** regarding lane striping and adjustments of signal timing, ensures that Alternative B would not contribute towards significant effects on roadway segments under 2020 Buildout Year and 2025 Future Year conditions.

Freeway Facility Analysis

Tables 4.8-13 and **4.8-14** show the Friday PM peak hour density and LOS for each of the study freeway facilities with the addition of Alternative B traffic under 2020 Buildout Year and 2025 Future Year conditions, respectively.

TABLE 4.8-13
2020 BUILDOUT YEAR PLUS ALTERNATIVE B FREEWAY FACILITY DELAY AND LOS

Freeway Segment / Ramp / Weave Segment	2020 Buildout		2020 Buildout Plus Alternative B	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
NB US-31				
1. South of Pontaluna Road	17.5	B	17.8	B
2. Pontaluna Road Off-Ramp	20.9	C	21.4	C
3. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	13.5	B	13.8	B
4. Pontaluna Road On-Ramp	17.7	B	18.0	B
5. Pontaluna Road On-Ramp to EB Sternberg Road Off-Ramp	15.7	B	16.0	B
6. EB Sternberg Road Off-Ramp	18.5	C	18.9	C
7. EB Sternberg Road Off-Ramp to WB Sternberg Road Off-Ramp	13.8	B	13.9	B
8. WB Sternberg Road Off-Ramp	16.6	B	16.8	B
9. WB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	12.7	B	12.8	B
10. Sternberg Road On-Ramp to Hile Road Off-Ramp	18.2	C	18.3	C
11. Hile Road Off-Ramp to EB US-31 BR On-Ramp *(Weave)*	20.7	C	20.7	C
12. EB US-31 BR On-Ramp to WB US-31 BR Off-Ramp *(Weave)*	17.7	B	17.7	B
13. WB US-31 BR Off-Ramp to WB I-96 / Airline Highway On-Ramps	16.9	B	16.9	B
14. WB I-96 / Airline Highway On-Ramps	24.5	C	24.7	C
NB US-31 FREEWAY FACILITY	**17.7**	**B**	**17.4**	**B**
SB US-31				
1. North of Airline Highway	21.3	C	21.5	C
2. Airline Highway Off-Ramp	25.1	C	25.4	C
3. Airline Highway Off-Ramp to Airline Highway On-Ramp	17.4	B	17.5	B
4. Airline Highway On-Ramp to EB I-96 Off-Ramp *(Weave)*	14.8	B	15.0	B
5. EB I-96 Off-Ramp to EB I-96 On-Ramp *(Weave)*	13.7	B	13.7	B
6. EB I-96 On-Ramp to WB Sternberg Road Off-Ramp	12.8	B	12.8	B
7. WB Sternberg Road Off-Ramp to EB Sternberg Road Off-Ramp	15.3	B	15.3	B
8. EB Sternberg Road Off-Ramp	19.8	B	19.9	B
9. EB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	8.0	A	8.1	A
10. Sternberg Road On-Ramp	11.6	B	11.9	B
11. Sternberg Road On-Ramp to Pontaluna Road Off-Ramp	10.5	A	10.8	A

Freeway Segment / Ramp / Weave Segment	2020 Buildout		2020 Buildout Plus Alternative B	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
12. Pontaluna Road Off-Ramp	12.3	B	12.6	B
13. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	8.7	A	9.0	A
14. Pontaluna Road On-Ramp	12.9	B	13.2	B
15. Pontaluna Road On-Ramp to south of Pontaluna Road	11.5	B	11.8	B
SB US-31 FREEWAY FACILITY	**14.4**	**B**	**14.6**	**B**
EB I-96				
1. Grand Haven Road to SB US-31 Off-Ramp	9.2	A	9.4	A
2. SB US-31 Off-Ramp	11.1	B	11.3	B
3. SB US-31 Off-Ramp to SB US-31 On-Ramp	4.4	A	4.6	A
4. SB US-31 On-Ramp to NB US-31 Off-Ramp *(Weave)*	8.3	A	8.5	A
5. Hile Road Off-Ramp	11.4	B	11.7	B
6. Hile Road Off-Ramp to Hile Road On-Ramp	8.4	A	8.4	A
7. Hile Road On-Ramp	10.5	B	11.5	B
8. Hile Road On-Ramp to Airline Highway Off-Ramp	9.4	A	10.3	A
9. Airline Highway Off-Ramp	11.1	B	12.2	B
10. Airline Highway Off-Ramp to Airline Highway On-Ramp	7.7	A	8.6	A
11. Airline Highway On-Ramp	10.3	B	11.3	B
12. Airline Highway On-Ramp to east of Airline Highway	9.2	A	10.1	A
EB I-96 FREEWAY FACILITY	**9.4**	**A**	**10.1**	**A**
WB I-96				
1. East of Airline Highway to Farr Road / Airline Highway Off-Ramp	10.2	A	11.3	A
2. Farr Road / Airline Highway Off-Ramp	12.1	B	13.3	B
3. Farr Road / Airline Highway Off-Ramp to Farr Road On-Ramp	8.2	A	9.2	A
4. Farr Road / Airline Highway On-Ramp	10.6	B	11.7	B
5. Farr Road / Airline Highway On-Ramp to NB US-31 Off-Ramp	9.6	A	10.5	A
6. NB US-31 Off-Ramp	11.6	B	12.8	B
7. NB US-31 Off-Ramp to NB US-31 On-Ramp	3.3	A	4.2	A
8. NB US-31 On-Ramp to Airline Highway Off-Ramp *(Weave)*	6.6	A	7.5	A
9. Airline Highway Off-Ramp to Airport Road On-Ramp	6.7	A	7.5	A
10. Airport Road On-Ramp	10.4	B	10.5	B
WB I-96 FREEWAY FACILITY	**9.4**	**A**	**10.3**	**A**

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

As shown in **Tables 4.8-13** and **4.8-14**, all study freeway facilities would continue to operate acceptable at LOS D or better during the Friday PM peak hour under 2020 Buildout Year and 2025 Future Year conditions with the addition of Alternative B traffic. Therefore, Alternative B would not contribute towards significant effects on freeway facilities under 2020 Buildout Year or 2025 Future Year conditions.

TABLE 4.8-14
2025 FUTURE YEAR PLUS ALTERNATIVE B FREEWAY FACILITY DELAY AND LOS

Freeway Segment / Ramp / Weave Segment	2025 Future		2025 Future Plus Alternative B	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
NB US-31				
1. South of Pontaluna Road	17.7	B	18.0	B
2. Pontaluna Road Off-Ramp	21.2	C	21.6	C
3. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	13.7	B	14.0	B
4. Pontaluna Road On-Ramp	17.9	B	18.2	B
5. Pontaluna Road On-Ramp to EB Sternberg Road Off-Ramp	15.9	B	16.2	B
6. EB Sternberg Road Off-Ramp	18.7	B	19.1	B
7. EB Sternberg Road Off-Ramp to WB Sternberg Road Off-Ramp	13.9	B	14.1	B
8. WB Sternberg Road Off-Ramp	16.8	B	17.0	B
9. WB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	12.8	B	13.0	B
10. Sternberg Road On-Ramp to Hile Road Off-Ramp	18.4	C	18.6	C
11. Hile Road Off-Ramp to EB US-31 BR On-Ramp *(Weave)*	21.0	C	21.0	C
12. EB US-31 BR On-Ramp to WB US-31 BR Off-Ramp *(Weave)*	17.9	B	17.9	B
13. WB US-31 BR Off-Ramp to WB I-96 / Airline Highway On-Ramps	17.1	B	17.1	B
14. WB I-96 / Airline Highway On-Ramps	24.8	C	25.0	C
NB US-31 FREEWAY FACILITY	**17.3**	**B**	**17.6**	**B**
SB US-31				
1. North of Airline Highway	21.5	C	21.7	C
2. Airline Highway Off-Ramp	25.4	C	25.7	C
3. Airline Highway Off-Ramp to Airline Highway On-Ramp	17.5	B	17.7	B
4. Airline Highway On-Ramp to EB I-96 Off-Ramp *(Weave)*	15.0	B	15.2	B
5. EB I-96 Off-Ramp to EB I-96 On-Ramp *(Weave)*	13.8	B	13.9	B
6. EB I-96 On-Ramp to WB Sternberg Road Off-Ramp	13.0	B	13.0	B
7. WB Sternberg Road Off-Ramp to EB Sternberg Road Off-Ramp	15.5	B	15.5	B
8. EB Sternberg Road Off-Ramp	20.0	C	20.1	C
9. EB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	8.1	A	8.2	A
10. Sternberg Road On-Ramp	11.7	B	12.1	B
11. Sternberg Road On-Ramp to Pontaluna Road Off-Ramp	10.6	A	12.1	B
12. Pontaluna Road Off-Ramp	12.4	B	12.8	B
13. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	8.8	A	9.1	A
14. Pontaluna Road On-Ramp	13.0	B	13.3	B
15. Pontaluna Road On-Ramp to south of Pontaluna Road	11.6	B	11.9	B
SB US-31 FREEWAY FACILITY	**14.5**	**B**	**14.7**	**B**
EB I-96				
1. Grand Haven Road to SB US-31 Off-Ramp	9.3	A	9.5	A
2. SB US-31 Off-Ramp	11.3	B	11.4	B
3. SB US-31 Off-Ramp to SB US-31 On-Ramp	4.5	A	4.5	A
4. SB US-31 On-Ramp to NB US-31 Off-Ramp *(Weave)*	8.4	A	8.6	A

Freeway Segment / Ramp / Weave Segment	2025 Future		2025 Future Plus Alternative B	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
5. Hile Road Off-Ramp	11.6	B	11.9	B
6. Hile Road Off-Ramp to Hile Road On-Ramp	8.5	A	8.5	A
7. Hile Road On-Ramp	10.6	B	11.6	B
8. Hile Road On-Ramp to Airline Highway Off-Ramp	9.5	A	10.4	A
9. Airline Highway Off-Ramp	11.2	B	12.3	B
10. Airline Highway Off-Ramp to Airline Highway On-Ramp	7.8	A	8.7	A
11. Airline Highway On-Ramp	10.4	B	11.4	B
12. Airline Highway On-Ramp to east of Airline Highway	9.3	A	10.2	A
EB I-96 FREEWAY FACILITY	**9.5**	**A**	**10.2**	**A**
WB I-96				
1. East of Airline Highway to Farr Road / Airline Highway Off-Ramp	10.3	A	11.4	B
2. Farr Road / Airline Highway Off-Ramp	12.2	B	13.5	B
3. Farr Road / Airline Highway Off-Ramp to Farr Road On-Ramp	8.3	A	9.3	A
4. Farr Road / Airline Highway On-Ramp	10.7	B	11.8	B
5. Farr Road / Airline Highway On-Ramp to NB US-31 Off-Ramp	9.7	A	10.6	A
6. NB US-31 Off-Ramp	11.8	B	12.9	B
7. NB US-31 Off-Ramp to NB US-31 On-Ramp	3.3	A	4.3	A
8. NB US-31 On-Ramp to Airline Highway Off-Ramp *(Weave)*	6.7	A	7.6	A
9. Airline Highway Off-Ramp to Airport Road On-Ramp	6.8	A	6.8	A
10. Airport Road On-Ramp	10.5	B	10.6	B
WB I-96 FREEWAY FACILITY	**9.5**	**A**	**10.4**	**A**
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).				

Transit Facilities

Transit facilities in the vicinity of the Muskegon Site and potential effects to transit services under Alternative B are the same as under Alternative A (**Section 4.8.2**). Implementation of mitigation in **Section 5.8** would ensure that no significant effects to transit services occur as a result of Alternative B.

Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities in the vicinity of the Muskegon Site under Alternative B would be the same as Alternative A. Refer to **Section 4.8.2**. Therefore, Alternative B would have no significant adverse effects.

4.8.4 ALTERNATIVE C – NON-GAMING ALTERNATIVE

Site Access

Access to the Muskegon Site under Alternative C would be the same as Alternative A, except that Alternative C has only two service driveways located along East Ellis Road. Refer to **Section 4.8.2**.

Installation of a traffic signal and full-width right turn lane at the main driveway has been recommended within the TIS (**Appendix J**) to manage safe ingress and egress of traffic at the Muskegon Site and is included as mitigation in **Section 5.8**. Indirect effects as a result of the access driveway mitigation are discussed in **Section 4.14**.

Construction Traffic

The temporary traffic generated during construction of Alternative C would be less than Alternative A; therefore, Alternative C would result in a less-than-significant effect to traffic and circulation during construction. Mitigation is included in **Section 5.8** to further reduce any impacts from construction traffic.

Project Traffic

Trip Generation

The projected vehicle trip generation resulting from Alternative C is shown in **Table 4.8-15**. Methodology used to determine trip generation and trip distribution is described above under **Section 4.8.1**.

TABLE 4.8-15
ALTERNATIVE C FRIDAY PM PEAK HOUR TRIP GENERATION

Land Use	ITE Code	Amount	Units	Average Daily Traffic	Friday PM Peak Hour		
					In	Out	Total
Shopping Center	820	175,000	sf	7,473	419	453	872
Pass-By	*34%*			*2,541*	*142*	*154*	*296*
Total				**4,932**	**277**	**299**	**576**

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

Trip Distribution

The vehicle trips that would be generated by Alternative C were assigned to the study road network based on existing traffic patterns and locations of similar shopping centers, since retail development has a higher proportion of traffic originating from local nearby communities rather than regional areas. Traffic to and from the Muskegon Site is expected to be distributed in the manner shown on Figures 16-1 and 16-2 of the TIS (**Appendix J**).

Traffic Conditions with Alternative C

To assess the impacts of Alternative C on transportation facilities in the study area, the projected number of trips generated by Alternative C was added to 2020 Buildout Year and 2025 Future Year baseline traffic volumes (refer to **Section 4.8.1**).

Intersection Analysis

Tables 4.8-16 and **4.8-17** show the Friday PM peak hour intersection delay and LOS for each of the study intersections with the addition of Alternative C traffic under 2020 Buildout Year conditions and 2025 Future Year conditions.

TABLE 4.8-16
2020 BUILDOUT PLUS ALTERNATIVE C INTERSECTION DELAY AND LOS

Intersection	Control	Approach	2020 Buildout		2020 Buildout Plus Alternative C	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. Airline Highway & Airport Road	Signalized	Overall	21.3	C	24.9	C
2. Airline Highway & Hile Road	Signalized	Overall	15.8	B	17.0	B
3. Harvey Street & Hile Road	Signalized	Overall	26.9	C	59.4	E
4. Grand Haven Road & Hile Road	Signalized	Overall	13.5	B	14.6	B
5. Harvey Street & East Ellis Road	Signalized	Overall	10.7	B	12.2	B
6. Harvey Street & Independence Drive	Signalized	Overall	36.6	D	46.3	D
7. Harvey Street & Sternberg Road	Signalized	Overall	48.4	D	57.9	E
8. Grand Haven Road & Sternberg Road	Signalized	Overall	29.5	C	30.6	C
9. Harvey Street & Mount Garfield Road	Signalized	Overall	24.0	C	24.2	C
10. Harvey Street & Pontaluna Road	Signalized	Overall	31.2	C	32.7	C
11. Grand Haven Road & Pontaluna Road	Signalized	Overall	27.7	C	27.9	C
12. Airline Highway & Sternberg Road	Signalized	Overall	17.6	B	18.3	B
13. Airline Highway & Farr Road	Signalized	Overall	16.2	B	16.2	B
14. Airport Road & NB BR US-31 On-Ramp	Free-Flow	EB LT	8.7	A	8.8	A
15. Airline Highway & WB I-96 Off-Ramp	SSSC	NB	35.3	E	42.2	E
		SB	26.7	D	29.5	D
16. Airline Highway & SB US-31 Ramps	SSSC	SB	19.4	C	23.0	C
17. Airline Highway & NB US-31 On-Ramp	Free-Flow	EB LT	8.1	A	8.2	A
18. Hile Road & EB I-96 Ramps	SSSC	NB	35.7	E	127.3	F
19. Hile Road & NB US-31 Off-Ramp	SSSC	NB	11.7	B	12.6	B
20. Sternberg Road & NB US-31 Ramps	SSSC	NB	173.6	F	227.2	F
21. Sternberg Road & NB US-31 Off-Ramp to WB Sternberg Road	SSSC	SB	11.8	B	12.4	B
22. Sternberg Road & SB US-31 Ramps	SSSC	SB	12.9	B	13.4	B
23. Pontaluna Road & NB US-31 Ramps	AWSC	Overall	43.8	E	47.3	E
24. Pontaluna Road & SB US-31 Off-Ramp	SSSC	SB	39.7	E	51.5	F
25. Pontaluna Road & SB US-31 On-Ramp	Free-Flow	WB LT	10.0	A	10.0	A
26. Farr Road & WB I-96 Off-Ramp	SSSC	NB	12.5	B	12.5	B
27. Farr Road & WB I-96 On-Ramp	Free-Flow	WB LT	7.5	A	7.5	A
28. Airline Highway & EB I-96 Ramps	SSSC	EB	28.9	D	28.9	D
29. Hile Road & Site Drive	SSSC	EB	DOES NOT EXIST		195.5	F

Notes: LT = left turn; SSSC = side-street stope controlled; AWSC = all-way stop controlled
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

TABLE 4.8-17
2025 FUTURE PLUS ALTERNATIVE C INTERSECTION DELAY AND LOS

Intersection	Control	Approach	2025 Future		2025 Future Plus Alternative C	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. Airline Highway & Airport Road	Signalized	Overall	22.0	C	25.9	C
2. Airline Highway & Hile Road	Signalized	Overall	15.9	B	17.2	B
3. Harvey Street & Hile Road	Signalized	Overall	28.4	C	62.2	E
4. Grand Haven Road & Hile Road	Signalized	Overall	13.6	B	14.6	B
5. Harvey Street & East Ellis Road	Signalized	Overall	10.8	B	12.4	B
6. Harvey Street & Independence Drive	Signalized	Overall	38.0	D	48.6	D
7. Harvey Street & Sternberg Road	Signalized	Overall	49.5	D	59.5	E
8. Grand Haven Road & Sternberg Road	Signalized	Overall	29.7	C	30.7	C
9. Harvey Street & Mount Garfield Road	Signalized	Overall	24.1	C	24.4	C
10. Harvey Street & Pontaluna Road	Signalized	Overall	32.0	C	33.6	C
11. Grand Haven Road & Pontaluna Road	Signalized	Overall	28.2	C	28.4	C
12. Airline Highway & Sternberg Road	Signalized	Overall	17.7	B	18.4	B
13. Airline Highway & Farr Road	Signalized	Overall	16.4	B	16.4	B
14. Airport Road & NB BR US-31 On-Ramp	Free-Flow	EB LT	8.7	A	8.8	A
15. Airline Highway & WB I-96 Off-Ramp	SSSC	NB	37.1	E	44.4	E
		SB	27.1	D	30.0	D
16. Airline Highway & SB US-31 Ramps	SSSC	SB	19.8	C	23.9	C
17. Airline Highway & NB US-31 On-Ramp	Free-Flow	EB LT	8.1	A	8.2	A
18. Hile Road & EB I-96 Ramps	SSSC	NB	37.5	E	136.3	F
19. Hile Road & NB US-31 Off-Ramp	SSSC	NB	11.8	B	12.7	B
20. Sternberg Road & NB US-31 Ramps	SSSC	NB	186.6	F	242.3	F
21. Sternberg Road & NB US-31 Off-Ramp to WB Sternberg Road	SSSC	SB	11.9	B	12.5	B
22. Sternberg Road & SB US-31 Ramps	SSSC	SB	13.0	B	13.5	B
23. Pontaluna Road & NB US-31 Ramps	AWSC	Overall	45.9	E	49.6	E
24. Pontaluna Road & SB US-31 Off-Ramp	SSSC	SB	42.2	E	55.2	F
25. Pontaluna Road & SB US-31 On-Ramp	Free-Flow	WB LT	10.0	A	10.0	A
26. Farr Road & WB I-96 Off-Ramp	SSSC	NB	12.6	B	12.6	B
27. Farr Road & WB I-96 On-Ramp	Free-Flow	WB LT	7.5	A	7.5	A
28. Airline Highway & EB I-96 Ramps	SSSC	EB	30.0	D	30.0	D
29. Hile Road & Site Drive	SSSC	EB	DOES NOT EXIST		135.1	F

Notes: LT = left turn; SSSC = side-street stope controlled; AWSC = all-way stop controlled
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

With the addition of Alternative C - related traffic, the following study intersection movements are projected to operate at an unacceptable LOS under 2020 Buildout Year and 2025 Future Year conditions:

- Signalized intersection of Harvey Street & Hile Road;
- NB left turn movement at the signalized intersection of Harvey Street & Independence Drive;
- Signalized intersection of Harvey Street & Sternberg Road;
- Stop controlled WB I-96 Off-Ramp approach to Airline Highway;
- Stop controlled left turn movement from the EB I-96 Off-Ramp approach to Hile Road;
- Stop controlled NB US-31 Off-Ramp approach to Sternberg Road;
- AWSC intersection of Pontaluna Road with the NB US-31 Ramps;
- Stop controlled left turn movement from the SB US-31 Off-Ramp left turn movement to Pontaluna Road;
- Proposed site driveway to Harvey Street.

Additionally, the following intersections would operate at unacceptable LOS under 2025 Future Year conditions:

- SB shared through/right turn movements at the signalized intersection of Harvey Street & Pontaluna Road;
- Stop controlled SB US-31 Off-Ramp to Airline Highway;

It should be noted that the intersection of Pontaluna Road/US-31 would operate unacceptably with or without the addition of Alternative C, and Alternative C would increase traffic at this intersection by less than two percent. MDOT has recently completed improvements to this intersection, including the construction of additional left and right turn lanes; however, the SB left turn movement from the SB US-31 off-ramp would continue to operate at LOS E or F. Further, SimTraffic network simulations indicate acceptable traffic operations and 95th percentile vehicle queue lengths for the WB and SB movements to be 10 and 4 vehicles, respectively, which is not significant. Therefore, impacts at this intersection is less than significant and the Tribe is not required to pay a fair share towards improvements at this intersection.

The increase in traffic generated by Alternative C would contribute to or cause unacceptable traffic operations at the study intersections outlined above under 2020 Buildout Year and 2025 Future Year conditions and without mitigation, these intersections would operate below acceptable LOS standards described in **Section 4.8.1**. These unacceptable LOS would create significant effects from the development of Alternative C. Mitigation measures have been recommended within the TIS and included within **Section 5.8** to reduce impacts. Upon implementation of recommended mitigation measures in **Section 5.8**, Alternative C would not contribute towards significant effects on study inteserctions under 2020 Buildout Year or 2025 Future Year conditions. See Tables 70 and 71 in **Appendix J** for a summary of study intersection delay and LOS after implementation of recommended mitigation measures under 2020 Buildout Year and 2025 Future Year conditions, respectively.

Roadway Segment Analysis

Tables 4.8-18 and **4.8-19** show the Friday PM peak hour V/C ratio and LOS for each of the study roadway segments with the addition of Alternative C traffic under 2020 Buildout Year and 2025 Future Year conditions.

TABLE 4.8-18
2020 BUILDOUT YEAR PLUS ALTERNATIVE C ROADWAY SEGMENT V/C RATIO AND LOS

Roadway Segment	Direction	2020 Buildout		2020 Buildout Plus Alternative C	
		V/C	LOS	V/C	LOS
1. Harvey Street - Hile Road to East Ellis Road	NB	0.53	D	0.63	E
	SB	0.43	D	0.54	D
2. Harvey Street - East Ellis Road to Independence Drive	NB	0.20	C	0.25	C
	SB	0.19	C	0.25	C
3. Harvey Street - Independence Drive to Sternberg Road	NB	0.37	D	0.41	D
	SB	0.33	D	0.39	D
4. Sternberg Road - Harvey Street to NB US-31	EB	0.39	C	0.40	C
	WB	0.47	D	0.50	D
5. Hile Road - Harvey Street to Airline Highway	EB	0.54	D	0.59	D
	WB	0.34	C	0.41	C
6. Airline Highway - Hile Road to US-31	EB	0.42	D	0.45	D
	WB	0.40	C	0.42	D
7. Airline Highway - US-31 to Airport Road	EB	0.46	D	0.48	D
	WB	0.26	D	0.26	D

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

TABLE 4.8-19
2025 FUTURE YEAR PLUS ALTERNATIVE C ROADWAY SEGMENT V/C RATIO AND LOS

Roadway Segment	Direction	2025 Future		2025 Future Plus Alternative C	
		V/C	LOS	V/C	LOS
1. Harvey Street - Hile Road to East Ellis Road	NB	0.53	D	0.64	E
	SB	0.43	D	0.54	D
2. Harvey Street - East Ellis Road to Independence Drive	NB	0.21	C	0.25	D
	SB	0.19	C	0.26	D
3. Harvey Street - Independence Drive to Sternberg Road	NB	0.37	D	0.41	D
	SB	0.33	D	0.39	D
4. Sternberg Road - Harvey Street to NB US-31	EB	0.39	C	0.40	C
	WB	0.48	D	0.51	D
5. Hile Road - Harvey Street to Airline Highway	EB	0.55	D	0.60	D
	WB	0.34	C	0.42	D
6. Airline Highway - Hile Road to US-31	EB	0.42	D	0.46	D
	WB	0.41	C	0.42	D
7. Airline Highway - US-31 to Airport Road	EB	0.46	D	0.49	D
	WB	0.26	D	0.27	D

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

With the addition of Alternative C - related traffic, the following study roadway segment is projected to operate at an unacceptable LOS under 2020 Buildout Year and 2025 Future Year conditions:

- NB Harvey Street between Hile Road and Ellis Road.

Since the completion of the TIS, Harvey Street has been widened to five lanes between Hile Road and Ellis Road. This, along with mitigation measure provided in **Section 5.8** regarding lane striping and adjustments of signal timing, ensures that Alternative C would not contribute towards significant effects on roadway segments under 2020 Buildout Year or 2025 Future Year conditions.

Freeway Facility Analysis

Tables 4.8-20 and **4.8-21** show the Friday PM peak hour density and LOS for each of the study freeway facilities under with the addition of Alternative C traffic under 2020 Buildout Year and 2025 Future Year conditions, respectively.

TABLE 4.8-20
2020 BUILDOUT YEAR PLUS ALTERNATIVE C FREEWAY FACILITY DELAY AND LOS

Freeway Segment / Ramp / Weave Segment	2020 Buildout		2020 Buildout Plus Alternative C	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
NB US-31				
1. South of Pontaluna Road	17.5	B	17.7	B
2. Pontaluna Road Off-Ramp	20.9	C	21.2	C
3. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	13.5	B	13.7	B
4. Pontaluna Road On-Ramp	17.7	B	18.1	B
5. Pontaluna Road On-Ramp to EB Sternberg Road Off-Ramp	15.7	B	16.1	B
6. EB Sternberg Road Off-Ramp	18.5	B	18.9	B
7. EB Sternberg Road Off-Ramp to WB Sternberg Road Off-Ramp	13.8	B	13.9	B
8. WB Sternberg Road Off-Ramp	16.6	B	16.8	B
9. WB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	12.7	B	12.8	B
10. Sternberg Road On-Ramp to Hile Road Off-Ramp	18.2	C	18.3	C
11. Hile Road Off-Ramp to EB US-31 BR On-Ramp *(Weave)*	20.7	C	20.7	C
12. EB US-31 BR On-Ramp to WB US-31 BR Off-Ramp *(Weave)*	17.7	B	17.7	B
13. WB US-31 BR Off-Ramp to WB I-96 / Airline Highway On-Ramps	16.9	B	16.9	B
14. WB I-96 / Airline Highway On-Ramps	24.5	C	24.6	C
NB US-31 FREEWAY FACILITY	**17.1**	**B**	**17.3**	**B**
SB US-31				
1. North of Airline Highway	21.3	C	21.3	C
2. Airline Highway Off-Ramp	25.1	C	25.2	C
3. Airline Highway Off-Ramp to Airline Highway On-Ramp	17.4	B	17.4	B
4. Airline Highway On-Ramp to EB I-96 Off-Ramp *(Weave)*	14.8	B	14.8	B
5. EB I-96 Off-Ramp to EB I-96 On-Ramp *(Weave)*	13.7	B	13.7	B
6. EB I-96 On-Ramp to WB Sternberg Road Off-Ramp	12.8	B	12.8	B

Freeway Segment / Ramp / Weave Segment	2020 Buildout		2020 Buildout Plus Alternative C	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
7. WB Sternberg Road Off-Ramp to EB Sternberg Road Off-Ramp	15.3	B	19.8	B
8. EB Sternberg Road Off-Ramp	19.8	B	19.8	B
9. EB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	8.0	A	8.0	A
10. Sternberg Road On-Ramp	11.6	B	12.0	B
11. Sternberg Road On-Ramp to Pontaluna Road Off-Ramp	10.5	A	10.8	A
12. Pontaluna Road Off-Ramp	12.3	B	12.7	B
13. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	8.7	A	9.0	A
14. Pontaluna Road On-Ramp	12.9	B	13.1	B
15. Pontaluna Road On-Ramp to south of Pontaluna Road	11.5	B	11.7	B
SB US-31 FREEWAY FACILITY	**14.4**	**B**	**14.5**	**B**
EB I-96				
1. Grand Haven Road to SB US-31 Off-Ramp	9.2	A	9.7	A
2. SB US-31 Off-Ramp	11.1	B	11.6	B
3. SB US-31 Off-Ramp to SB US-31 On-Ramp	4.4	A	4.9	A
4. SB US-31 On-Ramp to NB US-31 Off-Ramp *(Weave)*	8.3	A	8.6	A
5. Hile Road Off-Ramp	11.4	B	12.0	B
6. Hile Road Off-Ramp to Hile Road On-Ramp	8.4	A	8.4	A
7. Hile Road On-Ramp	10.5	B	10.6	B
8. Hile Road On-Ramp to Airline Highway Off-Ramp	9.4	A	9.5	A
9. Airline Highway Off-Ramp	11.1	B	11.2	B
10. Airline Highway Off-Ramp to Airline Highway On-Ramp	7.7	A	7.8	A
11. Airline Highway On-Ramp	10.3	B	10.4	B
12. Airline Highway On-Ramp to east of Airline Highway	9.2	A	9.3	A
EB I-96 FREEWAY FACILITY	**9.4**	**A**	**9.6**	**A**
WB I-96				
1. East of Airline Highway to Farr Road / Airline Highway Off-Ramp	10.2	A	10.3	B
2. Farr Road / Airline Highway Off-Ramp	12.1	B	12.2	B
3. Farr Road / Airline Highway Off-Ramp to Farr Road On-Ramp	8.2	A	8.3	A
4. Farr Road / Airline Highway On-Ramp	10.6	B	10.7	B
5. Farr Road / Airline Highway On-Ramp to NB US-31 Off-Ramp	9.6	A	9.7	A
6. NB US-31 Off-Ramp	11.6	B	11.8	B
7. NB US-31 Off-Ramp to NB US-31 On-Ramp	3.3	A	3.3	A
8. NB US-31 On-Ramp to Airline Highway Off-Ramp *(Weave)*	6.6	A	6.7	A
9. Airline Highway Off-Ramp to Airport Road On-Ramp	6.7	A	6.7	A
10. Airport Road On-Ramp	10.4	B	10.6	B
WB I-96 FREEWAY FACILITY	**9.4**	**A**	**9.5**	**A**

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

TABLE 4.8-21
2025 FUTURE YEAR PLUS ALTERNATIVE C FREEWAY FACILITY DELAY AND LOS

Freeway Segment / Ramp / Weave Segment	2025 Future		2025 Future Plus Alternative C	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
NB US-31				
1. South of Pontaluna Road	17.7	B	17.7	B
2. Pontaluna Road Off-Ramp	21.2	C	21.4	C
3. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	13.7	B	13.9	B
4. Pontaluna Road On-Ramp	17.9	B	18.3	B
5. Pontaluna Road On-Ramp to EB Sternberg Road Off-Ramp	15.9	B	16.2	B
6. EB Sternberg Road Off-Ramp	18.7	B	19.1	B
7. EB Sternberg Road Off-Ramp to WB Sternberg Road Off-Ramp	13.9	B	14.4	B
8. WB Sternberg Road Off-Ramp	16.8	B	17.0	B
9. WB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	12.8	B	13.0	B
10. Sternberg Road On-Ramp to Hile Road Off-Ramp	18.4	C	18.5	C
11. Hile Road Off-Ramp to EB US-31 BR On-Ramp *(Weave)*	21.0	C	21.0	C
12. EB US-31 BR On-Ramp to WB US-31 BR Off-Ramp *(Weave)*	17.9	B	17.9	B
13. WB US-31 BR Off-Ramp to WB I-96 / Airline Highway On-Ramps	17.1	B	17.1	B
14. WB I-96 / Airline Highway On-Ramps	24.8	C	24.9	C
NB US-31 FREEWAY FACILITY	**17.3**	**B**	**17.5**	**B**
SB US-31				
1. North of Airline Highway	21.5	C	21.6	C
2. Airline Highway Off-Ramp	25.4	C	25.5	C
3. Airline Highway Off-Ramp to Airline Highway On-Ramp	17.5	B	17.5	B
4. Airline Highway On-Ramp to EB I-96 Off-Ramp *(Weave)*	15.0	B	15.0	B
5. EB I-96 Off-Ramp to EB I-96 On-Ramp *(Weave)*	13.8	B	13.8	B
6. EB I-96 On-Ramp to WB Sternberg Road Off-Ramp	13.0	B	13.0	B
7. WB Sternberg Road Off-Ramp to EB Sternberg Road Off-Ramp	15.5	B	15.5	B
8. EB Sternberg Road Off-Ramp	20.0	B	20.0	B
9. EB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	8.1	A	8.1	A
10. Sternberg Road On-Ramp	11.7	B	12.1	B
11. Sternberg Road On-Ramp to Pontaluna Road Off-Ramp	10.6	A	10.9	A
12. Pontaluna Road Off-Ramp	12.4	B	12.8	B
13. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	8.8	A	9.0	A
14. Pontaluna Road On-Ramp	13.0	B	13.2	B
15. Pontaluna Road On-Ramp to south of Pontaluna Road	11.6	B	11.8	B
SB US-31 FREEWAY FACILITY	**14.5**	**B**	**14.6**	**B**
EB I-96				
1. Grand Haven Road to SB US-31 Off-Ramp	9.3	A	9.8	A
2. SB US-31 Off-Ramp	11.3	B	11.8	B
3. SB US-31 Off-Ramp to SB US-31 On-Ramp	4.5	A	4.9	A
4. SB US-31 On-Ramp to NB US-31 Off-Ramp *(Weave)*	8.4	A	8.7	A

Freeway Segment / Ramp / Weave Segment	2025 Future		2025 Future Plus Alternative C	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
5. Hile Road Off-Ramp	11.6	B	12.1	B
6. Hile Road Off-Ramp to Hile Road On-Ramp	8.5	A	8.5	A
7. Hile Road On-Ramp	10.6	B	10.7	B
8. Hile Road On-Ramp to Airline Highway Off-Ramp	9.5	A	9.6	A
9. Airline Highway Off-Ramp	11.2	B	11.4	B
10. Airline Highway Off-Ramp to Airline Highway On-Ramp	7.8	A	7.9	A
11. Airline Highway On-Ramp	10.4	B	10.5	B
12. Airline Highway On-Ramp to east of Airline Highway	9.3	A	9.4	A
EB I-96 FREEWAY FACILITY	**9.5**	**A**	**9.7**	**A**
WB I-96				
1. East of Airline Highway to Farr Road / Airline Highway Off-Ramp	10.3	A	10.4	A
2. Farr Road / Airline Highway Off-Ramp	12.2	B	12.3	B
3. Farr Road / Airline Highway Off-Ramp to Farr Road On-Ramp	8.3	A	8.4	A
4. Farr Road / Airline Highway On-Ramp	10.7	B	10.8	B
5. Farr Road / Airline Highway On-Ramp to NB US-31 Off-Ramp	9.7	A	9.8	A
6. NB US-31 Off-Ramp	11.8	B	11.9	B
7. NB US-31 Off-Ramp to NB US-31 On-Ramp	3.3	A	3.4	A
8. NB US-31 On-Ramp to Airline Highway Off-Ramp *(Weave)*	6.7	A	6.8	A
9. Airline Highway Off-Ramp to Airport Road On-Ramp	6.8	A	6.8	A
10. Airport Road On-Ramp	10.5	B	10.7	B
WB I-96 FREEWAY FACILITY	**9.5**	**A**	**9.6**	**A**
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).				

As shown in **Tables 4.8-20** and **4.8-21**, all study freeway facilities would continue to operate acceptable at LOS D or better during the Friday PM peak hour under 2020 Buildout Year and 2025 Future Year conditions with the addition of Alternative C traffic. Therefore, Alternative C would not contribute towards significant effects on freeway facilities under 2020 Buildout Year and 2025 Future Year conditions.

Transit Facilities

Transit facilities in the vicinity of the Muskegon Site and potential effects to transit services under Alternative C are the same as under Alternative A (**Section 4.8.2**). Implementation of mitigation in **Section 5.8** would ensure that no significant effects to transit services occur as a result of Alternative C.

Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities in the vicinity of the Muskegon Site under Alternative C would be the same as Alternative A. Refer to **Section 4.8.2**. Therefore, Alternative B would nave no significant adverse effects.

4.8.5 ALTERNATIVE D – CUSTER SITE ALTERNATIVE

Site Access

Public access to the Custer Site under Alternative D would be provided via the development of one driveway located along East First Street. No improvements to the main driveway are necessary to maintain safe ingress and egress of traffic at the Custer Site.

Construction Traffic

Construction of Alternative D would require truck trips for delivery of equipment and material, and daily construction workers trips. Traffic impacts resulting from the construction of Alternative D would be temporary and intermittent in nature and would generally occur during off-peak traffic hours. Construction-related traffic volumes would be concentrated on East First Street, Custer Road, United States Highway 10 (US-10), and US-31 in the immediate vicinity of the Custer Site, and would include temporary traffic delays due to slower moving construction trucks and the increase in worker vehicles on area roadways. Because construction traffic would be temporary, occur outside of peak hours, and therefore not create LOS impacts at study transportation facilities, no significant effects would occur to from Alternative D related construction traffic. Mitigation is included in **Section 5.8** to further reduce any impacts from construction traffic.

Project Traffic

Trip Generation

The projected vehicle trip generation resulting from Alternative D is shown in **Table 4.8-22**. Methodology used to determine trip generation and trip distribution is described above under **Section 4.8.1**.

TABLE 4.8-22
ALTERNATIVE D FRIDAY PM PEAK HOUR TRIP GENERATION

Land Use	Amount	Units	Average Daily Traffic	Friday PM Peak Hour		
				In	Out	Total
Casino	565	Gaming Positions	2,763	104	88	192
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).						

Trip Distribution

The trip distribution assumed for Alternative D is based on location of the Custer Site, type of the project, population surrounding the Custer Site, existing transportation facilities, existing traffic volumes and patterns on adjacent and nearby arterial roadways, and professional traffic engineering judgment. Traffic to and from the Custer Site is expected to be distributed in the manner shown on Figure 19 of the TIS (**Appendix J**).

Traffic Conditions with Alternative D

To assess the impacts of Alternative D on transportation facilities in the study area, the projected number of trips generated by Alternative D was added to 2020 Buildout Year and 2025 Future Year baseline traffic volumes (refer to **Section 4.8.1**).

Intersection Analysis

Tables 4.8-23 and **4.8-24** show the Friday PM peak hour intersection delay and LOS for each of the study intersections with the addition of Alternative D traffic under 2020 Buildout Year and 2025 Future Year conditions, respectively.

TABLE 4.8-23
2020 BUILDOUT YEAR PLUS ALTERNATIVE D INTERSECTION DELAY AND LOS

Intersection	Control	Approach	2020 Buildout		2020 Buildout Plus Alternative D	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. US-10 & SB US-31 Entrance Ramp	Signalized	Overall	3.6	A	3.8	A
2. US-10 / US-31 & Brye Road	Signalized	Overall	19.8	B	20.1	C
3. US-10 / US-31 & Stiles Road	Signalized	Overall	6.2	A	6.2	A
4. US-10 (State Street) & Main Street	Signalized	Overall	11.5	B	11.6	B
5. US-10 & NB to EB US-31 Exit Ramp	SSSC	NB	14.3	B	15.1	C
6. US-10 & US-31	SSSC	SB	10.9	B	11.2	B
7. US-10 & Custer Road / Main Street	SSSC	NB	14.7	B	21.3	C
		SB	13.4	B	15.3	C
8. Custer Road & First Street	SSSC	EB	9.7	A	11.0	B
		WB	8.7	A	8.7	B
9. First Street & Site Drive	SSSC	NB	DOES NOT EXIST		8.7	A

Notes: SSSC = side-street stope controlled
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

As shown in **Tables 4.8-23** and **4.8-24**, all study intersections would continue to operate acceptably at LOS D or better during the Friday PM peak hour under 2020 Buildout Year and 2025 Future Year conditions with the addition of Alternative D traffic. Therefore, Alternative D would not contribute towards significant effects on study nitersections under 2020 Buildout Year or 2025 Future Year conditions.

Roadway Segment Analysis

Tables 4.8-25 and **4.8-26** show the Friday PM peak hour V/C ratio and LOS for each of the study roadway segments with the addition of Alternative D traffic under 2020 Buildout Year and 2025 Future Year conditions, respectively.

TABLE 4.8-24
2025 FUTURE YEAR PLUS ALTERNATIVE D INTERSECTION DELAY AND LOS

Intersection	Control	Approach	2025 Future		2025 Future Plus Alternative D	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. US-10 & SB US-31 Entrance Ramp	Signalized	Overall	3.6	A	3.9	A
2. US-10 / US-31 & Brye Road	Signalized	Overall	20.0	B	20.4	C
3. US-10 / US-31 & Stiles Road	Signalized	Overall	6.2	A	6.2	A
4. US-10 (State Street) & Main Street	Signalized	Overall	11.6	B	11.7	B
5. US-10 & NB to EB US-31 Exit Ramp	SSSC	NB	14.5	B	15.3	C
6. US-10 & US-31	SSSC	SB	11.0	B	11.2	B
7. US-10 & Custer Road / Main Street	SSSC	NB	14.7	B	21.7	C
		SB	13.5	B	15.4	C
8. Custer Road & First Street	SSSC	EB	9.7	A	11.0	B
		WB	8.7	A	8.7	B
9. First Street & Site Drive	SSSC	NB	DOES NOT EXIST		8.7	A

Notes: SSSC = side-street stope controlled
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

TABLE 4.8-25
2020 BUILDOUT YEAR PLUS ALTERNATIVE D ROADWAY SEGMENT V/C RATIO AND LOS

Roadway Segment	Direction	2020 Buildout		2020 Buildout Plus Alternative D	
		V/C	LOS	V/C	LOS
1. US-10 - Custer Road to Bean Road	EB	0.26	B	0.32	B
	WB	0.18	B	0.23	B
2. US-10 - Bean Road to US-31	EB	0.35	D	0.39	D
	WB	0.31	D	0.35	D
3. US-10 - US-31 to Brye Road	EB	0.30	B	0.31	B
	WB	0.21	B	0.22	B
4. US-10 - Brye Road to SB US-31 Ramp	EB	0.32	B	0.33	B
	WB	0.30	B	0.31	B

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

TABLE 4.8-26
2025 FUTURE YEAR PLUS ALTERNATIVE D ROADWAY SEGMENT V/C RATIO AND LOS

Roadway Segment	Direction	2025 Future		2025 Future Plus Alternative D	
		V/C	LOS	V/C	LOS
1. US-10 - Custer Road to Bean Road	EB	0.26	B	0.32	B
	WB	0.18	B	0.23	B
2. US-10 - Bean Road to US-31	EB	0.36	D	0.40	D
	WB	0.31	D	0.35	D
3. US-10 - US-31 to Brye Road	EB	0.30	B	0.32	B
	WB	0.21	B	0.22	B
4. US-10 - Brye Road to SB US-31 Ramp	EB	0.32	B	0.34	B
	WB	0.30	B	0.31	B

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

As shown in **Tables 4.8-25** and **4.8-26**, all study roadway segments would continue to operate acceptably at LOS D or better during the Friday PM peak hour under 2020 Buildout Year and 2025 Future Year conditions with the addition of Alternative D traffic. Therefore, Alternative D would not contribute towards significant effects on roadway segments under 2020 Buildout Year or 2025 Future Year conditions.

Freeway Facility Analysis

Tables 4.8-27 and **4.8-28** show the Friday PM peak hour density and LOS for each of the study freeway facilities with the addition of Alternative D traffic under 2020 Buildout Year and 2025 Future Year conditions, respectively.

TABLE 4.8-27
2020 BUILDOUT YEAR PLUS ALTERNATIVE D FREEWAY FACILITY DELAY AND LOS

Freeway Segment / Ramp	2020 Buildout		2020 Buildout Plus Alternative D	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
NB US-31				
1. NB US-31 Exit Ramp to EB US-10	1.3	A	1.7	A
2. NB US-31 Exit Ramp to WB US-10	8.6	A	9.0	A
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).				

TABLE 4.8-28
2025 FUTURE YEAR PLUS ALTERNATIVE D FREEWAY FACILITY DELAY AND LOS

Freeway Segment / Ramp	2025 Future		2025 Future Plus Alternative D	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
NB US-31				
1. NB US-31 Exit Ramp to EB US-10	1.3	A	1.8	A
2. NB US-31 Exit Ramp to WB US-10	8.7	A	9.1	A
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).				

As shown in **Tables 4.8-27** and **4.8-28**, all study freeway facilities would continue to operate acceptably at LOS D or better during the Friday PM peak hour under 2020 Buildout Year and 2025 Future Year conditions with the addition of Alternative D traffic. Therefore, Alternative D would not contribute towards significant effects on freeway facilities under 2020 Buildout Year or 2025 Future Year conditions.

Transit Facilities

Currently there are no transportation services in the immediate vicinity of the Custer Site. Because there is sufficient parking available on site and there are no transit facilities currently providing public transit to the Custer Site, no significant effects would occur to transit facilities as a result of Alternative D.

Bicycle, and Pedestrian Facilities

Bicycle and pedestrian facilities in the vicinity of the Custer are limited, with no sidewalk facilities in the vicinity of the Custer Site and no bike path or bike lane along East First Street. Because sufficient parking is available and off-site sidewalk and bicycle facilities do not provide direct access to the Custer Site, no significant effects would occur to the existing pedestrian or bicycle facilities as a result of Alternative D.

4.8.6 ALTERNATIVE E – NO ACTION/NO DEVELOPMENT ALTERNATIVE

The traffic conditions under the No Action/No Development Alternative would continue as described in **Section 4.8.1** for the baseline without project conditions. No project-related traffic would be added to the local intersections, roadway segments, or freeway facilities, and no increase in demand on transit services or bicycle and pedestrian facilities would occur. Therefore, no effects would occur under this alternative.

4.9 LAND USE

This section assesses the significance of the direct effects to land use that would result from the development of each alternative described in **Section 2.0**. Effects are measured against the environmental baseline presented in **Section 3.9**. Indirect effects associated with off-site construction and growth-inducement are identified in **Section 4.14**. Cumulative effects are identified in **Section 4.15**.

Assessment Criteria

Adverse effects would occur if development would be incompatible with adjacent designated land uses, thereby impeding local and regional planning efforts.

4.9.1 ALTERNATIVE A – PROPOSED PROJECT

Land Use Planning

Alternative A would result in the development of a casino-hotel facility, parking, and other supporting facilities. As discussed in **Section 3.9**, Alternative A will transfer approximately 60 acres (Proposed Fee-to-Trust Property) into trust held by the United States, which would not be subject to State or local land use regulations. The Little River Band of Ottawa Indians (Tribe) would have jurisdictional authority over land use matters on the federal trust lands held on its behalf. The remaining approximately 26.5 acres would be left in fee and would continue to be subject to applicable State and local land use regulations. To facilitate implementation of Alternative A on the multi-jurisdictional Muskegon Site, the Tribe, Fruitport Township (Township), and Muskegon County (County) have entered into a Municipal Services Agreement (MSA) to describe the scope of the parties' respective rights and obligations (**Appendix B**). In Section 2.0 of the MSA, the Township and County enumerate their commitment to provide municipal services to the Muskegon Site. In order to address any impacts that could arise to the Township or County as a result of Alternative A, the MSA specifies that the Tribe's development shall follow the fire code, building code, and State of Michigan Drain Code in effect at the time of construction.

As described in **Section 3.9**, the Muskegon Site is zoned Shopping Center (SC-1), and the areas in the surrounding vicinity are zoned a mixture of General Business, Service Business, and Planned Unit Development (PUD). The Muskegon Site is within an area close to current urban and developed land, as it is adjacent to built-up areas of Norton Shores, and near commercial areas in western Fruitport Township.

Previous uses of the Muskegon Site include a horse racetrack and associated facilities. This is considered a past commercial use for entertainment purposes. Similarly, Alternative A would be categorized as a commercial development for entertainment purposes; therefore, Alternative A would be consistent with past uses on the Muskegon Site, as well as the primarily commercial adjacent land uses. Additionally, the viable economic development which would occur due to Alternative A would be consistent with the economic development goal of the most recent Muskegon County Comprehensive Plan (refer to Vision 3) (Muskegon County, 2013). Refer to **Section 4.7** for a discussion of the direct and indirect economic output due to the Alternative A. The Muskegon Site is within the Township limits and in an area that is almost entirely built out; therefore Alternative A would not introduce sprawling or "leap frog"

development to the area. Given the above, the Alternative A would not impede local and regional planning efforts.

Land Use Compatibility

The Muskegon Site was previously developed as a horse racetrack, but is currently unused, and most of the buildings and facilities have been demolished from the previous use. Nearby development is primarily commercial, with several homes located in a PUD area to the west, and some land zoned for commercial uses but is currently undeveloped open space located immediately south of the Muskegon Site. The development of Alternative A has the potential to result in significant impacts to adjacent sensitive receptors residing in the few nearby residences to the west of the Muskegon Site, as discussed in detail in the other topical sections of this Environmental Impact Statement (EIS). Impacts may include, but are not limited to, air quality and noise effects from construction and operational activities (**Sections 4.4** and **4.11** respectively); and congestion on local roads from increased traffic (**Section 4.8**). Implementation of BMPs provided in **Section 2.3.3** and mitigation measures identified in **Section 5.0** would reduce these potential adverse effects; therefore, the effects associated with land use compatibility would be less than significant.

Agriculture

The Muskegon Site is not zoned for agricultural uses and does not contain any farming operations or infrastructure that would support land cultivation. As described in **Section 3.9**, the Muskegon Site received a score of 11 for the site assessment component of the Farmland Conversion Impact Rating (FCIR) Form evaluation. Thus, the Muskegon Site does not meet the requirements for protection under the Farmland Protection Policy Act (FPPA). Therefore, Alternative A would not result in significant adverse effects to agricultural resources by being in compliance with the FPPA.

4.9.2 ALTERNATIVE B – REDUCED INTENSITY ALTERNATIVE

Land Use Planning

Alternative B would result in the development of a casino facility, on-site retail, and restaurants. As discussed above for Alternative A, Alternative B would transfer approximately 60 acres (Proposed Fee-to-Trust Property) into trust held by the United States, which would not be subject to State or local land use regulations. The Tribe would have jurisdictional authority over land use matters on the federal trust lands held on its behalf. The remaining approximately 26.5 acres in the Muskegon Site would be left in fee and would continue to be subject to applicable State and local land use regulations. This development would be less than half the size of Alternative A (121,226 square feet [sf] of buildings compared to 396,177 sf under Alternative A). The MSA entered into by the Tribe, Fruitport Township, and Muskegon County also applies to Alternative B (**Appendix B**).

Similar to Alternative A, Alternative B would be consistent with adjacent land uses and past land uses of the Muskegon Site, and the goals of the County, which seek to increase economic development within the County. The Muskegon Site is within the Township limits and in an area that is almost entirely built out; therefore Alternative B would not introduce sprawling or "leap frog" development to the area. Therefore, Alternative B would not impede local and regional planning efforts.

Land Use Compatibility

Similar to Alternative A, Alternative B has the potential to result in significant impacts to adjacent sensitive receptors residing in the few nearby residences to the west of the Muskegon Site, as discussed in detail in the other topical sections of this EIS. Impacts may include, but are not limited to, air quality and noise effects from construction and operational activities (**Sections 4.4** and **4.11** respectively); and congestion on local roads from increased traffic (**Section 4.8**). Implementation of BMPs provided in **Section 2.3.3** and mitigation measures identified in **Section 5.0** would reduce these potential adverse effects; therefore, the effects associated with land use compatibility would be less than significant.

Agriculture

The Muskegon Site is not zoned for agricultural uses and does not contain any farming operations or infrastructure that would support land cultivation. As described in **Section 3.9**, the Muskegon Site received a score of 11 for the site assessment component of the FCIR Form evaluation. Thus, the Muskegon Site does not meet the requirements for protection under the FPPA. Therefore, Alternative B would not result in significant adverse effects to agricultural resources by being in compliance with the FPPA.

4.9.3 ALTERNATIVE C – NON-GAMING ALTERNATIVE

Land Use Planning

Alternative C would result in the development of a retail shopping center on the 60-acre Proposed Fee-to-Trust Property. As discussed above, once the Proposed Fee-to-Trust Property is taken into trust, the Tribe would have jurisdictional authority over land use matters on the federal trust lands held on its behalf. As with Alternatives A and B, the remaining approximately 26.5 acres in the Muskegon Site would be left in fee and would continue to be subject to applicable State and local regulations. This development would be less than half the size of Alternative A (175,000 sf of buildings compared to 396,177 sf under Alternative A). No agreement with the Township has been made at this time to provide water supply and wastewater services to the site under Alternative C; however, it is assumed that an agreement similar to the MSA provided in **Appendix B** would be executed prior to construction of Alternative C, if it is selected as the preferred alternative.

Alternative C would be consistent with adjacent land uses of the Muskegon Site, and the goals of the County, which seek to increase economic development within the County, as well as the current zoning for the Muskegon Site (Shopping Center, SC-1). The Muskegon Site is within the Township limits and in an area that is almost entirely built out; therefore Alternative C would not introduce sprawling or "leap frog" development to the area. Given the above, Alternative C would not impede local and regional planning efforts.

Land Use Compatibility

Similar to Alternative A, Alternative C has the potential to result in significant impacts to adjacent sensitive receptors residing in the few nearby residences to the west of the Muskegon Site, as discussed in detail in the other topical sections of this EIS. Impacts may include, but are not limited to, air quality and

noise effects from construction and operational activities (**Sections 4.4** and **4.11** respectively); and congestion on local roads from increased traffic (**Section 4.8**). Implementation of BMPs provided in **Section 2.3.3** and mitigation measures identified in **Section 5.0** would reduce these potential adverse effects; therefore, the effects associated with land us compatibility would be less than significant.

Agriculture

The Muskegon Site is not zoned for agricultural uses and does not contain any farming operations or infrastructure that would support land cultivation. As described in **Section 3.9**, the Muskegon Site received a score of 11 for the site assessment component of the FCIR Form evaluation. Thus, the Muskegon Site does not meet the requirements for protection under the FPPA. Therefore, Alternative C would not result in significant adverse effects to agricultural resources by being in compliance with the FPPA.

4.9.4 ALTERNATIVE D – CUSTER SITE ALTERNATIVE

Land Use Planning

Alternative D would result in the development of a casino facility, parking, and necessary back house operations on approximately 45 acres of land already held in trust near the Village of Custer. The Tribe has jurisdictional authority over land use matters on the federal trust lands held on its behalf. Although, the site is not subject to the goals and policies of the Mason County Master Plan, Alternative D would be considered commercial entertainment, which is consistent with the goals of the Mason County Master Plan to broaden its economic base by increasing tourist attractions, including those related to expanding recreational activities, as discussed in **Section 3.9**. Refer to **Section 4.7** for a discussion of the direct and indirect economic output due to the Proposed Project.

As described in **Section 3.9**, the areas surrounding the Custer Site are zoned a mixture of Rural Estate (RE), Agricultural (AG), Recreation Residential (RR), and Forestry (F). The Custer Site is close to the Village of Custer, which contains residentially developed land, as well as a few small retail areas and schools.

Alternative D would be categorized as a commercial development for entertainment purposes. Although Alternative D would not be consistent with adjacent land uses, the economic development which would occur due to Alternative D would be consistent with the economic development goals in the most recent Mason County Master Plan (Mason County, 2014). Alternative D has the potential to impede planning efforts by developing an area of Mason County not planned for development. The Custer Site is within the Custer Township limits and in a rural area therefore; Alternative D has the potential introduce sprawling or “leap frog” development to the area. This is a significant impact.

Land Use Compatibility

The Custer Site is currently undeveloped and vacant and was last zoned RR (zoning designations do not apply to land in federal trust). The areas in the surrounding vicinity are zoned a mixture of RE, AG, and F. Alternative D would not be consistent the goals of the Mason County Master Plan, which has no development planned for the area of or surrounding the Custer Site. Development of Alternative D has

the potential to result in significant impacts to adjacent sensitive receptors as discussed in detail in the other topical sections of this EIS. Impacts may include, but are not limited to, air quality and noise effects from construction and operational activities (**Sections 4.4** and **4.11** respectively); congestion on local roads from increased traffic (**Section 4.8**); and alterations of the visual resources and aesthetics of the surrounding area (**Section 4.13**). Implementation of BMPs provided in **Section 2.3.3** and mitigation measures identified in **Section 5.0** would reduce these potential adverse effects; therefore, the effects associated with land use compatibility would be less than significant.

Agriculture

The Custer Site contains no prime farmland (NRCS, 2016b). As indicated on the FCIR Form, included as **Appendix K**, the Custer Site received a score of 55 for the site assessment component, making it impossible for the site to reach the 160-point threshold for protection under the FPPA. Thus, the Custer Site does not meet the requirements for protection under the FPPA.

The Custer Site is currently undeveloped and vacant, and it is not considered to be agricultural land of value. Additionally, Indian trust land is not subject to local zoning designations. Alternative D would not result in the conversion of agricultural land to a commercial use. Therefore, Alternative D would not result in significant adverse effects to agricultural resources by being in compliance with the FPPA.

4.9.5 ALTERNATIVE E – NO ACTION/NO DEVELOPMENT ALTERNATIVE

Under the No Action/No Development Alternative, no land would be taken into trust and no development would occur on either alternative site. The current land uses would continue to exist on each alternative site. No impacts associated with land use and agricultural resources would occur.

4.10 PUBLIC SERVICES

This section assesses the significance of the direct effects to public services that would result from the development of each alternative described in **Section 2.0**. Potential project related effects are measured against the environmental baseline presented in **Section 3.10**. Indirect effects associated with off-site construction and growth-inducement are identified in **Section 4.14**. Cumulative effects are identified in **Section 4.15**. Measures to avoid and, if necessary, mitigate for adverse effects are presented in **Section 5.10**.

Assessment Criteria

To determine the impact on public services the water supply, wastewater, solid waste, law enforcement, fire protection and emergency medical services, and electricity and natural gas service, demand for each alternative is considered. A significant impact would occur if project-related demands on public services would cause an exceedance of system capacities that result in adverse effects to the physical environment.

4.10.1 ALTERNATIVE A – PROPOSED PROJECT

Water Supply

As described in **Section 2.3.3**, under Alternative A the Muskegon Site would either be connected to the existing water distribution system maintained by the Fruitport Township (Township; Water Supply Option 1) in accordance with Section 2.4 of the Municipal Services Agreement (MSA; **Appendix B**) between the Little River Band of Ottawa Indians (Tribe), Township, and Muskegon County (see **Section 1.5.2**) or, should the Township be unable to provide water services to the Muskegon Site due to unforeseen circumstances, the Tribe would construct on-site wells and water tanks to supply water to the project (Water Supply Option 2). Both of these options are analyzed below. Proposed water mains are shown in Figure 4 of the Water Demand and Supply Study (**Appendix D**).

Municipal Water Connection (Water Supply Option 1)

In a letter dated May 13, 2016, the Township expressed that it is willing and able to supply water to the Muskegon Site to serve Alternative A (**Appendix P**). As shown in **Table 4.10-1**, the estimated average daily domestic water demand for consumption, food preparation, sanitation, and other general water requirements for Alternative A is approximately 144,250 gallons per day (GPD). The existing municipal water system has 3.7 million gallons per day (MGD) of capacity that is currently unused, which would be adequate to serve Alternative A (Fleis & Vandenbrink 2016d; **Appendix D**).

As described in **Section 2.3.3**, the Township's municipal potable water infrastructure would serve the Muskegon Site through a new 8-inch diameter on-site pipeline that would be looped from an existing water main in East Ellis Road to a water main in Harvey Road. Pursuant to Section 2.4 of the MSA, the on-site improvements would be constructed according to the Township's standards and requirements at the Tribe's cost and would be subject to the approval of the Township. The existing 8-inch diameter water main on East Ellis Road does not have adequate capacity to serve Alternative A and would need to be replaced with a 12-inch diameter water main (**Appendix D**). Mitigation included in **Section 5.10** would ensure the Tribe would either construct the new pipeline or pay the full actual cost to the Township

for constructing the new pipeline. With the implementation of this mitigation, the Township's water supply infrastructure would have sufficient available capacity to accommodate the increased demands resulting from the development of Alternative A. Potential indirect effects associated with the expansion of the Township's water supply infrastructure are discussed in **Section 4.14**.

TABLE 4.10-1
ESTIMATED WATER AND WASTEWATER FLOW – ALTERNATIVE A

Facility	Units	Water Demand Rate	Water Flow (GPD)	Wastewater Generation Rate	Wastewater Flow (GPD)
Casino	1,945 seats	50 GPD / seat	97,250	50 GPD / seat	97,250
Convention Center	10,000 sf	15 GPD / 100 sf	1,500	12.5 GPD / 100 sf	1,250
Restaurants					
Buffet	250 seats	5 GPD / seat	1,250	5 GPD / seat	1,250
24-Hour Café	100 seats	50 GPD / seat	5,000	50 GPD / seat	5,000
Specialty Restaurants	80 seats	35 GPD / seat	2,800	35 GPD / seat	2,800
Sports Bar/Lounge	150 seats	35 GPD / seat	5,250	35 GPD / seat	5,250
Deli/Food Court	50 seats	35 GPD / seat	1,750	35 GPD / seat	1,750
Retail (one shop)	100 sf	6 GPD / 100 sf	6	5 GPD / 100 sf	5
Hotel					
Hotel Rooms	220 rooms	100 GPD / room	22,000	100 GPD / room	22,000
Outdoor Pool	7,500 sf	90 GPD / 100 sf	6,750	75 GPD / 100 sf	5,625
Fitness Center	925 sf	75 GPD / 100 sf	694	62.5 GPD / 100 sf	578
Total GPD			***144,250***		***142,758***
Total GPM			***250***		***248***

Source: Fleis & Vandenbrink, 2016d and 2016a; **Appendix D** and **Appendix E**.

The Regional Water System (RWS) has a capacity of 22.8 MGD, with a peak hour demand of 19.1 MGD. With Alternative A, the peak hour demand has the potential to increase to 19.2 MGD, which remains within the RWS capacity. Therefore, 3.6 MGD would remain for the use of future growth requiring connections to the RWS. Therefore, no significant direct effects to the Township's water supply infrastructure would occur as a result of Alternative A.

As discussed in the MSA, upon connection to the Township's water distribution system, the Tribe will pay water capital connection charges and monthly service fees in the same manner as is usual and customary for all other users of the municipal public water system. Additionally, as described above, the Tribe would fund the upgrade of the Township's pipeline to the Muskegon Site (**Appendix B**). With

implementation of the MSA and of the pipeline upgrade along East Ellis Road, as discussed in **Section 5.10**, no significant adverse effects to the Township's public water distribution system and level of service would occur. Therefore, Water Supply Option 1 under Alternative A would not cause an exceedance of system capacities and no adverse effects to the physical environment would result.

On-Site Supply (Water Supply Option 2)

Under Water Supply Option 2 the Muskegon Site would not connect to the Township's water distribution system; therefore, Alternative A would not have any effect on the Township's water distribution system or the City of Muskegon's Filtration Plant. As described in **Section 3.10.1**, the RWS relies on Lake Michigan surface water purchased from the City of Muskegon; therefore, the use of wells on the Muskegon Site to serve Alternative A would not impact the RWS's water supply source and ability to provide water to its customers. Therefore, Water Supply Option 2 under Alternative A would not cause an exceedance of system capacities and no adverse effects to the physical environment would result.

Wastewater Service

As described in **Section 2.3.3**, under Alternative A, the Muskegon Site would either be connected to existing wastewater lines maintained by the Township (Wastewater Treatment Option 1) in accordance with Section 2.3 of the MSA (**Appendix B**) between the Tribe, Township, and Muskegon County (see **Section 1.5.2**) or, should the Township be unable to provide wastewater services to the Muskegon Site due to unforeseen circumstances, the Tribe will construct on-site wastewater facilities (Wastewater Treatment Option 2). Both of these options are analyzed below. Proposed sewer pipelines are shown in Figure 4 of the Wastewater Disposal Study (**Appendix E**). In a letter dated May 13, 2016, Fruitport Township expressed that it is willing and able to supply wastewater services to the Muskegon Site under Alternative A (**Appendix P**).

Municipal Treatment and Disposal (Wastewater Treatment Option 1)

As shown in **Table 4.10-1**, the projected average daily wastewater flow for Alternative A would be approximately 142,758 GPD. Pursuant to Section 2.3 of the MSA, wastewater infrastructure will be designed, installed, and maintained in accordance with Township sewer infrastructure standards.

As described in **Section 2.3.3**, the Township's municipal wastewater infrastructure will serve the Muskegon Site through the existing 10-inch sewer line in East Ellis Road, which connects to a 12-inch line on Harvey Street. Pursuant to Section 2.3 of the MSA, the on-site improvements required for this connection will be constructed according to the Township's standards and requirements at the Tribe's cost and will be subject to the approval of the Township. Cumulative impacts to the Township's wastewater collection system are discussed in **Section 4.15**. Potential indirect effects associated with the upgrade of the collection system are discussed in **Section 4.14**.

The Township's wastewater treatment facility has an existing capacity of approximately 43 MGD, 31 MGD of which is currently unused. The estimated demand of Alternative A is 142,758 GPD (0.14 MGD). Therefore, after buildout of Alternative A, approximately 30.9 MGD of capacity at the wastewater treatment facility would remain for the use of future growth and development in the area after

development of Alternative A. Because the existing wastewater treatment facility has adequate capacity to serve Alternative A, there would be a less-than-significant impact.

The Township's wastewater infrastructure (pipelines and lift stations), have an available capacity of 800 gallons per minute (GPM). The estimated demand of Alternative A is 248 GPM of infrastructure capacity. Therefore, after buildout of Alternative A, approximately 552 GPM of wastewater infrastructure capacity would remain for the use of future growth and development in the area. Because the existing sewer lines have adequate capacity to serve Alternative A, there will be a less-than-significant impact.

In accordance with Section 2.3 of the MSA, upon connection to the Township's sewer system the Tribe would pay the current capital connection charges and monthly service fees, as well as fund the upgrade of the Township's municipal system to the Muskegon Site (**Appendix B**). With implementation of the conditions of the MSA, as discussed in **Section 5.10**, no significant adverse effects to the Township's public wastewater collection and treatment system and level of service, such as the exceedance of the system's capacity, would occur.

On-Site Treatment and Disposal (Wastewater Treatment Option 2)

Under Wastewater Treatment Option 2 the Muskegon Site would not connect to the Township's wastewater infrastructure; therefore, Alternative A would not have any effect on the Township's wastewater infrastructure or the Muskegon County Wastewater Treatment Facility. Wastewater Treatment Option 2 under Alternative A would not cause an exceedance of system capacities and no adverse effects to the physical environment would result.

Solid Waste Service

Construction

Construction of Alternative A would result in a temporary increase in waste generation. Potential solid waste streams from construction would include paper, wood, glass, aluminum and plastics from packing materials; waste lumber; insulation; empty non-hazardous chemical containers; concrete; metal, including steel from welding/cutting operations; and electrical wiring. Waste that cannot be recycled would be disposed of at either the Muskegon County Landfill or the Ottawa County Landfill. The Muskegon County Landfill has an estimated available capacity of approximately 1.6 million cubic yards, and the Ottawa County Farms Landfill has an estimated available capacity of approximately 4.1 million cubic yards. The Muskegon County Landfill is estimated to be in operation through the year 2026, and the Ottawa County Farms Landfill until 2054, and expansions are planned for the Muskegon County Landfill to extend its closure date (MDEQ, 2018; Leverence, 2016). Therefore, Alternative A would not result in an exceedance of landfill capacities during construction.

Operation

As described in **Section 3.10.3**, the Muskegon Site is located within several solid waste companies' service areas. It is anticipated that the Tribe will contract with one of these companies for solid waste

collection service. Waste generated under Alternative A would be disposed of appropriately at the facilities described in **Section 3.10.3**.

As shown in **Table 4.10-2**, it is estimated that Alternative A would generate approximately 3.42 tons per day of trash. Landscaping and maintenance staff would pick up any trash that is left on the property. Decorative receptacles for trash and recycling would be placed strategically throughout the casino, hotel, and associated facilities to discourage littering. As discussed above, waste that cannot be recycled would be disposed of at either the Muskegon County Landfill or the Ottawa County Landfill. The solid waste from Alternative A would represent approximately 1,248 tons per year (tpy), which accounts for either approximately 0.077 percent of Muskegon County Landfill's total available capacity or approximately 0.030 percent of Ottawa County Landfill's total available capacity for each year the project is in operation. This would not significantly alter the expected lifetime of either landfill. Operation of Alternative A would not result in significant effects to solid waste services or landfill capacities, and no adverse effects to the physical environment would occur.

TABLE 4.10-2
ESTIMATED SOLID WASTE DISPOSAL – ALTERNATIVE A

Waste Generation Source	Waste Generation Rate	Units	Value	Total Waste (lb/day)
Hotel	2	lb / room / day	220 rooms	440
Casino (other services)	3.12	lb / 100 sf / day	149,069 sf	4,561
Convention Center	3.12	lb / 100 sf / day	38,790 sf	1,210
Restaurant	1	lb / seat / day	630 seats	630
Retail	2.5	lb / 1000 sf / day	100 sf	0.25
			Total lb/day	**6,841**
			Total tons/day	**3.42**
			Total tpy	***1,248***
Source: Cal Recycle, 2013.				

Law Enforcement, Fire Protection, and Emergency Response Services

An analysis of the impact of casino gambling on local crime rates is included in **Section 4.7**.

As discussed in **Section 2.3.1**, in accordance with Section 2.1 of the MSA, municipal services including but not limited to police, fire inspection and emergency response, public safety dispatch, emergency medical and ambulance services would be provided by the Township and County. The provision of law enforcement, fire protection, and emergency response services is further specified in the Cooperative Law Enforcement Agreement (CLEA) included as **Appendix C**. The CLEA provides procedural details for responding to incidents at or as a result of the proposed development at the Muskegon Site. Pursuant to Section 2.1 of the MSA, reiterated in **Section 5.10**, the Tribe will contribute a non-recurring payment to the Township for the provision of law enforcement, fire protection, and emergency response services, in addition to recurring payments dependent on increased demand for services due to incidents occurring at the Proposed Project. Implementation of Alternative A would result in an increase in the need for law enforcement, fire protection, and emergency response services. It is estimated that Alternative A will

generate approximately 70 incidents per year, which is an increase of 0.3 percent over current incident reports (Innovation Group, 2015). As discussed in **Section 3.10**, both the Fruitport Township Police Department (FPD) and the Fruitport Fire Department (FPFD) are located approximately 2.25 miles from the Muskegon Site.

With implementation of the MSA and CLEA, as discussed in **Section 5.10**, development of Alternative A would not result in significant effects on public law enforcement, fire protection, or emergency response services, such as an exceedance of service capacities, and no adverse effects to the physical environment would occur.

Electricity and Natural Gas Service

Electricity and natural gas would be provided by Consumers Energy and DTE Energy, respectively, for the Muskegon Site through nearby connections on East Ellis Road and Harvey Street, south and west of the Muskegon Site. See **Appendix P** for copies of the willingness to serve letters from Consumers Energy and DTE Energy. Consumers Energy and DTE Energy currently have sufficient capacity to serve Alternative A. Alternative A would not result in significant effects on energy or natural gas services, such as the exceedance of available system capacities.

4.10.2 ALTERNATIVE B – REDUCED INTENSITY ALTERNATIVE

Water Supply

As described in **Section 2.4.1**, under Alternative B the Muskegon Site would either be connected to the existing water mains maintained by the Township (Water Supply Option 1) in accordance with Section 2.4 of the MSA (**Appendix B**) between the Tribe, Township, and Muskegon County (see **Section 1.5.2**) or, should the Township be unable to provide water services to the Muskegon Site due to unforeseen circumstances, the Tribe would construct on-site wells and water tanks to supply water to the project (Water Supply Option 2). Both of these options are analyzed below. Proposed improvements are shown in Figure 5 of the Water Demand and Supply Study (**Appendix D**).

Municipal Water Connection (Water Supply Option 1)

In a letter dated May 13, 2016, the Township expressed that it is willing and able to supply water to the Muskegon Site (**Appendix P**). As with Alternative A, Alternative B would utilize the existing connection to the Township water main on East Ellis Road. Pursuant to Section 2.4 of the MSA, water supply infrastructure will be designed, installed, and maintained in accordance with Township water supply infrastructure standards. As discussed in the MSA (**Appendix B**), the Tribe will utilize existing municipal services provided by the Township and the County rather than duplicating those services on the Muskegon Site. The Township's municipal potable water distribution system would serve the Muskegon Site through connections to be provided to the Muskegon Site at the Tribe's cost. As discussed in the MSA, upon connection to the Township's water distribution system, the Tribe will pay water capital connection charges and monthly service fees in the same manner as is usual and customary for all other users of the municipal public water distribution system (**Appendix B**).

As shown in **Table 4.10-3**, the estimated average daily domestic water demand for consumption, food preparation, sanitation, and other general water requirements for the casino and restaurant developments proposed under Alternative B is approximately 72,406 GPD. The existing municipal water system has 3.7 MGD of capacity that is currently unused, which would be adequate to serve Alternative B (Fleis & Vandenbrink 2016d; **Appendix D**).

TABLE 4.10-3
ESTIMATED WATER AND WASTEWATER DEMAND – ALTERNATIVE B

Facility	Units	Water Demand Rate	Water Flow (GPD)	Wastewater Generation Rate	Wastewater Flow (GPD)
Casino	1,283 seats	50 GPD / seat	64,150	50 GPD / seat	64,150
Restaurants					
Buffet	150 seats	5 GPD / seat	750	5 GPD / seat	750
24-Hour Café	80 seats	50 GPD / seat	4,000	50 GPD / seat	4,000
Specialty Restaurants	50 seats	35 GPD / seat	1,750	35 GPD / seat	1,750
Sports Bar/Lounge	50 seats	35 GPD / seat	1,750	35 GPD / seat	1,750
Retail (one shop)	100 sf	6 GPD / 100 sf	6	5 GPD / 100 sf	5
Total GPD			***72,406***		***72,405***
Total GPM			***126***		***126***

Source: Fleis & Vandenbrink, 2016d and 2016a; **Appendix D** and **Appendix E**.

As described in **Section 2.4.1**, the Township's municipal potable water infrastructure would serve the Muskegon Site through a new 8-inch diameter on-site pipeline that would be looped from an existing water main in East Ellis Road to a water main in Harvey Road. Pursuant to Section 2.4 of the MSA, the on-site improvements would be constructed according to the Township's standards and requirements at the Tribe's cost and would be subject to the approval of the Township. The force main on East Ellis Road would need to be replaced with a 12-inch diameter main (**Appendix D**). The Tribe would be responsible for this upgrade, either by constructing the new pipeline or by providing payment to the Township for constructing the new pipeline (see **Section 5.10**). With the implementation of this mitigation, the Township's water supply infrastructure would have sufficient available capacity to accommodate the increased demands resulting from the development of Alternative B. Potential indirect effects associated with the expansion of the Township's water supply infrastructure are discussed in **Section 4.14**.

The RWS has a capacity of 22.8 MGD, with a peak hour demand of 19.1 MGD. Under Alternative B, the peak hour demand has the potential to increase to 19.2 MGD, which remains within the RWS capacity. Therefore, 3.6 MGD would remain for the use of future growth requiring connections to the RWS. Therefore, no significant direct effects to the Township's water supply infrastructure would occur as a result of Alternative B.

In accordance with Section 2.4 of the MSA, upon connection to the Township's water distribution system, the Tribe would pay the current water capital connection charges and monthly service fees, as well as fund the upgrade of the Township's pipeline to the Muskegon Site (**Appendix B**). With implementation of the MSA and of the pipeline upgrade along East Ellis Road, as discussed in **Section 5.10**, no significant effects to the Township's public water distribution system and level of service would occur. Therefore, Water Supply Option 1 under Alternative B would not cause an exceedance of system capacities and no adverse effects to the physical environment would result.

On-Site Supply (Water Supply Option 2)

Under Water Supply Option 2, the Muskegon Site would not connect to the Township's water distribution system; therefore, Alternative B would not have any effect on the Township's water distribution system or the City of Muskegon's Filtration Plant. On-site water facilities under Alternative B would be similar to Alternative A. Therefore, there would be no significant effect to municipal water services.

Wastewater Service

As described in **Section 2.4.1**, under Alternative B, the Muskegon Site would either be connected to existing wastewater lines maintained by the Township (Wastewater Treatment Option 1) in accordance with Section 2.3 of the MSA (**Appendix B**) between the Tribe, Township, and Muskegon County (see **Section 1.5.2**) or, should the Township be unable to provide wastewater services to the Muskegon Site due to unforeseen circumstances, the Tribe will construct on-site wastewater facilities (Wastewater Treatment Option 2). Both of these options are analyzed below. Sewer pipelines are shown in Figure 5 of the Wastewater Disposal Study (**Appendix E**). In a letter dated May 13, 2016, Fruitport Township expressed that it is willing and able to supply wastewater services to the Muskegon Site to serve Alternative B (**Appendix P**).

Municipal Treatment and Disposal (Wastewater Treatment Option 1)

As shown in **Table 4.10-3**, the projected average daily wastewater flow for Alternative B would be approximately 72,405 GPD. Pursuant to Section 2.3 of the MSA, wastewater infrastructure will be designed, installed, and maintained in accordance with Township sewer infrastructure standards.

As described in **Section 2.4.1**, the Township's municipal wastewater infrastructure will serve the Muskegon Site through the existing 10-inch sewer line in East Ellis Road, which connects to a 12-inch line on Harvey Street. Pursuant to Section 2.3 of the MSA, the on-site improvements required for this connection will be constructed according to the Township's standards and requirements, at the Tribe's cost, and will be subject to the approval of the Township.

The Township's wastewater treatment facility has an existing capacity of approximately 43 MGD, 31 MGD of which is currently unused. The estimated demand of Alternative B is 72,406 GPD (0.072 MGD). Therefore, after buildout of Alternative B, approximately 30.9 MGD of capacity at the wastewater treatment facility would remain for the use of future growth and development in the area. Because the existing wastewater treatment facility has adequate capacity to serve Alternative B, there will be a less-than-significant impact.

The Township's wastewater infrastructure (pipelines and lift stations), have an available capacity of 800 GPM. The estimated demand of Alternative B is 126 GPM of infrastructure capacity. Therefore, after buildout of Alternative B, approximately 674 GPM of wastewater infrastructure capacity would remain for the use of future growth and development in the area. Because the existing sewer lines have adequate capacity to serve Alternative B, as discussed in **Appendix E**, and there will be a less-than-significant impact.

In accordance with Section 2.3 of the MSA, upon connection to the Township's sewer system the Tribe would pay the current capital connection charges and monthly service fees, as well as fund the upgrade of the Township's municipal system to the Muskegon Site (**Appendix B**). With implementation of the conditions of the MSA, as discussed in **Section 5.10**, no significant adverse effects to the Township's public wastewater collection and treatment system and level of service, such as the exceedance of the system's capacity, would occur.

On-Site Treatment and Disposal (Wastewater Treatment Option 2)

Under Wastewater Treatment Option 2 the Muskegon Site would not connect to the Township's wastewater infrastructure; therefore, Alternative B would not have any effect on the Township's wastewater infrastructure or the Muskegon County Wastewater Treatment Facility.

Solid Waste Service

Construction

Construction of Alternative B would result in a temporary increase in waste generation. Potential solid waste streams from construction would include paper, wood, glass, aluminum and plastics from packing materials; waste lumber; insulation; empty non-hazardous chemical containers; concrete; metal, including steel from welding/cutting operations; and electrical wiring. As described for Alternative A, waste generated by Alternative B that cannot be recycled would be disposed of at either the Muskegon County Landfill or the Ottawa County Landfill. The Muskegon County Landfill has an estimated available capacity of approximately 1.6 million cubic yards, and the Ottawa County Farms Landfill has an estimated available capacity of approximately 4.1 million cubic yards. The Muskegon County Landfill is estimated to be in operation through the year 2026, and the Ottawa County Farms Landfill until 2054, and expansions are planned for the Muskegon County Landfill to extend its closure date (MDEQ, 2018; Leverence, 2016). Therefore, Alternative B would not result in an exceedance of landfill capacities during construction.

Operation

As described in **Section 3.10.3**, the Muskegon Site is located within several solid waste companies' service area. It is anticipated that the Tribe will contract with one of these companies for solid waste collection service. Waste generated under Alternative B would be disposed of appropriately at the facilities described in **Section 3.10.3**.

As shown in **Table 4.10-4**, it is estimated that Alternative B would generate approximately 1.72 tons per day of trash. Landscaping and maintenance staff would pick up any trash that is left on the property.

Decorative receptacles for trash and recycling would be placed strategically throughout the casino, hotel, and associated facilities to discourage littering. As discussed above, waste that cannot be recycled would be disposed of at either the Muskegon County Landfill or the Ottawa County Landfill. The solid waste from Alternative B would represent approximately 627 tpy, which accounts for either approximately 0.11 percent of the Muskegon County Landfill's total available capacity or approximately 0.046 percent of Ottawa County Landfill's total available capacity for each year the project is in operation. This would not significantly alter the expected lifetime of either landfill. Operation of Alternative B would not result in significant effects on solid waste services or landfill capacities and would no adverse effects to the physical environment would occur.

TABLE 4.10-4
ESTIMATED SOLID WASTE DISPOSAL – ALTERNATIVE B

Waste Generation Source	Waste Generation Rate	Units	Value	Total Waste (lb/day)
Casino (other services)	3.12	lb / 100 sf / day	99,558	3,106
Restaurant	1	lb / seat / day	330	330
Retail	2.5	lb / 1000 sf / day	100	0.25
			Total lb/day	**3,436**
			Total tons/day	**1.72**
			Total tpy	***627***
Source: Cal Recycle, 2013.				

Law Enforcement, Fire Protection, and Emergency Response Services

An analysis of the impact of casino gambling on local crime rates is included in **Section 4.7**.

As with Alternative A, municipal services including but not limited to police, fire inspection and emergency response, public safety dispatch, emergency medical and ambulance services would be provided by the Township and County under Alternative B. It is conservatively estimated that Alternative B will generate less than or equal to 70 incidents per year, which is an increase of less than or equal to 0.3 percent over current incident reports (Innovation Group, 2015). With implementation of the MSA and CLEA, as discussed in **Section 5.10**, development of Alternative B would not result in significant effects on public law enforcement, fire protection, or emergency response services, such as an exceedance of service capacities, and no adverse effects to the physical environment would occur.

Electricity and Natural Gas Service

As described for Alternative A, electricity and natural gas would be provided by Consumers Energy and DTE Energy, respectively, for the development of Alternative B through nearby connections on Harvey Street and East Ellis Road, west and south of the Muskegon Site. See **Appendix P** for copies of the willingness to serve letters from Consumers Energy and DTE Energy. Consumers Energy and DTE Energy currently have sufficient capacity to serve Alternative B. Alternative B would not result in significant effects on energy or natural gas services, such as the exceedance of available system capacities.

4.10.3 ALTERNATIVE C – NON-GAMING ALTERNATIVE

Water Supply

As described in **Section 2.5.1**, under Alternative C the Muskegon Site would either be connected to the existing water mains maintained by the Township (Water Supply Option 1) or, should the Township be unable to provide water services to the Muskegon Site due to unforeseen circumstances, the Tribe would construct on-site wells and water tanks to supply water to the project (Water Supply Option 2). Both of these options are analyzed below. Proposed improvements are shown in Figure 6 of the Water Demand and Supply Study (**Appendix D**). There is currently no agreement for Alternative C, but should this alternative be chosen, it is assumed an agreement similar to the MSA would be executed prior to construction. In a letter dated May 13, 2016, Fruitport Township expressed that it is willing and able to supply water to the Muskegon Site to serve Alternative C (**Appendix P**).

Municipal Water Connection (Water Supply Option 1)

No agreement with the Township has been made at this time to provide municipal services to the site under Alternative C; however, it is assumed that an agreement similar to the MSA provided in **Appendix B** would be executed prior to construction of Alternative C. It is assumed that as with Alternatives A and B, the Tribe would utilize existing municipal services provided by the Township for the development of Alternative C rather than duplicating those services on the Muskegon Site. The Township's municipal potable water distribution system would likely serve the Muskegon Site through connections to be provided to the Muskegon Site at the Tribe's cost. Domestic water would be provided by extensions of the Township water supply system along East Ellis Road and Harvey Street.

As shown in **Table 4.10-5**, the estimated average daily domestic water demand for consumption, food preparation, sanitation, and other general water requirements for Alternative C is approximately 10,500 GPD. The existing municipal water system has 3.7 MGD of capacity that is currently unused, which would be adequate to serve Alternative C (Fleis & Vandenbrink 2016d; **Appendix D**).

TABLE 4.10-5
ESTIMATED WATER AND WASTEWATER DEMAND – ALTERNATIVE C

Facility	Units	Water Demand Rate	Water Flow (GPD)	Wastewater Generation Rate	Wastewater Flow (GPD)
Retail	175,000 sf	6 GPD / 100 sf	10,500	5 GPD / 100 sf	8,750
Total GPD			***10,500***		***8,750***
Total GPM			***18***		***15***

Source: Fleis & Vandenbrink, 2016d and 2016a; **Appendix D** and **Appendix E**.

As described in **Section 2.5.1**, the Township's municipal potable water infrastructure would serve the Muskegon Site through a new 8-inch diameter on-site pipeline that would be looped from an existing water main in East Ellis Road to a water main in Harvey Road. The on-site improvements would be constructed according to the Township's standards and requirements at the Tribe's cost and would be subject to the approval of the Township. The existing 8-inch diameter water main on East Ellis Road

does not have adequate capacity to serve Alternative A and would need to be replaced with a 12-inch diameter water main (**Appendix D**). Mitigation included in **Section 5.10** would ensure the Tribe would either construct the new pipeline or pay the full actual cost to the Township for constructing the new pipeline. With implementation of the conditions of an agreement with the Township, as discussed in **Section 5.10**, the Township's water supply would have sufficient available capacity to accommodate the increased demands resulting from the development of Alternative C. Cumulative impacts to the Township's water supply sources are discussed in detail in **Section 4.15**. Potential indirect effects associated with the expansion of the Township's water supply infrastructure are discussed in **Section 4.14**.

The RWS has a capacity of 22.8 MGD, with a peak hour demand of 19.1 MGD. Under Alternative C, the peak hour demand has the potential to increase to 19.2 MGD, which remains within the RWS capacity. Therefore, 3.6 MGD would remain for the use of future growth requiring connections to the RWS. Therefore, no significant direct effects to the Township's water supply infrastructure would occur as a result of Alternative C.

As with Alternatives A and B, the Muskegon Site would be connected to the Township's existing system under Alternative C. The City's existing distribution facilities have available capacity to service the increased demands from Alternative C. Alternative C would demand less water supply than Alternatives A or B. With implementation of an agreement with the Township and the pipeline upgrade along East Ellis Road, as discussed in **Section 5.10**, no significant effects to the Township's public water distribution system and level of service would occur. Therefore, Water Supply Option 1 under Alternative C would not cause an exceedance of system capacities and no adverse effects to the physical environment would result.

On-Site Supply (Water Supply Option 2)

Under Water Supply Option 2 the Muskegon Site would not connect to the Township's water distribution system; therefore, Alternative B would not have any effect on the Township's water distribution system or the City of Muskegon's Filtration Plant. On-site water facilities under Alternative C would be similar to Alternative A. Therefore, there would be no significant effect to municipal water supply services.

Wastewater Service

As described in **Section 2.5.1**, under Alternative C, the Muskegon Site would either be connected to existing wastewater lines maintained by the Township (Wastewater Treatment Option 1) or, should the Township be unable to provide wastewater services to the Muskegon Site due to unforeseen circumstances, the Tribe will construct on-site wastewater facilities (Wastewater Treatment Option 2). Both of these options are analyzed below. Sewer pipelines are shown in Figure 6 of the Wastewater Disposal Study (**Appendix E**).

Municipal Treatment and Disposal (Wastewater Treatment Option 1)

In a letter dated May 13, 2016, Fruitport Township expressed that it is willing and able to supply wastewater services to the Muskegon Site to serve Alternative C (**Appendix P**). As described previously, no agreement with the Township has been made at this time to provide wastewater services to the site

under Alternative C; however, it is assumed that an agreement similar to the MSA provided in **Appendix B** would be executed prior to construction of Alternative C. As with Alternatives A and B, under Alternative C, it is assumed the Township's public sewer and wastewater treatment system will serve the Muskegon Site through connections to be provided to the Muskegon Site at the Tribe's cost. Assuming an agreement similar to the MSA is reached, water infrastructure would be designed, installed, and maintained in accordance with Township sewer infrastructure standards.

As described in **Section 2.5.1**, the Township's municipal wastewater infrastructure would serve the Muskegon Site through the existing 10-inch diameter sewer line in East Ellis Road, which connects to an existing 12-inch diameter line on Harvey Street. The on-site improvements required for this connection would be constructed according to the Township's standards and requirements at the Tribe's cost and would be subject to the approval of the Township.

The Township's wastewater treatment facility has an existing capacity of approximately 43 MGD, 31 MGD of which is currently unused. The estimated demand of Alternative C is 8,750 GPD (0.0088 MGD). Therefore, after buildout of Alternative C, approximately 31.0 MGD of capacity at the wastewater treatment facility would remain for the use of future growth and development in the area. Because the existing wastewater treatment facility has adequate capacity to serve Alternative C, there will be a less-than-significant impact.

The Township's wastewater infrastructure (pipelines and lift stations), have an available capacity of 800 GPM. The estimated demand of Alternative C is 15 GPM of infrastructure capacity. Therefore, after buildout of Alternative C, approximately 785 GPM of wastewater infrastructure capacity would remain for the use of future growth and development in the area. The existing sewer lines have adequate capacity to serve Alternative C, there will be a less-than-significant impact.

Assuming an agreement similar to the MSA is reached and connection to the Township's sewer system is established, the Tribe would pay the current capital connection charges and monthly service fees, as well as fund the upgrade of the Township's municipal system to the Muskegon Site under Alternative C. With implementation of the conditions of an agreement with the Township, as discussed in **Section 5.10**, Alternative C would cause no significant adverse effects to the level of service of the Township's public wastewater collection and treatment system, and level of service, such as the exceedance of the system's capacity, would occur.

On-Site Treatment and Disposal (Wastewater Treatment Option 2)

Under Wastewater Treatment Option 2 the Muskegon Site would not connect to the Township's wastewater infrastructure; therefore, Alternative C would not have any effect on the Township's wastewater infrastructure or the Muskegon County Wastewater Treatment Facility.

Solid Waste Service

Construction

Construction of Alternative C would result in a temporary increase in waste generation. Potential solid waste streams from construction would include paper, wood, glass, aluminum and plastics from packing

materials; waste lumber; insulation; empty non-hazardous chemical containers; concrete; metal, including steel from welding/cutting operations; and electrical wiring. As described for Alternatives A and B, waste generated by Alternative C that cannot be recycled would be disposed of at either the Muskegon County Landfill or the Ottawa County Farms Landfill. The Muskegon County Landfill has an estimated available capacity of approximately 1.6 million cubic yards, and the Ottawa County Farms Landfill has an estimated available capacity of approximately 4.1 million cubic yards. The Muskegon County Landfill is estimated to be in operation through the year 2026, and the Ottawa County Farms Landfill until 2054, and expansions are planned for the Muskegon County Landfill to extend its closure date (MDEQ, 2018; Leverence, 2016). Therefore, Alternative A would not result in an exceedance of landfill capacities during construction.

Operation

As described in **Section 3.10.3**, the Muskegon Site is located within several solid waste companies' service area. It is anticipated that the Tribe will contract with one of these companies for solid waste collection service. Waste generated under Alternative C would be disposed of appropriately at the facilities described in **Section 3.10.3**.

As shown in **Table 4.10-6**, it is estimated that Alternative C would generate approximately 0.22 tons per day of trash. Landscaping and maintenance staff would pick up any trash that is left on the property. Decorative receptacles for trash and recycling would be placed strategically throughout the retail facilities to discourage littering. As discussed above, waste that cannot be recycled would be disposed of at either the Muskegon County Landfill or the Ottawa County Landfill. The solid waste from Alternative C would represent approximately 79.8 tpy, which accounts for either approximately 0.0017 percent of Muskegon County's Landfill's total available capacity or approximately 0.0019 percent of Ottawa County Landfill's total available capacity for each year the project is in operation. This would not significantly alter the expected lifetime of either landfill. Operation of Alternative C would not result in significant effects on solid waste services or landfill capacities, no adverse effects to the physical environment would occur, and would have a lesser effect than Alternatives A or B.

TABLE 4.10-6
ESTIMATED SOLID WASTE DISPOSAL – ALTERNATIVE C

Waste Generation Source	Waste Generation Rate	Units	Value	Total Waste (lb/day)
Retail	2.5	lb / 1000 sf / day	175,000	437.5
			Total lb/day	**437.5**
			Total tons/day	**0.22**
			Total tpy	***79.8***
Source: Cal Recycle, 2013.				

Law Enforcement, Fire Protection, and Emergency Response Services

No agreement with the Township has been made at this time to provide law enforcement and fire protection services to the site under Alternative C; however, it is assumed that an agreement similar to the MSA provided in **Appendix B** would be executed prior to construction of Alternative C. It is

conservatively estimated that Alternative C would generate less than or equal to 70 incidents per year due to increased visitor potential, which is an increase of less than or equal to 0.3 percent over current incident reports (Innovation Group, 2015). With implementation of the mitigation measures as discussed in **Section 5.10**, development of Alternative C would not result in significant effects on public law enforcement, fire protection, or emergency response services, such as that of an exceedance of service capacities, and no adverse effects to the physical environment would occur.

Electricity and Natural Gas Service

As described for Alternatives A and B, electricity and natural gas would be provided by Consumers Energy and DTE Energy, respectively, for the development of Alternative C through nearby connections on Harvey Street and East Ellis Road, west and south of the Muskegon Site. See **Appendix P** for copies of the willingness to serve letters from Consumers Energy and DTE Energy. Consumers Energy and DTE Energy currently have sufficient capacity to serve Alternative C. Alternative C would not result in significant effects on energy or natural gas services, such as the exceedance of available system capacities.

4.10.4 ALTERNATIVE D – CUSTER SITE ALTERNATIVE

Water Supply

As described in **Section 2.6.1**, the Custer Site would either be connected to water mains maintained by the City of Scottville (Water Supply Option 1) or the Tribe would construct on-site wells and water tanks to supply water to the project (Water Supply Option 2). Both of these options are analyzed below.

Municipal Water Connection (Water Supply Option 1)

As shown in **Table 4.10-7**, the estimated average daily domestic water demand for consumption, food preparation, sanitation, and other general water requirements for Alternative D is approximately 37,536 GPD (0.037 MGD). As described in **Section 2.6.1**, the City's municipal potable water infrastructure could serve the Custer Site through a new 12-inch diameter water main that would provide a connection from the City of Scottville to the Custer Site. Potential indirect effects associated with the expansion of the City's water supply infrastructure are discussed in **Section 4.14**.

TABLE 4.10-7
ESTIMATED WATER AND WASTEWATER DEMAND – ALTERNATIVE D

Facility	Units	Water Demand Rate	Water Flow (GPD)	Wastewater Generation Rate	Wastewater Flow (GPD)
Casino	660 seats	50 GPD / seat	33,000	50 GPD / seat	33,000
Restaurants					
24-Hour Café	90 seats	50 GPD / seat	4,500	50 GPD / seat	4,500
Retail (one shop)	600 sf	6 GPD / 100 sf	36	5 GPD / 100 sf	30
Total GPD			***37,536***		***37,530***
Total GPM			***26***		***26***

Source: Fleis & Vandenbrink, 2016d and 2016a; **Appendix D** and **Appendix E**.

The existing capacity of the City of Scottville's water conveyance system has 0.18 MGD of unused capacity, which would be adequate to serve the 0.037 MGD water demand generated by the operation of Alternative D (Fleis & Vandenbrink, 2016d; **Appendix D**).

The Ludington Water Treatment Plant (LWTP) has a total capacity of 6.4 MGD, with a current maximum daily demand of 3.6 MGD. With Alternative D, the maximum daily demand would increase by 0.037 MGD, which would not exceed the LWTP's total capacity. Therefore, the LWTP would have sufficient capacity to serve the projected demands of Alternative D.

Proposed water mains are shown in Figure 8 of the Water Demand and Supply Study (**Appendix D**). However, on-site storage would be required to alleviate the capacity of peak demands during fire flows. A 300,000-gallon tank would be required on site to meet the fire flow requirement of 2,500 GPM for 2 hours. With the mitigation measures presented in **Section 5.10**, including entering into an agreement with the City of Scottville, and the payment of water connection fees, Alternative D would have no significant adverse effects to the City's public water distribution system. Additionally, no impacts to the level of service provided to current water customers would occur. Therefore, Water Supply Option 1 under Alternative D would not cause an exceedance of system capacities and no adverse effects to the physical environment would result.

On-Site Supply (Water Supply Option 2)

Under Water Supply Option 2 the Custer Site would not connect to the City's water distribution system; therefore, Alternative D would not have any effect on the City's water distribution system or the LWTP. The use of wells on the Custer Site to serve Alternative D would not impact the City's water supply source and ability to provide water to its customers. On-site wells would be constructed on the Custer Site.

Wastewater Service

As described in **Section 2.6.1**, under Alternative D, the Custer Site would either be connected to existing wastewater lines maintained by the City (Wastewater Treatment Option 1) or the Tribe would construct on-site wastewater facilities (Wastewater Treatment Option 2). Both of these options are analyzed below.

Municipal Treatment and Disposal (Wastewater Treatment Option 1)

As shown in **Table 4.10-7**, the projected average daily wastewater flow for Alternative D would be approximately 37,530 GPD. The Ludington Wastewater Treatment Plant (LWWTP) has 1.0 MGD of available capacity, which would be adequate to serve Alternative D (Fleis & Vandenbrink, 2016a; **Appendix D**). Additionally, the available capacity of the City's wastewater collection system (pipelines and lift stations) is approximately 3.5 MGD, with a current flow of 2.5 MGD. Therefore, the addition of wastewater from the Alternative D would not have a significant impact on the City's wastewater collection system.

As described in **Section 2.6.1**, the City's municipal wastewater infrastructure could serve the Muskegon Site through new 12-inch diameter sewer line along East First Street, Tuttle Road, and State Street

(United States Highway 10 [US-10]). Refer to Figure 8 of **Appendix D**. Potential indirect effects associated with the extension of the collection system are discussed in **Section 4.14**.

With the mitigation measures included in **Section 5.10**, Alternative D would have no significant adverse effects to the level of service of the City's public wastewater collection and treatment systems.

On-Site Treatment and Disposal (Wastewater Treatment Option 2)

Under Wastewater Treatment Option 2 the Custer Site would not connect to the City's wastewater infrastructure; therefore, Alternative D would not have any effect on the City's wastewater collection system or the LWWTP.

Solid Waste Service

Construction

Construction of Alternative D would result in a temporary increase in waste generation. Potential solid waste streams from construction would include paper, wood, glass, aluminum and plastics from packing materials; waste lumber; insulation; empty non-hazardous chemical containers; concrete; metal, including steel from welding/cutting operations; and electrical wiring. Waste generated by Alternative D that cannot be recycled would be disposed of at the Manistee County Landfill. The Manistee County Landfill has an estimated available capacity of approximately 8.8 million cubic yards and is estimated to be in operation through the year 2069 (MDEQ, 2018). Therefore, waste generated during the construction of Alternative D would not result in an exceedance of landfill capacities during construction.

Operation

As described in **Section 3.10.3**, the Custer Site is located within several solid waste companies' service areas. It is anticipated that the Tribe will contract with one of these companies for solid waste collection service. Waste generated under Alternative A would disposed of appropriately at the facilities described in **Section 3.10.3**.

As shown in **Table 4.10-8**, it is estimated that Alternative D would generate approximately 1.26 tons per day of solid waste. Landscaping and maintenance staff would pick up any trash that is left on the property. Decorative receptacles for trash and recycling would be placed strategically throughout the retail facilities to discourage littering. As discussed above, waste that cannot be recycled would be disposed of at the Manistee County Landfill. The solid waste from Alternative D would represent approximately 460 tpy, which accounts for approximately 0.015 percent of Manistee County Landfill's total available capacity each year the project is in operation. This would not significantly alter the expected lifetime of either landfill. Operation of Alternative D would not result in significant adverse effects on solid waste services or landfill capacities.

Law Enforcement, Fire Protection, and Emergency Response Services

An analysis of the impact of casino gambling on local crime rates is included in **Section 4.7**.

TABLE 4.10-8
ESTIMATED SOLID WASTE DISPOSAL – ALTERNATIVE D

Waste Generation Source	Waste Generation Rate	Units	Value	Total Waste (lb/day)
Casino (other services)	3.12	lb / 100 sf / day	77,810	2,428
Restaurant	1	lb / seat / day	90	90
Retail	2.5	lb / 1000 sf / day	600	1.5
			Total lb/day	**2,519**
			Total tons/day	**1.26**
			Total ton/year	***460***
Source: Cal Recycle, 2013.				

As discussed in **Section 3.10.4**, the Custer Site is within the Scottville Fire Department (SFD) and Scottville Police Department (SPD) service area. No agreement with the City has been made at this time to provide law enforcement and fire services to the site under Alternative D. It is estimated that Alternative D will generate approximately 24 incidents per year, which is an increase of 1.0 percent over current incident reports (**Appendix I**; Innovation Group, 2015). The SPD and SFD may require additional personnel or equipment to meet the increased need for services under Alternative D. Consequently, the effect on public law enforcement and fire protection services would be considered significant. With implementation of the conditions of an agreement with the City, as discussed in **Section 5.10**, development of Alternative D would not result in significant adverse effects on public law enforcement, fire protection, or emergency response services, such as an exceedance of service capacities.

Electricity and Natural Gas Service

Electricity would be provided by Consumers Energy for the development of Alternative D through nearby connections on East First Street, north of the Custer Site. Consumers Energy currently has sufficient capacity to serve Alternative D.

Natural gas would be provided by either DTE Gas Company for the development of Alternative D through a nearby connection at the intersection of East First Street and Jefferson Street, east of the Custer Site, or by on-site propane tanks. Provision of natural gas by DTE Gas Company would include the extension of a gas line, currently located less than 1.0 mile east of the Custer Site along East First Street. Indirect effects associated with the extension of this gas line are analyzed in **Section 4.14**. DTE Gas Company currently has sufficient capacity to serve Alternative D. Should DTE Gas Company be unable to serve Alternative D, propane would be provided via an on-site storage tank, which would be refilled as needed by a company such as AmeriGas, which has an office in Ludington.

Consumers Energy, DTE Gas Company, and AmeriGas have sufficient capacities to serve the Custer Site under Alternative D. Therefore, Alternative D would not result in significant effects on energy or natural gas services, such as the exceedance of available system capacities.

4.10.5 ALTERNATIVE E – NO ACTION/NO DEVELOPMENT ALTERNATIVE

Existing uses on the alternative sites would continue under the No Action/No Development Alternative. No additional public services would be necessary and, therefore, no impacts to public service providers would occur.

4.11 NOISE

This section assesses the significance of the direct effects of noise that would result from the development of each alternative described in **Section 2.0**. Effects are measured against the environmental baseline presented in **Section 3.11**. Indirect effects associated with off-site construction and growth-inducement are identified in **Section 4.14**. Cumulative effects are identified in **Section 4.15**.

Assessment Criteria

The assessment of the significance of project-related noise effects is based on Federal Noise Abatement Criteria (NAC) standards used by the Federal Highway Administration (FHWA; **Table 3.11-3** and **3.11-4**). Adverse noise-related effects would occur during construction and operation, if project implementation would result in an increase in the ambient noise environment of greater than 72 A-weighted decibels (dBA) equivalent noise level (Leq) or 5.0 dBA Leq greater than the baseline noise levels (whichever is louder). FHWA considers a traffic noise impact to occur if predicted peak-hour traffic noise levels "approach or exceed" the NAC or "substantially exceed" existing levels. The Michigan Department of Transportation (MDOT) considers traffic noise impacts to occur if predicted peak-hour traffic noise levels are greater than 1.0 dBA less than the NAC or exceed existing levels by greater than 10 dBA (MDOT, 2011). Therefore, adverse noise-related effects would occur during operation if project implementation would cause ambient noise levels to exceed 66 dBA Leq at sensitive receptors, or would exceed existing levels by greater than 10 dBA. See **Section 3.11** for a definition and locations of sensitive receptors. The assessment of vibration noise is based on the Federal Transit Administration (FTA) construction vibration criteria for damage to structures and annoyance of sensitive receptors. Vibrational noise is considered to have a significant adverse effect if it exceeds the FTA vibration criteria of 90 VdB (vibration decibels with a reference velocity of one micro-inch per second) for damage to structures, and 70 VdB for annoyance of people (FTA, 2006).

4.11.1 ALTERNATIVE A – PROPOSED PROJECT

Construction Noise

Construction Traffic

Grading and construction activities associated with Alternative A would be intermittent and temporary in nature. The closest sensitive receptors that would be exposed to potential noise impacts during construction are private residences located along Harvey Street approximately 100 feet west of the Muskegon Site. Construction noise levels at and near the Muskegon Site would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Construction-related material haul trips and worker trips have the potential to raise ambient noise levels along local routes, depending on the number of worker/haul trips made and types of vehicles used. All construction traffic and haul trips would access the Muskegon Site via Harvey Street or East Ellis Road.

The existing ambient noise levels in the vicinity of the East Hile Road/Interstate 96 (I-96) ramps, I-96, East Ellis Road, and Harvey Street were measured at 56.0, 51.7, 54.6, and 52.7 dBA Leq, respectively (refer to **Section 3.11**, **Table 3.11-5**).

Existing peak hour traffic on Harvey Street (which would experience the majority of the traffic associated with construction trips) is 1,235 vehicles per PM peak hour (Fleis & Vandenbrink, 2016c, **Appendix J**). There would be approximately 600 one-way employee construction trips per day under Alternative A (**Appendix O**). Although construction trips would generally occur outside of the peak hour, it is assumed for this noise analysis, as a worst case scenario, that all these trips occur during the peak hour. Given this assumption, employee construction trips would result in a 1.72 dBA Leq increase in the existing ambient noise level. As discussed in **Section 3.11**, a 3-dBA increase in noise is barely perceivable; therefore, the increase in traffic noise due to construction trips from Alternative A would not be a significant change in traffic noise in the vicinity of the Muskegon Site. Additionally, the ambient noise would be 54.4 dBA Leq, which is below the FHWA construction noise threshold of 72 dBA Leq for sites near residential uses. Therefore, noise resulting from increased construction traffic for Alternative A would not result in a significant adverse effect to the ambient noise level.

Construction Equipment

Construction of Alternative A would consist of ground clearing, excavation, erection of foundations and buildings, and finishing work. **Table 4.11-1** shows typical stationary point source noise levels measured at a distance of 50 feet of different construction equipment.

TABLE 4.11-1
TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVELS

Construction Equipment	Noise Level at 50 feet (dBA Leq)
Backhoe	80
Concrete Mixer	85
Dozer	85
Loader	85
Paver	89
Roller	74
Truck	88
Source: FTA, 2006.	

As described in **Section 3.11**, stationary point sources of noise attenuate (lessen) at a rate of 6 to 9 dBA per doubling of distance from the source, depending on environmental conditions (i.e., atmospheric conditions, topography, and type of ground surfaces, natural and manmade noise barriers, etc.). An attenuation factor of 6 dBA per doubling of distance is appropriate for this analysis given the flat topography and type of ground cover (i.e. few trees located between sensitive receptors and the Muskegon Site). As shown on **Table 4.11-1**, the maximum construction noise at the Muskegon Site would be 89 dBA at 50 feet. Using an attenuation factor of 6 dBA Leq per doubling of distance, the maximum noise level at the nearest sensitive noise receptor, a private residence located 100 feet to the west of the Muskegon Site, would be 83 dBA Leq.[1] The maximum noise level at the nearest sensitive

[1] The majority of construction activities will commence more than 100 feet (most often occurring between 800 feet and 1,600 feet) from the nearest sensitive receptor. However, for a conservative analysis, the shortest distance was used.

noise receptor would be greater than the FHWA threshold of 72 dBA Leq (**Table 3.11-3**). However, Best Management Practices (BMPs) provided in **Section 2.3.3** will reduce the potential for stationary construction noise effects. These BMPs comply with local noise ordinances (see **Section 3.11**), as the portion of the Muskegon Site closest to sensitive receptors will remain in fee and would continue to be subject to these ordinances. Additionally, construction would be temporary and intermittent in nature. Therefore, with implementation of BMPs, construction noise associated with Alternative A would not result in significant adverse effects associated with the ambient noise environment.

Construction Vibration

Construction activities for Alternative A would consist of using earthmoving equipment such as those shown in **Table 4.11-2**, which can produce detectable or damaging levels of vibration at nearby sensitive land uses, primarily depending on the distance between the source and the nearby sensitive land use. Generally, physical damage is only an issue when construction requires the use of equipment with high vibration levels (i.e., compactors, large dozers, etc.) and occurs within 25 feet of an existing structure. **Table 4.11-2** provides estimated vibration levels at 100 feet from construction activities. The predicted vibration decibel (VdB) levels are below the significance threshold of 90 VdB for structures at 70 VdB for annoyance of people (FTA, 2006). Therefore, vibration from construction of Alternative A would not result in significant adverse effects to nearby structures or sensitive receptors.

TABLE 4.11-2
VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV at 25 feet (in/sec)	Approximate L_v at 25 feet (VdB)	Approximate L_v at 100 feet (VdB)
Large bulldozer	0.089	87	68.9
Excavator	0.089	87	68.9
Loaded trucks	0.076	86	67.9
Small bulldozer	0.003	58	39.9

Notes: L_v at 100 feet was calculated using the following equation: $L_v(D) = L_v(25\ ft) - 30 * \log(D / 25)$.
Source: FTA, 2006.

Operation Noise

The following identifies potential impacts from operation-related noise sources, such as traffic; heating, ventilation, and air conditioning (HVAC) systems; noise originating in parking structures and parking lots; and material deliveries.

Traffic

The levels of operational traffic noise depend on: l) the volume of the traffic, 2) the speed of the traffic, and 3) the number of trucks in the flow of the traffic. It is not anticipated that average vehicle speeds would change in the vicinity of the Muskegon Site or that the mix of trucks in the traffic would change during the operational phase; however, with the implementation of Alternative A traffic volumes from project patrons would increase.

Interstate 96

The nearest sensitive receptor to I-96 in the vicinity of the Muskegon Site is located approximately 550 feet northeast. There are approximately 23,400 Average Annual Daily Trips (AADT) on I-96 adjacent to the Muskegon Site (MDOT, 2016b). Of the 23,400 AADT, 10 percent are assumed to occur during the peak hour, or 2,340 trips per PM peak hour. Operation of Alternative A would add approximately 457 vehicles per PM peak hour, would travel on I-96 (**Appendix J**). Alternative A would less than double the traffic volume on I-96, resulting in a 0.77 dBA Leq increase in the ambient noise level. With implementation of Alternative A and subsequent increase in traffic volumes, the ambient noise level in the vicinity of I-96 during the PM peak hour would increase from 51.7 dBA Leq to 52.5 dBA Leq. This remains below the MDOT threshold of 66 dBA Leq; therefore, Alternative A would not result in significant adverse effects associated with traffic noise levels for sensitive receptors located along I-96.

East Hile Road

The nearest sensitive receptor to East Hile Road in the vicinity of the Muskegon Site is located approximately 250 feet south of East Hile Road. There are approximately 1,280 PM peak hour trips on East Hile Road adjacent to the Muskegon Site (Fleis & Vandenbrink, 2016c, **Appendix J**). Operation of Alternative A would add approximately 537 vehicles per PM peak hour, would travel on East Hile Road (**Appendix J**). Alternative A would less than double the traffic volume on East Hile Road, resulting in a 1.52 dBA Leq increase in the ambient noise level. With implementation of Alternative A and subsequent increase in traffic volumes, the ambient noise level at the sensitive receptor to the south of East Hile Road during the PM peak hour would increase from 56.0 dBA Leq to 57.5 dBA Leq. This remains below the MDOT threshold of 66 dBA Leq, therefore, Alternative A would not result in significant adverse effects associated with traffic noise levels for sensitive receptors located along East Hile Road.

Harvey Street

The nearest sensitive receptor to Harvey Street in the vicinity of the Muskegon Site is located approximately 100 feet west of the Muskegon Site. There are approximately 1,235 PM peak hour trips on Harvey Street adjacent to the Muskegon Site (Fleis & Vandenbrink, 2016c, **Appendix J**). Operation of Alternative A would add approximately 675 vehicles per PM peak hour, would travel on Harvey Street (**Appendix J**). Alternative A would less than double the traffic volume on Harvey Street, resulting in a 1.89 dBA Leq increase in the ambient noise level. With implementation of Alternative A and subsequent increase in traffic volumes, the ambient noise level at the sensitive receptor to the west of Harvey Street during the PM peak hour would increase from 52.7 dBA Leq to 54.6 dBA Leq. This remains below the MDOT threshold of 66 dBA Leq, therefore, Alternative A would not result in significant adverse effects associated with traffic noise levels for sensitive receptors located along Harvey Street.

East Ellis Road

The nearest sensitive receptor to East Ellis Road in the vicinity of the Muskegon Site is located approximately 900 feet southeast of the Muskegon Site. There are approximately nine PM peak hour trips on East Ellis Road adjacent to the Muskegon Site (Fleis & Vandenbrink, 2016c, **Appendix J**). Operation of Alternative A would add approximately 65 vehicles per PM peak hour, would travel on East Ellis Road (**Appendix J**). Alternative A would more than double the traffic volume on East Ellis Road, resulting in a 9.15 dBA Leq increase in the ambient noise level. With implementation of Alternative A

and subsequent increase in traffic volumes, the ambient noise level along East Ellis Road during the PM peak hour would increase from 54.6 dBA Leq to 63.8 dBA Leq. This remains below the MDOT threshold of 66 dBA Leq; therefore, Alternative A would not result in significant adverse effects associated with traffic noise levels along East Ellis Road.

Other Noise Sources

Commercial uses on the Muskegon Site would generate noise due to the operation of roof-mounted air handling units associated with building HVAC equipment in addition to noise from loading docks and parking lots. The noise levels produced by HVAC systems vary with the capacities of the units, as well as with individual unit design. In this case, HVAC systems on commercial buildings would be located at higher elevations than the surrounding residences, so that roof-mounted HVAC equipment has the potential to be heard at nearby sensitive noise receptors. However, given the distance to the nearest sensitive noise receptor (approximately 950 feet), noise from roof mounted HVAC equipment would not be audible. Therefore, Alternative A operational equipment noise would not result in significant adverse effects associated with the ambient noise environment.

Idling trucks at loading docks, proposed under Alternative A, have the potential to emit 70 dBA at 25 feet from the source (San Jose, 2014). The proposed loading docks will be located approximately 1,600 feet from the nearest residence, which is located west of the Muskegon Site across Harvey Street. Using the attenuation rate of 6 dBA[2] with implementation of Alternative A, the noise from loading docks at the nearest sensitive noise receptor would be approximately 34 dBA Leq which is less than the MDOT standard of 66 dBA Leq (**Section 3.11**, **Table 3.11-3**). Because loading dock noise would be less than the ambient noise level, an increase of less than 3 dBA would occur due to the additive property of noise (see **Section 3.11**). This would not be an audible increase. Additionally, landscaping shown in **Figure 2-5** on the western site of the development between the proposed buildings and sensitive receptors would further reduce noise impacts from idling trucks at the loading docks. Therefore, Alternative A loading dock noise would not result in significant adverse effects associated with the ambient noise environment.

Alternative A parking structures and paved surface parking lot noise increases would be mainly due to slow moving and idling vehicles, opening and closing doors, and patron conversations. The noise level in parking lots and parking structures is generally dominated by slow moving vehicles; therefore, the ambient noise level in parking structures and parking lots is approximately 60 dBA (49 Code of Federal Regulations [CFR] §571), which would attenuate to less than 50 dBA at the nearest sensitive noise receptor located 100 feet west of the Muskegon Site. This is below the MDOT standard of 66 dBA. Therefore, Alternative A internal vehicle noise levels would not result in significant adverse effects associated with the off-site ambient noise environment.

[2] The landscaped berms to the west of building development would absorb sound from the loading dock, resulting in an attenuation rate greater than 6 dBA. However, to provide a conservative analysis, the attenuation rate of 6 dBA is used.

Operation Vibration

The commercial and hotel uses proposed under Alternative A do not include sources of perceptible vibration. Therefore, operation of Alternative A would not result in significant adverse effects associated with vibration.

4.11.2 ALTERNATIVE B – REDUCED INTENSITY ALTERNATIVE

Construction Noise

Existing peak hour traffic on Harvey Street (which would experience the majority of the traffic associated with construction trips) is 1,235 vehicles per PM peak hour (Fleis & Vandenbrink, 2016c; **Appendix J**). There would be approximately 300 one-way employee construction trips per day under Alternative B (**Appendix O**). Although construction trips would generally occur outside of the peak hour, it is assumed for this noise analysis, as a worst case scenario, that all these trips occur during the peak hour. Given this assumption, employee construction trips would result in a 0.94 dBA Leq increase in the existing ambient noise level. As discussed in **Section 3.11**, a 3-dBA increase in noise is barely perceivable; therefore, the increase in traffic noise due to construction trips from Alternative B would not be a significant change in traffic noise in the vicinity of the Muskegon Site. Additionally, the ambient noise would be 53.6 dBA Leq, which is below the FHWA construction noise threshold of 72 dBA Leq for sites near residential land uses. Therefore, noise resulting from increased construction traffic for Alternative B would not result in a significant adverse effect to the ambient noise level.

Noise impacts resulting from stationary construction noise associated with Alternative B would be similar to, yet lesser than, Alternative A due to the reduced size, development components, and development locations on the Muskegon Site. Refer to **Section 4.11.1**. BMPs provided in **Section 2.3.3** will reduce the potential for stationary construction noise effects. These BMPs comply with local noise ordinances (see **Section 3.11**), as the portion of the Muskegon Site closest to sensitive receptors will remain in fee and would continue to be subject to these ordinances. Therefore, Alternative B construction noise would not result in significant adverse effects associated with the ambient noise environment.

Construction Vibration

Construction of Alternative B would result in similar vibration effects as Alternative A. Refer to **Section 4.11.1**. Alternative B construction vibration would not result in significant adverse effects to nearby structures or sensitive receptors.

Operation Noise

Traffic

Interstate 96

Alternative B would add approximately 275 vehicles per PM peak hour to I-96 (**Appendix J**). Alternative B would less than double the traffic volume on I-96, resulting in a 0.48 dBA Leq increase in the ambient noise level. With implementation of Alternative B, the ambient noise level on I-96 during the PM peak hour would be 52.2 dBA Leq, which is less than the MDOT threshold of 66 dBA Leq for

residential sensitive receptors (**Section 3.11**, **Table 3.11-4**). Therefore, Alternative B would not result in significant adverse effects associated with traffic noise levels for sensitive receptors located along I-96.

East Hile Road

Alternative B would add approximately 323 vehicle trips during the PM peak hour to East Hile Road north of the Muskegon Site. Alternative B would less than double the existing traffic volume on East Hile Road, resulting in a 0.98 dBA Leq increase in the ambient noise level. With implementation of Alternative B, the ambient noise level on East Hile Road would be 57.0 dBA Leq. After Alternative B, the ambient noise level at sensitive receptors south of East Hile Road during the PM peak hour would be less than the MDOT threshold of 66 dBA Leq for residential sensitive receptors (**Section 3.11**, **Table 3.11-4**). Therefore, Alternative B would not result in significant adverse effects associated with traffic noise levels for sensitive receptors located along East Hile Road.

Harvey Street

Alternative B would add approximately 406 vehicle trips during the PM peak hour to Harvey Street west of the Muskegon Site. Alternative B would less than double the existing traffic volume on Harvey Street, resulting in a 1.23 dBA Leq increase in the ambient noise level. With implementation of Alternative B, the ambient noise level on Harvey Street during the PM peak hour would be 53.9 dBA Leq. The ambient noise level at nearby sensitive noise receptors would be less than the MDOT threshold of 66 dBA Leq for residential sensitive receptors (**Section 3.11**, **Table 3.11-4**). Therefore, Alternative B would not result in significant adverse effects associated with traffic noise levels for sensitive receptors located along Harvey Street.

East Ellis Road

Alternative B would add approximately 39 vehicle trips during the PM peak hour to East Ellis Road south of the Muskegon Site. Alternative B would more than double the existing traffic volume on East Ellis Road, resulting in a 7.27 dBA Leq increase in the ambient noise level. With implementation of Alternative B, the ambient noise level on East Ellis Road during the PM peak hour would be 61.9 dBA Leq. The ambient noise level at nearby sensitive noise receptors would be less than the MDOT threshold of 66 dBA Leq for residential sensitive receptors (**Section 3.11**, **Table 3.11-4**). Therefore, Alternative B would not result in significant adverse effects associated with traffic noise levels for sensitive receptors located along East Ellis Road.

Other Noise Sources

Noise from stationary sources and parking lots resulting from Alternative B would be similar to Alternative A. Refer to **Section 4.11.1**. Therefore, Alternative B noise from parking structure and parking lots, HVAC equipment, and loading docks would not result in significant adverse effects associated with the ambient noise environment. Additionally, landscaping shown in **Figure 2-8** on the western site of the development between the proposed buildings and sensitive receptors would further reduce noise impacts from idling trucks at the loading docks.

Operation Vibration

Commercial uses do not include sources of perceptible vibration. Therefore, operation of Alternative B would not result in significant adverse effects associated with vibration.

4.11.3 ALTERNATIVE C – NON-GAMING ALTERNATIVE

Construction Noise

Existing peak hour traffic on Harvey Street (which would experience the majority of the traffic associated with construction trips) is 1,235 vehicles per PM peak hour (Fleis & Vandenbrink, 2016c; **Appendix J**). There would be approximately 500 one-way employee construction trips per day under Alternative C (**Appendix O**). Although construction trips would generally occur outside of the peak hour, it is assumed for this noise analysis, as a worst case scenario, that all these trips occur during the peak hour. Given this assumption, employee construction trips would result in a 1.48 dBA Leq increase in the existing ambient noise level. As discussed in **Section 3.11**, a 3-dBA increase in noise is barely perceivable; therefore, the increase in traffic noise due to construction trips from Alternative A would not be a significant change in traffic noise in the vicinity of the Muskegon Site. Additionally, the ambient noise would be 54.2 dBA Leq, which is below the FHWA construction noise threshold of 72 dBA Leq for sites near residential uses. Therefore, noise resulting from increased construction traffic for Alternative C would not result in a significant adverse effect to the ambient noise level.

Noise impacts resulting from grading and construction associated with Alternative C would be less then Alternative A due to the reduced footprint and size of the project. BMPs provided in **Section 2.3.3** will reduce the potential for stationary construction noise effects. Furthermore, these BMPs comply with local noise ordinances (see **Section 3.11**), as the portion of the Muskegon Site closest to sensitive receptors will remain in fee and would continue to be subject to these ordinances. Therefore, Alternative C construction traffic noise would not result in significant adverse effects associated with the ambient noise environment.

Construction Vibration

Construction of Alternative C would result in less vibration effects as Alternative A. Refer to **Section 4.11.1**. Alternative C construction vibration would not result in significant adverse effects associated with the ambient noise environment.

Operation Noise

Traffic

Interstate 96

Alternative C would add approximately 73 vehicles per PM peak hour to I-96 (**Appendix J**). Alternative C would less than double the traffic volume on I-96, resulting in a 0.13 dBA Leq increase in the ambient noise level. With implementation of Alternative C, the ambient noise level on I-96 during the PM peak hour would be 51.8 dBA Leq, which is less than the MDOT threshold of 66 dBA Leq for residential sensitive receptors (**Section 3.11**, **Table 3.11-4**). Therefore, Alternative C would not result in significant adverse effects associated with traffic noise levels for sensitive receptors located along I-96.

East Hile Road

Alternative C would add approximately 172 vehicle trips during the PM peak hour to East Hile Road north of the Muskegon Site. Alternative C would less than double the existing traffic volume on East Hile Road, resulting in a 0.55 dBA Leq increase in the ambient noise level. With implementation of Alternative C, the ambient noise level on East Hile Road during the PM peak hour would be 56.6 dBA Leq. The ambient noise level at nearby sensitive noise receptors would be less than the MDOT threshold of 66 dBA Leq for residential sensitive receptors (**Section 3.11**, **Table 3.11-4**). Therefore, Alternative C would not result in significant adverse effects associated with traffic noise levels for sensitive receptors located along East Hile Road.

Harvey Street

Alternative C would add approximately 872 vehicle trips during the PM peak hour to Harvey Street west of the Muskegon Site. Alternative C would less than double the existing traffic volume on Harvey Street, resulting in a 2.32 dBA Leq increase in the ambient noise level. With implementation of Alternative C, the ambient noise level on Harvey Street during the PM peak hour would be 55.0 dBA Leq. The ambient noise level at nearby sensitive noise receptors would be less than the MDOT threshold of 66 dBA Leq for residential sensitive receptors (**Section 3.11**, **Table 3.11-4**). Therefore, Alternative C would not result in significant adverse effects associated with traffic noise levels for sensitive receptors located along Harvey Street.

East Ellis Road

Alternative C would generate no additional trips along East Ellis Road. Therefore, Alternative C would not result in significant adverse effects associated with traffic noise levels for sensitive receptors located along East Ellis Road.

Other Noise Sources

Noise from stationary sources and parking lots resulting from Alternative C would be less than Alternative A due to the project's reduced size. Refer to **Section 4.11.1**. Additionally, landscaping shown in **Figure 2-10** on the western site of the development between the proposed buildings and sensitive receptors would further reduce noise impacts from idling trucks at the loading docks. Therefore, Alternative C parking lot, HVAC, and loading dock noise would not result in significant adverse effects associated with the ambient noise environment.

Operation Vibration

Commercial retail uses do not include sources of perceptible vibration. Therefore, operation of Alternative C would not result in significant adverse effects associated with vibration.

4.11.4 ALTERNATIVE D – CUSTER SITE ALTERNATIVE

Construction Noise

Construction Traffic

Grading and construction activities associated with Alternative D would be intermittent and temporary in nature. The closest sensitive receptors that would be exposed to potential noise impacts during construction are private residences located along East First Street approximately 100 feet north of the Custer Site. Construction noise levels at and near the Custer Site would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Construction-related material haul trips and worker trips have the potential to raise ambient noise levels along local routes, depending on the number of worker/haul trips made and types of vehicles used. All construction traffic and haul trips would access the Custer Site via East First Street.

The existing ambient noise level in the vicinity of East First Street was measured at 59.9 dBA Leq (refer to **Section 3.11**, **Table 3.11-6**).

There are 15 houses on East First Street in the vicinity of the Custer Site (between South Darr Road and Custer Road). Using an average of 9.6 trips per day per household, there is a current total of 144 AADT (FHWA, 2010). There would be approximately 250 employee construction trips per day under Alternative D (**Appendix O**). This would result in a 4.37 dBA Leq increase in the existing ambient noise level. The ambient noise would be during construction would be 64.3 dBA Leq, which is below the FHWA threshold of 72 dBA Leq for residential uses. Additionally, construction would be temporary and intermittent in nature. Therefore, noise resulting from increased construction traffic for Alternative D would not result in a significant adverse effect to the ambient noise level.

Construction Equipment

Stationary point sources of noise attenuate at a rate of 6 to 9 dBA per doubling of distance from the source. An attenuation factor of 6 dBA per doubling of distance is appropriate for this analysis given the flat topography and type of ground cover (i.e. few trees located between sensitive receptors and the Custer Site). The maximum construction noise at the Custer Site would be 89 dBA at 50 feet (see **Table 4.11-1**). Using an attenuation factor of 6 dBA Leq per doubling of distance, the maximum noise level at the nearest sensitive noise receptor, a private residence located 100 feet to the north of the Custer Site, would be 83 dBA Leq[3]. The maximum noise level at the nearest sensitive noise receptor would be greater than the FHWA threshold of 72 dBA Leq (**Table 3.11-3**). However, BMPs provided in **Section 2.3.3** will reduce the potential for stationary construction noise effects. Additionally, construction would be intermittent and temporary. Therefore, with implementation of BMPs, construction noise associated with Alternative D would not result in significant adverse effects associated with the ambient noise environment.

[3] The majority of construction activities will commence more than 100 feet (most often occurring between 500 feet and 1,100 feet) from the nearest sensitive receptor. However, to provide a conservative analysis, the shortest distance was used.

Construction Vibration

Construction activities for Alternative D would consist of using earthmoving equipment such as those shown in **Table 4.11-2**, which can produce detectable or damaging levels of vibration at nearby sensitive land uses, primarily depending on the distance between the source and the nearby sensitive land use. Sensitive noise receptors are located approximately 100 feet north of the Custer Site. Therefore, construction of Alternative D would result in similar vibration effects as Alternative A, where the nearest sensitive receptor is located approximately 100 feet north of the Custer Site. Refer to **Section 4.11.1** and **Table 4.11-2**. The predicted VdB levels are below the significance threshold of 90 VdB and 70 VdB for annoyance of people (FTA, 2006). Therefore, vibration from construction of Alternative D would not result in significant adverse effects associated with the construction vibration.

Operation Noise

Traffic

Alternative D would add 192 PM peak hour trips to roadways in the vicinity of the Custer Site. There are 15 houses on East First Street in the vicinity of the Custer Site (between South Darr Road and Custer Road). Using an average of 9.6 trips per day per household, there is a current total of 144 AADT (FHWA, 2010). Of the 144 AADT, 10 percent are assumed to occur during the PM peak hour, or 14.4 trips per PM peak hour. Alternative D would more than double the traffic volume on East First Street, resulting in an 11.6 dBA Leq increase in the ambient noise level. With implementation of Alternative D, the ambient noise level on East First Street during the PM peak hour would be 71.5 dBA Leq which is greater than the MDOT threshold of 69.9 dBA Leq[4] for residential sensitive receptors (**Section 3.11**, **Table 3.11-4**). Therefore, Alternative D would result in significant adverse effects associated with traffic noise levels for sensitive receptors located along East First Street.

There are no feasible mitigation measures that could reduce this impact; therefore, increases in operational noise due to increased traffic volumes under Alternative D is considered a significant and unavoidable impact.

Other Noise Sources

Commercial uses on the Custer Site would generate noise due to operation of roof-mounted air handling units associated with building HVAC equipment in addition to noise from loading docks and parking lots. HVAC systems would be located at higher elevations than the surrounding residences, so that roof-mounted HVAC equipment has the potential to be heard at nearby sensitive noise receptors. However, given the distance to the nearest sensitive noise receptor (approximately 450 feet), noise from roof mounted HVAC equipment would not be audible. Therefore, Alternative D operational equipment noise would not result in significant adverse effects associated with the ambient noise environment.

[4] The ambient noise level at East First Street was measured at 59.9 dBA Leq. The MDOT threshold states that a noise impact would occur when either a 10 dBA increase between the existing noise level (59.9 dBA Leq) to the design year predicted noise level (therefore, 69.9 dBA Leq total), or a predicted design year noise level that is 1.0 dBA less than the levels shown in **Table 3.11-4** (67 dBA Leq for residential receptors; therefore, 66 dBA Leq) (MDOT, 2011). The threshold with the higher noise level is used.

Idling trucks at loading docks, proposed under Alternative D, have the potential to emit 70 dBA at 25 feet from the source (San Jose, 2014). The proposed loading docks will be located approximately 950 feet from the nearest residence, which is located north of the Custer Site across East First Street. Using an attenuation rate of 6 dBA (refer to construction analysis above) with implementation of Alternative D, the noise from loading docks at the nearest sensitive noise receptor would be less than 40 dBA Leq which is less than the MDOT standard of 66 dBA Leq (**Section 3.11**, **Table 3.11-3**). Additionally, landscaping shown in **Figure 2-12** on the western site of the development between the proposed buildings and sensitive receptors will further reduce noise impacts from idling trucks at the loading docks. Therefore, Alternative D loading dock noise would not result in significant adverse effects associated with the ambient noise environment.

Alternative D surface parking lot noise increases would be mainly due to slow moving and idling vehicles, opening and closing doors, and patron conversation. The noise level in parking lots and parking structures is generally dominated by slow moving vehicles; therefore, the ambient noise level in parking structures and parking lots is approximately 60 dBA (49 CFR §571), which would attenuate to less than 42 dBA at the nearest sensitive noise receptor located 500 feet north of the nearest proposed parking lots on the Custer Site. This is below the MDOT standard of 66 dBA. Therefore, Alternative D internal vehicle noise levels would not result in significant adverse effects associated with the off-site ambient noise environment.

Similar to Alternative A, due to the distance from sensitive receptors, noise would attenuate to less-than-significant levels from the source to the receptor. Additionally, trees will remain on the site and/or additional trees will be planted on the site, which would further reduce noise levels from parking lots, HVAC systems, and loading docks. Therefore, noise from Alternative D's parking lots, HVAC systems, and loading dock would not result in significant adverse effects associated with the ambient noise environment.

Operation Vibration

Commercial uses do not include sources of perceptible vibration. Therefore, operation of Alternative D would not result in significant adverse effects associated with vibration.

4.11.5 ALTERNATIVE E – NO ACTION/NO DEVELOPMENT ALTERNATIVE

Under the No Action/No Development Alternative, a change in the current land use of the alternative sites is not reasonably foreseeable. None of the potential effects identified for Alternatives A through D are anticipated to occur.

4.12 HAZARDOUS MATERIALS

This section assesses the significance of the direct effects associated with hazardous materials that would result from the development of each alternative described in **Section 2.0**. Effects are measured against the environmental baseline presented in **Section 3.12**. Indirect effects associated with off-site construction and growth-inducement are identified in **Section 4.14**. Cumulative effects are identified in **Section 4.15**.

Assessment Criteria

Impacts associated with hazardous materials include impacts resulting from a release of hazardous materials and impacts from improper hazardous materials management. A project would be considered to have significant hazardous materials impacts if the alternative site has existing hazardous materials on site that would require remediation prior to development of a proposed project. Additionally, if a project would result in the use, handling, or generation of a regulated hazardous material, of which the regulated amounts would increase the potential risk of exposure resulting in reduction of quality of life or loss of life, then the project would have a significant impact.

4.12.1 ALTERNATIVE A – PROPOSED PROJECT

Construction

As described in **Section 3.12.2**, there are no reported hazardous materials spills, violations, or instances of recorded contamination within the Muskegon Site. However, the possibility does exist that undiscovered contaminated soil and/or groundwater is present on the site due to the migration of hazardous materials from off-site properties. This potential migration, although not documented, could potentially affect surface and/or subsurface conditions on the Muskegon Site. Although not anticipated, construction personnel could encounter contamination during construction-related earth moving activities. This could pose a risk to human health and/or the environment. The unanticipated discovery of contaminated soil and/or groundwater is addressed by Best Management Practices (BMPs) provided in **Section 2.3.3**. These BMPs provide requirements to follow in the event that contaminated soil and/or groundwater is encountered during construction-related earth-moving activities. Implementation of these BMPs would ensure that effects to workers associated with unanticipated discovery of contaminated soil and/or groundwater are less than significant.

Hazardous materials used during construction may include substances such as gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. These materials would be used for the operation and maintenance of equipment, and directly in the construction of the facilities. Regular fueling and oiling of construction equipment would be performed daily. The most likely possible incidents would involve the dripping of fuels, oil, and grease from construction equipment. The small quantities of fuel, oil, and grease that may drip would have low relative toxicity and concentrations. Typical BMPs for construction limit and often eliminate the effect of such accidental releases. Specific BMPs presented in **Section 2.3.3** would minimize the risk of inadvertent release and, in the event of a contingency, minimize adverse effects. With these BMPs,

Alternative A would not result in significant adverse effects associated with inadvertent hazardous materials releases during construction.

Operation

As discussed in **Section 3.12.1**, the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) regulations include provisions that require facilities to document the potential risk associated with the storage, use, and handling of toxic and flammable substances. OSHA regulations are codified in 29 Code of Federal Regulations (CFR) Part 1910.

The storage and use of swimming pool chemicals would be necessary for operation of the hotel swimming pool facility. Generally, liquid chlorine and liquid muriatic acid or dry granular sodium bisulfate are the primary pool chemicals that would be utilized. The materials would be stored within a secured building and only used by qualified personnel, minimizing the chance of impacts to human health and the environment. As such, no significant impacts resulting from the use, storage, and transportation of swimming pool chemicals would occur.

Project-related use, transport, and storage of landscape chemicals (fertilizers, herbicides, pest control chemicals), would be limited to infrequent transport for use on site. Although the transport of these materials would occur in relatively small amounts, their transport would be governed by federal and State laws to ensure proper transport occurs, thus minimizing the chance of impacts to human health and the environment. Nevertheless, if not managed properly, the presence of landscape chemicals could pose a risk to employees and casino patrons. With appropriate management, no impacts are anticipated to result from the use of landscape chemicals.

During operation of the facilities proposed under Alternative A, the majority of waste produced would be non-hazardous. The small quantities of hazardous materials that would be utilized include motor oil, hydraulic fluid, solvents, cleaners, lubricants, paint, and paint thinner. These materials would be utilized for the operation and maintenance of the casino. The amount and types of hazardous materials that would be generated are common to commercial sites and do not pose unusual storage, handling, or disposal issues. Materials would be stored, handled, and disposed of according to applicable federal, state, and manufacturer's guidelines. Therefore, operation of Alternative A would not result in significant adverse effects associated with hazardous materials.

4.12.2 ALTERNATIVE B – REDUCED INTENSITY ALTERNATIVE

Construction

Alternative B is similar to Alternative A, with the exception that the gaming facility development would be downsized, including the removal of the convention center and hotel. As with Alternative A, although not anticipated, construction personnel could encounter additional contamination during construction-related earth-moving activities. However, the recommended BMPs presented in **Section 2.3.3** would minimize or eliminate effects associated with the unanticipated discovery of contaminated soil and/or groundwater.

The amount and type of hazardous materials that would be stored, used, and generated during the construction of Alternative B would be similar to those described under Alternative A. As discussed in above in **Section 4.12.1**, BMPs for the storage and handling of hazardous materials are provided in **Section 2.3.3** that would minimize the risk of inadvertent release and, in the event of a contingency, minimize adverse effects. With the implementation of these BMPs, Alternative B would not result in significant adverse effects associated with hazardous materials during construction.

Operation

The type and amounts of hazardous materials that would be used, generated, and stored during the operation of Alternative B would be similar to those of Alternative A. Refer to **Section 4.12.1** above, for a description of effects resulting from hazardous materials usage and storage during operation of the casino and ancillary activities. BMPs included in **Section 2.3.3** would ensure that on-site hazardous materials are stored appropriately, further reducing effects associated with hazardous materials during operation of Alternative B.

4.12.3 ALTERNATIVE C – NON-GAMING ALTERNATIVE

Construction

Alternative C would consist of non-gaming retail facilities less than half the size of Alternative A. As with Alternative A, although not anticipated, construction personnel could encounter additional contamination during construction-related earth-moving activities. However, the recommended BMPs presented in **Section 2.3.3** would minimize or eliminate effects associated with the unanticipated discovery of contaminated soil and/or groundwater.

The amount and type of hazardous materials that would be stored, used, and generated during the construction of Alternative C would be similar to those described under Alternative A. As discussed in above in **Section 4.12.1**, BMPs for the storage and handling of hazardous materials are provided in **Section 2.3.3** that would minimize the risk of inadvertent release and, in the event of a contingency, minimize adverse effects. With the implementation of these BMPs, Alternative C would not result in significant adverse effects associated with hazardous materials during construction.

Operation

The type and amounts of hazardous materials that would be used, generated, and stored during the operation of Alternative C would be similar to those of Alternative A. Refer to **Section 4.12.1** above, for a description of effects resulting from hazardous materials usage and storage during operation of the casino and ancillary activities. BMPs included in **Section 2.3.3** would ensure that on-site hazardous materials are stored appropriately, further reducing effects associated with hazardous materials during operation of Alternative C.

4.12.4 ALTERNATIVE D – CUSTER SITE ALTERNATIVE

Construction

As described in **Section3.12.2**, there are no reported hazardous materials spills, violations, or instances of recorded contamination within the Custer Site. However, the possibility does exist that undiscovered contaminated soil and/or groundwater is present on the site due to the migration of hazardous materials from off-site properties. This potential migration, although not documented, could potentially affect surface and/or subsurface conditions on the Custer Site. Although not anticipated, construction personnel could encounter contamination during construction-related earth moving activities. This could pose a risk to human health and/or the environment. The unanticipated discovery of contaminated soil and/or groundwater is addressed by Best Management Practices (BMPs) provided in **Section 2.3.3**. These BMPs provide requirements to follow in the event that contaminated soil and/or groundwater is encountered during construction-related earth-moving activities. Implementation of these BMPs would ensure that effects to workers associated with unanticipated discovery of contaminated soil and/or groundwater are less than significant.

As with Alternative A, construction of Alternative D would involve the use of routine hazardous materials typical of construction activities. As discussed in **Section 4.12.1** above, BMPs for storage and handling of hazardous materials are provided in **Section 2.3.3**. Adherence to these BMPs would minimize the risk of inadvertent release and, in the event of a contingency, minimize adverse effects. With these BMPs, Alternative D would result in less-than-significant effects associated with hazardous materials during construction.

Operation

The type and amounts of hazardous materials that would be used, generated, and stored during the operation of Alternative D would not differ significantly from current levels. With proper handling and implementation of BMPs according to state, federal, and manufacturer's guidelines, Alternative D would result in less-than-significant effects associated with hazardous materials during operation.

4.12.5 ALTERNATIVE E – NO ACTION/NO DEVELOPMENT ALTERNATIVE

Existing uses on the alternative sites would continue under the No Action/No Development Alternative. No effects from the use, storage, or handling of hazardous materials would result from the No Action/No Development Alternative.

4.13 AESTHETICS

This section assesses the significance of the direct effects associated with aesthetics that would result from the development of each alternative described in **Section 2.0**. Effects are measured against the environmental baseline presented in **Section 3.13**. Indirect effects associated with off-site construction and growth-inducement are identified in **Section 4.14**. Cumulative effects are identified in **Section 4.15**.

Assessment Criteria

Assessing the impacts of a project on visual resources is in large part subjective by nature. The impact to viewsheds will be defined by the magnitude of the visual impact in terms of distance, viewer position, and the frequency of views. A proposed project would have significant adverse effects if the development would degrade or diminish the aesthetics of visual resources such as scenic vistas, introduce lighting that would substantially increase nighttime lighting in the area of existing conditions, and/or cast a shadow on private residences or public areas for substantial portions of the day.

4.13.1 ALTERNATIVE A – PROPOSED PROJECT

Construction Impacts

Alternative A would be constructed over 18 months. Equipment staging for the construction activities would take place on the Muskegon Site. During this time, heavy construction equipment, materials, and work crews would be readily visible from stationary locations in neighboring residential and commercial use areas, as well as from vehicles traveling along the primary travel routes near the Muskegon Site. Aesthetic impacts from construction would be temporary in nature and would not result in obstructed views of scenic resources. Therefore, construction of Alternative A would not result in significant adverse effects associated with visual resources.

Operational Impacts

Development of Alternative A would alter the majority of the Muskegon Site. The multi-use site would consist of the construction of a casino resort facility, parking facilities, hotel facility, retail space, convention center constructed on the approximately 60-acre Proposed Fee-to-Trust Property located immediately west and south of Interstate 96 (I-96). The height of the 9-story, 220-room hotel would be approximately 100 feet. To the north of the casino resort facility there would be one four-story concrete parking structure with a maximum height of approximately 50 feet. An architectural rendering of Alternative A is presented as **Figure 2-5**, which provides the anticipated view of the Muskegon Site from I-96. No designated scenic resources are present in the vicinity of the Muskegon Site.

The development of Alternative A would transform the current unused space to a more urban appearance. However, the development of Alternative A on the Muskegon Site would not be visually incompatible with land uses currently existing in the immediate vicinity. Alternative A would result in a visually cohesive development that may be considered more aesthetically pleasing than other regional commercial strip development and it would considerably increase the level of human-made elements on the existing landscape of the Muskegon Site, which has already been modified by the previous use of the site as a race

track. The proposed development would alter the colors, lines, and texture of the landscape vegetation currently located within the Muskegon Site. While the site-specific visual effects may be considered significant, the context of the project development in relation to the larger landscape would be less than significant since the changes would not affect any significant visual resources. Furthermore, the proposed landscaping barrier to the west of the proposed buildings will partially block views of the proposed development from the commercial buildings to the west, and landscaped trees will partially shield views of the development from the north. See **Figure 4.13-1** for an architectural rendering from Harvey Street of Alternative A. Specific effects to viewsheds in the vicinity of the Muskegon Site as well as possible effects associated with shadow, light, and glare are discussed below.

Effects on Viewsheds Surrounding the Project

Analysis of potential impacts to the viewsheds resulting from the build-out of Alternative A is identified below. See **Figure 3.13-1** for the viewpoint locations and **Figure 3.13-2** for the photos from each viewpoint.

Viewpoint 1 (Photo 1)

Photo 1 shows the Muskegon Site from the north towards the south, overlooking the portion of the Muskegon Site that will remain in fee. This view would be similar to those traveling south along Harvey Street. There are currently small commercial developments and setback residences along this section of Harvey Street to the west. Currently the viewshed from Photo 1 overlooks an empty parking lot in the foreground and trees across from the Muskegon Site in the background. With implementation of Alternative A, this viewshed would include landscaping and a detention basin immediately south, with views of the gaming facility development to the southeast.

While this change would represent an alteration, there are no visual resources that would be affected. Additionally, the proposed landscaping and creation of detention basins would be considered an improvement over the current view of unused parking lots. Therefore, a less-than-significant impact would occur under Alternative A.

Viewpoint 2 (Photo 2)

Viewpoint 2 is experienced by those along Harvey Street looking directly east onto the Muskegon Site, such as patrons of the commercial businesses along Harvey Street. Like the viewshed from Photo 1 the view would change from one of empty parking lots in the foreground, to one with landscaping in the foreground and commercial development consisting of the casino-resort facility at a distance of approximately 750 feet.

Like Viewpoint 1, this change would represent an alteration but there are no visual resources that would be affected. Additionally, the foreground landscaping would partially block the commercial development. Therefore, a less-than-significant impact would occur under Alternative A.

Viewpoint 3 (Photo 3)

Viewpoint 3 is experienced by those traveling on East Ellis Road from west to east through the intersection of East Ellis Road and Harvey Street. The view would change from one of an empty lot to

SOURCE: HBG, 2015; AES, 5/31/2016

Figure 4.13-1
Architectural Rendering – Alternative A from Harvey Street

the north of East Ellis Road, to one with commercial development consisting of the casino-resort facility at a distance of approximately 1,000 feet.

Like Viewpoint 1, this change would represent an alteration but there are no visual resources that would be affected. Additionally, foreground landscaping would partially block the commercial development. Therefore, a less-than-significant impact would occur under Alternative A.

Viewpoint 4 (Photos 4 and 5)

Viewpoint 4 is within the Muskegon Site itself near the fee-to-trust boundary. This viewshed currently shows the former horse race track and empty lot of the Muskegon Site. Views of Alternative A from this location would include the parking garage, multi-purpose center, casino facility, and back of house operations.

Like Viewpoint 1, this change would represent an alteration but there are no visual resources that would be affected. Therefore, a less-than-significant impact would occur under Alternative A.

Viewpoint 5 (Photo 6)

Viewpoint 5 is experienced by those travelling along I-96 looking southwest onto the Muskegon Site, or looking across I-96 from the commercial RV lots. The view would change from one of open space in the foreground, to one with landscaping and detention basins in the foreground and commercial development consisting of the casino-resort facility at a distance of approximately 650 feet (see **Figure 2-6**).

Like Viewpoint 1, this change would represent an alteration but there are no visual resources that would be affected. Additionally, the foreground landscaping would include the stormwater detention basins and vegetated areas within the surface parking lots, which would be aesthetically pleasing. Therefore, a less-than-significant impact would occur under Alternative A.

Shadow, Light, and Glare

A significant effect from shadow would result if the proposed development were to cast a shadow on private residences or public areas for substantial portions of the day. The nearest buildings off site are commercial and residential buildings approximately 1,200 feet to the west. The direction of the sunrise will vary from east to southeast throughout the year; the direction of the morning shadow from the hotel will vary from west to northwest, accordingly. In the late afternoon, the casino resort facility is unlikely to cast a shadow over the buildings adjacent to the Muskegon Site. Shadows from the development would not result in significant adverse effects to nearby structures since the casino and resort structures are located at least 1,000 feet from nearby structures. Additionally, the tallest structure is the hotel, which is positioned farther from nearby development than the other, shorter structures such as the casino and parking structure.

Alternative A would introduce new sources of light into the existing setting. Light spillover into surrounding areas and increases in regional ambient illumination could result in potentially significant adverse effects if it were to result in traffic safety issues, or create a nuisance to sensitive receptors. Alternative A will have lighting fixtures that would be an integral part of the overall design and strategically positioned to minimize any direct site lines or glare to the public. Illuminated signs would

be designed to blend with the light levels of the building and landscape lighting in both illumination levels and color characteristics. Signs placed along Harvey Street in the fee parcel would be in compliance with the Township's Sign Ordinance, while signs in the trust parcel would not be required to comply with the Sign Ordinance. The exterior lighting of the project would be integrated into components of the architecture and would be strategically positioned to minimize off-site lighting and any direct site lines to the public. Additionally, landscaped berms to the west of the facility and employee parking lots would aid in shielding light spillover to sensitive receptors along Harvey Street. Through the use of downcast and directed lighting, low-glare glass, and strategically positioned lighting fixtures, Alternative A's impacts of lighting off site would be minimized and would not be significantly adverse.

The use of glass panels and reflective ornamental detailing in the project design, including the proposed hotel, could increase the glare to aircraft operations, travelers on I-96, and adjacent residences. BMPs included in **Section 2.3.3** would ensure that effects from lighting and glare are minimized. Therefore the potential for Alternative A to produce glare in the project vicinity is not a significant adverse effect.

4.13.2 ALTERNATIVE B – REDUCED INTENSITY ALTERNATIVE

Construction Impacts

The development proposed under Alternative B would result in similar, yet less intensive construction on the Muskegon Site as Alternative A. Equipment and material staging would occur on site and be visible from stationary locations in neighboring residential and commercial use areas, as well as from vehicles traveling along the primary travel routes near the Muskegon Site. Aesthetic-related impacts from construction would be temporary in nature and would not result in obstructed views of scenic resources. Therefore, construction of Alternative B would not result in significant adverse effects associated with visual resources.

Operational Impacts

Impacts to viewsheds resulting from Alternative B would be lesser than those of Alternative A due to the reduced intensity design and the absence of a hotel and convention center. A site plan for this alternative appears as **Figure 2-7**. The removal of the 100-foot hotel tower, in particular, would lessen the visual impact of Alternative B from surrounding viewpoints. An architectural rendering of Alternative B is presented as **Figure 4.13-2**, which provides the anticipated view of the Muskegon Site from I-96. While the site-specific visual effects may be considered significant, the context of the project development in relation to the larger landscape would be less than significant, since the changes would not affect any sensitive visual resources.

Effects on Viewsheds Surrounding the Project

Effects on viewsheds surrounding the Muskegon Site would be similar to those discussed under Alternative A; however, the tallest visual element, the hotel tower, would not be developed under Alternative B. As described under Alternative A, the views of the Muskegon Site would change from an unused parcel of land, to commercial development consisting of a casino set amidst thoughtful landscaping. Alternative B would be partially screened by this landscaping and would, like Alternative

SOURCE: HBG, 2015; AES, 5/31/2016

Figure 4.13-2
Architectural Rendering – Alternative B from I-96

A, have less-than-significant visual impacts from each viewshed, as there are no scenic resources on or surrounding the Muskegon Site. The planned landscaping would aid in shielding the commercial development from east- and south-facing sensitive receptors. Impacts from Alternative B would be less than significant.

Shadow, Light, and Glare

Under Alternative B, the majority of structures within the casino development would be four stories, limiting the amount of shadow casted on nearby structures. Illuminated signs would be designed to blend with the light levels of the building and landscape lighting in both illumination levels and color characteristics. Signs placed along Harvey Street in the fee parcel would be in compliance with the Township's Sign Ordinance, while signs in the trust parcel would not be required to comply with the Sign Ordinance. The exterior lighting of the project would be integrated into components of the architecture and would be strategically positioned to minimize off-site lighting and any direct site lines to the public. Alternative B would not result in significant adverse effects associated with shadow.

The development of Alternative B would introduce new sources of light and glare as described under Alternative A. BMPs included in **Section 2.3.3** would ensure that effects from lighting and glare are minimized. Therefore, Alternative B would not result in significant adverse effects associated with light emissions and glare.

4.13.3 ALTERNATIVE C – NON-GAMING ALTERNATIVE

Construction Impacts

The development proposed under Alternative C would result in similar, yet less intensive construction on the Muskegon Site as Alternative A. Equipment and material staging would occur on site and be visible from stationary locations in neighboring commercial use areas, as well as from vehicles traveling along the primary travel routes near the Muskegon Site. Aesthetic-related impacts from construction would be temporary in nature and would not result in obstructed views of scenic resources. Therefore, construction of Alternative C would not result in significant adverse effects associated with visual resources.

Operational Impacts

The features of Alternative C would have a lesser impact than those described under Alternative A. Under Alternative C, the design of the project is visually smaller than Alternative A, as the proposed development would be one story in height with surface parking alone. Furthermore, the structures would be commercial retail space instead of gaming. A site plan for this alternative appears as **Figure 2-9**, and an architectural rendering of Alternative C, as seen from within the Muskegon Site, is provided as **Figure 4.13-3**.

Effects on Viewsheds Surrounding the Project

Effects on viewsheds surrounding the Muskegon Site would be lesser than those discussed under Alternative A as the main visual elements, the hotel tower and multi-story parking structures would not be

SOURCE: HBG, 2015; AES, 5/31/2016

Figure 4.13-3
Architectural Rendering – Alternative C

developed with Alternative C. The views of the Muskegon Site would change from an unused parcel of land to a commercial development consisting of a retail complex set amidst a planned landscape and surface parking lots. The retail buildings under Alternative C would be at a greater distance from the nearby receptors along Harvey Street, East Ellis Road, and East Hile Road. This increased distance would further minimize visual impacts. Therefore, impacts from Alternative C would be less than significant.

Shadow, Light, and Glare

It is unlikely for Alternative C to cast a shadow over commercial structures nearest to the Muskegon Site. Because the proposed building under Alternative C would only be one story, this impact would be less than significant. Illuminated signs would be designed to blend with the light levels of the building and landscape lighting in both illumination levels and color characteristics. Signs placed along Harvey Street in the fee parcel would be in compliance with the Township's Sign Ordinance, while signs in the trust parcel would not be required to comply with the Sign Ordinance. The exterior lighting of the project would be integrated into components of the architecture and would be strategically positioned to minimize off-site lighting and any direct site lines to the public.

The development of Alternative C would introduce new sources of light and glare lesser than those described under Alternative A. BMPs included in **Section 2.3.3** would ensure that effects from lighting and glare are minimized. Therefore, Alternative C would not result in significant adverse effects associated with light emissions and glare.

4.13.4 ALTERNATIVE D – CUSTER SITE ALTERNATIVE

Construction Impacts

Equipment and material staging would occur on site and may be visible from a few neighboring residential buildings, as well as from vehicles traveling along East First Street. However, views of this construction may be partially blocked by existing vegetation. Aesthetic-related impacts from construction would be temporary in nature and would not result in obstructed views of scenic resources. Therefore, the construction of Alternative D would not result in significant adverse effects associated with visual resources.

Operational Impacts

Alternative D consists of the construction of a one-story casino facility, parking lots, and a detention basin to the south of the development. The proposed casino would be offset by 750 feet from East First Street behind the casino parking lots. A site plan for this alternative is included as **Figure 2-12**, and an architectural rendering of Alternative D from within the Custer Site is provided as **Figure 4.13-4**. No designated scenic resources are present in the immediate vicinity of the Custer Site. However, development of Alternative D on the Custer Site would be visually incompatible with the agricultural and rural residential land uses currently on site and in the immediate vicinity, with no available mitigation.

SOURCE: HBG, 2015; AES, 5/31/2016

Figure 4.13-4
Architectural Rendering – Alternative D

Effects on Viewsheds Surrounding the Project

Section 3.13 describes the viewsheds surrounding the Custer Site. Potential impacts to the viewsheds resulting from the build-out of Alternative D are identified below. See **Figure 3.13-3** for the viewshed locations and **Figure 3.13-4** for the photos from each viewpoint.

Viewpoint A (Photos 1 and 2)

Photo 1 shows the Custer Site from the north towards the south. This view would be similar to those traveling east along East First Street. There are currently several residences along this section of East First Street to the north, seen in Photo 2. Currently the viewshed from Photo 1 is of trees adjacent to the roadway within the Custer Site. The viewshed from Photo 2 is of East First Street, with residences to the north and the undeveloped Custer Site shielded by trees to the south. With implementation of Alternative D, this viewshed would change to include the main entrance to the Custer Site. Trees blocking views of the development would largely remain in place.

The Pere Marquette River (a designated National Scenic River and State Natural River) is located south of the Custer Site, but is not currently visible, nor will views of the scenic river within the vicinity of the Custer Site be altered.

While there are no visual resources that would be affected, this change represents a permanent alteration to visual resources from sensitive receptors, namely the residences adjacent to the Custer Site. Therefore, a significant impact would occur for Alternative D, with no available mitigation.

Viewpoint B (Photos 3 and 4)

Viewpoint B is experienced by those travelling west along East First Street. Photo 3 shows the residences to the north of the Custer Site, as well as the northernmost portion of the Custer Site. Photo 4 shows the current vegetation on the Custer Site. With implementation of Alternative D, this viewshed would change to include the main entrance to the Custer Site, and roadways leading south to the casino development and parking lots. Trees blocking views of the development would remain in place.

Like Viewpoint A, this change would represent a permanent alteration to visual resources from sensitive receptors. Therefore, a significant impact would occur for Alternative D, with no available mitigation.

Viewpoint C (Photo 5)

Photo 5 is taken from the eastern border of the Custer Site along a private access road leading south of East First Street. This viewshed shows the vegetation found on the Custer Site, and is not experienced by many people, as the majority of traffic in the area only travels along East First Street. Views of Alternative D from this viewpoint would include the parking lots and casino facility.

This change would represent an alteration, but there are no visual resources or sensitive receptors that would view the Custer Site from this viewpoint that would be affected. Therefore, a less-than-significant impact would occur for Alternative D, with no available mitigation.

Shadow, Light, and Glare

Under Alternative D, the casino facility would be one story in height, and set back approximately 750 feet from the nearest residence, therefore limiting the amount of shadow casted on nearby residences. Illuminated signs would be designed to blend with the light levels of the building and landscape lighting in both illumination levels and color characteristics. The exterior lighting of the project would be integrated into components of the architecture and would be strategically positioned to minimize off-site lighting and any direct site lines to the public. Alternative D would not result in significant adverse effects associated with shadow.

The development of Alternative D would introduce similar new sources of light and glare as described under Alternative A. There are currently no light sources on the Custer Site; however, through the use of BMPs listed in listed in **Section 2.3.3**, including downcast and directed lighting and strategically positioned lighting fixtures, the impacts of lighting off site would be minimized.

4.13.5 ALTERNATIVE E – NO ACTION/NO DEVELOPMENT ALTERNATIVE

No changes or impacts would occur to visual resources under the No Action/No Development Alternative. With no structures foreseeable on either alternative site under Alternative E, it has no significant aesthetic impacts.

4.14 INDIRECT AND GROWTH-INDUCING EFFECTS

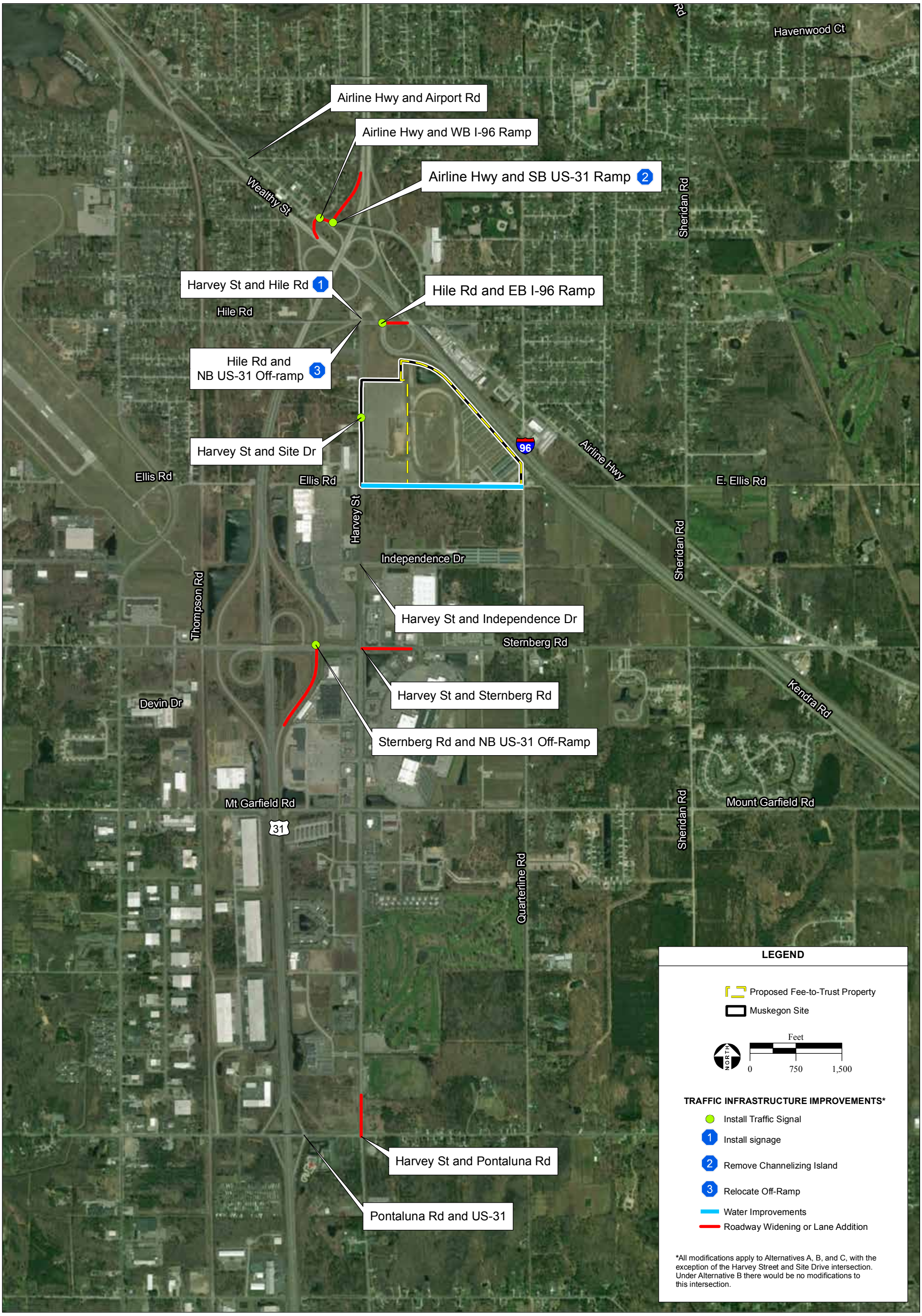
The Council on Environmental Quality (CEQ) Regulations for Implementing the National Environmental Policy Act (NEPA) requires that an Environmental Impact Statement (EIS) analyze both the indirect and the "growth-inducing" effects of a proposed project (40 Code of Federal Regulations [CFR] §1502.16 [b], 40 CFR §1508.8 [b]):

> [I]ndirect effects…are caused by the action and are later in time or farther removed in the distance, but are still reasonably foreseeable. Indirect effects may include 'growth inducing effects' and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on…natural systems.

Direct impacts, caused by the action and occurring at the same time and place as the action, have been discussed in **Sections 4.2** to **4.13** and cumulative impacts measured in conjunction with other reasonably foreseeable projects, whether past, present, or future, are addressed in **Section 4.15**. The potential indirect effects of off-site traffic mitigation and utility/infrastructure improvements integral to the development of Alternatives A, B, C, and D are discussed below in **Sections 4.14.1** through **4.14.4**, as they are distinctively separated in time and/or space from the proposed alternatives. Growth-inducing effects are also discussed below in **Section 4.14.5** since they are a distinct subset of indirect effects. Potential indirect effects associated with the proposed alternatives would be minimized to less-than-significant levels through project design and recommended measures presented in **Section 5.0**. In addition, off-site improvements may require approvals and permits from jurisdictional agencies, including the Michigan Department of Environmental Quality (MDEQ), Muskegon County, Fruitport Township (Township), Mason County, and City of Scottville. Implementation of permitting and MDEQ requirements would further reduce the potential for significant adverse effects from off-site construction projects.

4.14.1 INDIRECT EFFECTS FROM OFF-SITE TRAFFIC MITIGATION IMPROVEMENTS

A detailed description of off-site traffic mitigation recommended for Alternatives A, B, and C is provided in **Section 5.8**. As shown therein and in **Table 4.14-1** below, Alternative A would require the most traffic improvements resulting in the most indirect effects; therefore, this analysis conservatively focuses on the off-site impacts of Alternative A's traffic mitigation. Alternative D would not require any off-site traffic mitigation and, therefore, is not discussed below. The mitigation measures that would require construction to widen/improve intersection approaches, add lanes, and install traffic signals and/or roundabouts may require grading and the introduction of fill material. Construction of these improvements could generate indirect impacts in several areas, which are discussed below under each issue area. **Figure 4.14-1** shows the location of each traffic mitigation measure that could cause indirect effects. Improvements that do not require construction, such as restriping and optimizing signal timing, are unlikely to generate indirect impacts and are, therefore, not discussed below.



SOURCE: USDA aerial photograph, 7/21/2014; Muskegon County Parcels, 2013; AES, 3/14/2018

Figure 4.14-1

Offsite Mitigation Locations - Muskegon Site

TABLE 4.14-1
MUSKEGON SITE INTERSECTION IMPROVEMENTS

Intersection Improvement	Applicable Alternatives	Fair Share Contribution
Airline Highway / Airport Road:	**A, B, and C**	A: 2 percent B: 1 percent C: 5 percent
Modernize Traffic Signal		
Install permissive-protected NB and SB left turn phasing		
Airline Highway / Hile Road:	**A, B, and C**	N/A
Signal Timing Optimization		
Harvey Street / Hile Road:	**A, B, and C**	A: 43 percent B: 22 percent C: 18 percent
Modernize Traffic Signal		
Provide left turn lane and shared left/through/right turn lane on WB approach		
Provide left turn lane, shared through/right turn lane, and right turn lane on NB approach		
Provide split phasing for EB and WB approaches		
Provide signage along NB approach directing EB I-96 traffic to utilize the outer right turn lane		
Grand Haven Road / Hile Road:	**A, B, and C**	N/A
Signal Timing Optimization		
Harvey Street / Ellis Road:	**A, B, and C**	N/A
Signal Timing Optimization		
Harvey Street / Independence Drive:	**A, B, and C**	A: 7 percent B: 4 percent C: 13 percent
Re-stripe WB approach to provide shared through/left turn lane and exclusive right turn lane		
Signal Timing Optimization		
Harvey Street / Sternberg Road:	**A, B, and C**	A: 4 percent B: 2 percent C: 7 percent
Restripe SB and WB approaches to provide dual left turn lanes		
Provide lead-lag left turn phases for opposing approaches		
Construct WB right turn lane		
Provide right turn overlap phasing for EB and WB approaches		
Harvey Street / Pontaluna Road:	**A, B, and C**	A: 2 percent B: 1 percent C: 3 percent
Construct SB right turn lane with 150 feet of storage		
Provide right turn overlap phasing for SB approach		
Airline Highway / Farr Road:	**A, B, and C**	N/A
Signal Timing Optimization		
Airline Highway / WB I-96 Off-Ramp:	**A, B, and C**	A: 28 percent B: 13 percent C: 6 percent
Install Signal		
Construct right turn lane on off-ramp with 150 feet of storage		
Coordinate Signal with Signal at SB US-31 ramps		
Airline Highway / SB US-31 Ramp:	**A, B, and C**	A: 27 percent B: 13 percent C: 6 percent
Install Signal		
Construct right turn lane on off-ramp with 175 feet of storage		
Construct WB left turn lane with 50 feet of storage		
Coordinate Signal with Signal at WB I-96 Off-ramp		

Intersection Improvement	Applicable Alternatives	Fair Share Contribution
Hile Road / EB I-96 Ramps:	**A, B, and C**	A: 46 percent B: 24 percent C: 13 percent
Install Signal		
Construct WB left turn lane with 50 feet of storage		
Hile Road / NB US-31 Off-Ramp:	**A, B, and C**	A: 1 percent B: 6 percent C: 17 percent
Relocate ramp 200 feet west		
Sternberg Road / NB US-31 Off-Ramp:	**A, B, and C**	A: 3 percent B: 2 percent C: 5 percent
Install Signal		
Construct dual right turn lanes on NB US-31 off-ramp approach		
Harvey Street / Site Drive:	**A and C**	A: 100 percent C: 100 percent
Install Signal		

Environmental Consequences

Geology and Soils

The construction of roadway improvements would require grading and the introduction of fill material. Changes to topography would be minimal due to the developed condition of the area for potential impacts. The increase in impervious surfaces and additional cut-and-fill embankments could result in erosion of soils. Stable fill material, engineered embankments, and erosion control features would be used to reduce the potential for slope instability, subsidence and erosion in accordance with the jurisdictional agency (Michigan Department of Transportation [MDOT], County, Muskegon County Road Commission [MCRC], and/or Township) requirements for roadway construction. Watering during grading activities would mitigate the effect of wind erosion to the underlying soils. Effects to geology and soils would be less than significant.

With standard construction practices and specifications required by the jurisdictional agency and the General Construction National Pollutant Discharge Elimination System (NPDES) permit program, there would be no adverse effects to geology and soils as a result of off-site traffic mitigation.

Water Resources

The development of roadway improvements for traffic mitigation could affect water resources due to grading and construction activities and an increase in impervious surfaces. Potential effects include an increase in surface runoff and increased erosion, which could adversely affect surface water quality due to increases in sediment and roadway pollutants such as grease and oil. Additionally, MDOT is required by State and federal regulations to have a stormwater permit in areas covered by the municipal stormwater permit program. The Michigan Department of Natural Resources (MDNR) regulates the discharge of pollutants to waters of the state.

Construction of roadway improvements that exceed one acre of land would be required to comply with the NPDES General Construction Permit Program. To comply with the program, a Stormwater Pollution Prevention Plan (SWPPP) would be developed that would include soil erosion and sediment control

practices to reduce the amount of exposed soil, prevent runoff from flowing across disturbed areas, slow runoff from the site, and remove sediment from the runoff.

Curb and gutters, inlets, and other drainage facilities would be constructed to meet the standards of the jurisdictional agency and provide adequate facilities to direct stormwater runoff. With incorporation of these drainage features and compliance with the soil erosion and sediment control practices identified in the SWPPP, effects to water resources would be less than significant. Therefore, there would be no significant indirect effects to water resources as a result of off-site traffic mitigation.

Air Quality

With the improved circulation resulting from traffic mitigation, level of service (LOS) would be improved, thereby reducing idling time and associated vehicle emissions. Construction-generated dust and emissions would be controlled by Best Management Practices (BMPs) mandated by the State of Michigan. Construction emissions would be minimal given the temporary nature of construction activities. As traffic improvements would take place within an area in attainment for all criteria air pollutants (CAPs), corresponding air effects would not be significant.

Biological Resources

The area of disturbance for the off-site traffic mitigation would take place in existing disturbed and ruderal habitats. These areas offer poor habitats to any potentially occurring federal or state threatened or endangered species. These indirect effects will be required to comply with pertinent state and federal regulations associated with endangered species. It is not believed that any wetlands or other Waters of the U.S. will be disturbed by the indirect effects of traffic improvements associated with Alternatives A, B, or C. However, appropriate surveys to comply with the federal Clean Water Act (CWA) will be performed and, if wetlands or other Waters of the U.S. are located within the project area, appropriate mitigation measures will be required to occur. Compliance with these laws and the associated mitigation measures will reduce the indirect effects to biological resources effects to less-than-significant levels.

Cultural Resources

There are no documented historic properties within the off-site traffic mitigation areas (**Appendix H**). However, there is a possibility that previously unknown cultural resources would be encountered during ground disturbing activities. This would be a potentially significant impact. Improvements involving federal funding and approval would be subject to Section 106 of the National Historic Preservation Act (NHPA). Implementation of avoidance and mitigation measures listed in **Section 5.6** would ensure that indirect effects to cultural resources would not occur and thus not be significant as a result of off-site traffic improvements.

Socioeconomic Conditions

Off-site traffic improvements would result in short-term disturbances to traffic flows. Surrounding businesses and residences would remain accessible throughout construction. The area of roadway impacts would be of a limited size and would not create socioeconomic effects. Therefore, there would be no significant indirect effects to socioeconomic conditions as a result of off-site traffic mitigation.

Transportation/Circulation

Off-site traffic mitigation would result in beneficial effects to traffic circulation. Off-site traffic improvements would be limited in scale and duration, resulting only in short-term disturbances to traffic flows. If construction activities require temporary lane closures to accommodate construction equipment, a traffic management plan would be prepared in accordance with the jurisdictional agency requirements, thus avoiding potentially adverse temporary effects.

Land Use

Construction of off-site traffic mitigation would not result in adverse land use effects. The intersection improvements would be in accordance with the Township, County, and MDOT respective plans. Therefore, there would be no indirect effects to land use as a result of off-site traffic mitigation.

Public Services

Traffic improvements may require relocation of utilities near existing roadways. These utilities include overhead electricity lines and telecommunication lines. Relocation of these lines could result in a temporary break in service to some homes and businesses in the area. However, because these effects are common when upgrading and maintaining utility services, and because potential service breaks would be temporary, these effects are considered to be less than significant. Furthermore, each improvement would be completed to the standards of the agencies with jurisdiction over the intersections (MDOT, County, MCRC, and/or Township). No effects to police, fire protection, or emergency medical services are expected as access to homes and businesses would be maintained during the construction period. Therefore, there would be no indirect effects to public services as a result of off-site traffic mitigation.

Noise

Construction of intersection improvements would result in minimal noise impacts. Any impacts that may occur would be reduced through County and municipal regulations including the imposition of construction hours and the use of noise abatement equipment. Most proposed intersection improvement locations are not located on residential streets or in residential areas, and therefore noise would not affect sensitive receptors. Accordingly, no significant indirect noise impacts are expected to occur as a result of off-site traffic mitigation.

Hazardous Materials

Construction of the off-site roadway improvements could potentially result in negative hazardous materials effects. The accidental release of hazardous materials used during grading and construction activities could pose a hazard to construction employees, surrounding residents, and the environment. However, these hazards, which are common to construction activities, would be minimized with adherence to State and federal statutes and standard operating procedures, such as refueling in designated areas, storing hazardous materials in approved containers, clearing of dried vegetation, and proper initiation of response and clean-up measures. Potential indirect hazardous materials impacts from the construction of off-site roadway improvements are less than significant.

Aesthetics

With the modification and expansion of existing roadways, visual effects would occur. Road improvements would be made in areas that are already developed with roadway networks. Modified intersections, interchanges, and roadways would conform to modern design standards. Improvements would not result in significant removal or alteration of vegetation, topographic features, or key visual characteristics. Additionally, traffic improvements would not change surrounding land uses and would occur in areas with existing roadway networks. Therefore, no significant indirect effects to aesthetics or community character are expected to occur as a result of off-site traffic mitigation.

4.14.2 INDIRECT EFFECTS FROM MUNICIPAL WATER INFRASTRUCTURE IMPROVEMENTS FOR THE MUSKEGON SITE (ALTERNATIVES A, B, AND C)

Improvements

In accordance with Section 2.4 of the Municipal Services Agreement (MSA; **Appendix B**), the Township's municipal water system will serve the Muskegon Site under Alternatives A and B Water Supply Option 1 through the Township's existing connections to be provided to the Muskegon Site at the Tribe's sole cost and expense. Under Alternative C Water Supply Option 1, an agreement similar to the current MSA is anticipated to be executed. As described in **Section 4.10.1** and in the Water Demand and Supply Study (**Appendix D**), under Alternatives A, B, and C, the Township's existing 8-inch water main along East Ellis Road would be replaced with a 12-inch water main to accommodate for increased flow requirements. The pipeline to be replaced is shown in **Figure 4.14-1**.

Indirect Effects

The following section describes potential effects associated with the construction of the infrastructure improvements described above required to serve Alternatives A, B, and C. These infrastructure improvements would be as described under Water Supply Option 1 in **Section 2.3.3**.

Geology and Soils

The replacement of the Township's water lines along East Ellis Road would require excavation and the introduction of backfill material. Potential impacts include increased potential for soil erosion due to ground disturbing activities during construction. Construction of utility improvements over one acre would be required to comply with the NPDES General Construction Permit Program.

With standard construction practices and specifications required by the Township and the NPDES permit program, there would be no indirect effects to geology and soils as a result of water infrastructure improvements under Alternatives A, B, or C Water Supply Option 1.

Water Resources

Construction

The development of facility improvements could affect water resources due to grading and construction activities and an increase in impervious surfaces. Potential effects include an increase in surface runoff

and increased erosion, which could adversely affect surface water quality due to increases in sediment and roadway pollutants such as grease and oil.

Construction of utility improvements for Alternatives A, B, and C Water Supply Option 1 that exceed one acre of ground disturbance would also be required to comply with the NPDES General Construction Permit Program. A SWPPP would be developed that would include soil erosion and sediment control practices to reduce the amount of exposed soil, prevent runoff from flowing across disturbed areas, slow runoff from the site, and remove sediment from the runoff.

Effects to runoff volumes resulting from the increase in impervious roadways would be minimized through mitigation measures presented in **Section 5.0**. Compliance with the soil erosion and sediment control practices identified in the SWPPP, if applicable, would ensure that the effects of Alternatives A, B, and C Water Supply Option 1 to water resources would be less than significant.

Operation

There would be no significant indirect effects to groundwater or surface water quality as a result of off-site utility improvements under Alternatives A, B, or C Water Supply Option 1.

Air Quality

The area of off-site water infrastructure improvements for Alternatives A, B, and C Water Supply Option 1 would not be of a size to create air quality effects. Construction generated dust and emissions will be controlled by BMPs mandated by the State of Michigan. Construction emissions would be negligible given the small area of disturbance and temporary nature of construction activities. As improvements would take place within an area in attainment for all CAPs, corresponding air effects would not be significant for Alternatives A, B, or C Water Supply Option 1.

Biological Resources

The area of disturbance for the off-site water infrastructure improvements is within existing disturbed and ruderal habitats. These areas offer poor habitats to any potentially occurring federal or state threatened or endangered species. It is not likely that any wetlands or other Waters of the U.S. will be disturbed by the water main replacement. However, appropriate surveys to comply with the CWA will be performed and, if wetlands or other Waters of the U.S. are located within the project area, appropriate mitigation measures will be required to occur. Compliance with these laws and the associated mitigation measures will reduce the indirect effects to biological resources effects to less-than-significant levels.

Cultural Resources

No prehistoric or historic period cultural resources are known to occur within or adjacent to the proposed off-site water infrastructure improvements for Alternatives A, B, and C Water Supply Option 1 (**Appendix H**); however, there is a possibility that previously unknown cultural resources will be encountered during ground disturbing activities. This would be a potentially significant impact. Mitigation measures are presented in **Section 5.6** for the treatment of unanticipated archaeological discoveries. With the implementation of the proposed mitigation measures, no significant impacts to

cultural resources are likely to result from off-site water infrastructure improvements under Alternative A, B, or C Water Supply Option 1.

Socioeconomic Conditions

The costs of water improvements would be compensated by the Tribe through payments under the MSA (**Appendix B**) for Alternatives A and B, or under an MSA created specifically for Alternative C. Therefore, there would be no indirect effects to socioeconomic conditions as a result of off-site water infrastructure improvements under Alternative A, B, or C Water Supply Option 1.

Transportation/Circulation

Water improvement construction within road right-of-ways would be limited in scale and duration, resulting only in short-term disturbances to traffic flows. Additionally, as described in **Table 3.8-2**, there is very little existing traffic along East Ellis Road. Therefore, there would be no significant indirect effects to the transportation and circulation network as a result of off-site water infrastructure improvements under Alternatives A, B, or C Water Supply Option 1.

Land Use

Construction of off-site water infrastructure improvements for Alternatives A, B, and C Water Supply Option 1 would not result in adverse land use effects because the proposed improvements involve the expansion of existing Township water infrastructure. There would be no indirect effects to land use as a result of off-site water infrastructure improvements under Alternative A, B, or C Water Supply Option 1.

Public Services

No effects to police, fire, or emergency medical services would occur as access to homes and businesses would be maintained during the construction period. Therefore, there would be no indirect effects to public services as a result of water infrastructure improvements under Alternatives A, B, or C Water Supply Option 1.

Noise

Construction of off-site water infrastructure improvements may result in minor noise impacts similar to direct impacts discussed in **Section 4.11**. Township regulation through the imposition of construction hours (Fruitport Township Ordinances Section 42-603[10]) is expected to control such impacts. Therefore, no significant indirect noise impacts are expected to occur as a result of off-site water utility improvements under Alternatives A, B, or C Water Supply Option 1.

Hazardous Materials

Construction of the proposed water infrastructure improvements could potentially result in hazardous materials effects. The accidental release of hazardous materials used during grading and construction activities could pose a hazard to construction employees, surrounding residents, and the environment. However, these hazards, which are common to construction activities, would be minimized with adherence to State and federal statutes and standard operating procedures, such as refueling in designated areas, storing hazardous materials in approved containers, clearing of dried vegetation, and proper

initiation of response and clean-up measures. Potential indirect hazardous materials impacts from the construction of off-site water infrastructure improvements for Alternatives A, B, and C Water Supply Option 1 are therefore considered to be less than significant.

Aesthetics

As the proposed off-site water infrastructure improvements for Alternatives A, B, and C Water Supply Option 1 would include an underground pipeline and minimal changes to aboveground views, significant indirect effects to aesthetics would not occur as a result of Alternatives A, B, or C Water Supply Option 1. Additionally, construction would be intermittent and temporary, and would therefore result in less-than-significant aesthetic impacts.

4.14.3 INDIRECT EFFECTS FROM MUNICIPAL WATER AND WASTEWATER INFRASTRUCTURE IMPROVEMENTS FOR THE CUSTER SITE (ALTERNATIVE D)

Improvements

As described in the Water Demand and Supply Study (**Appendix D**) and in the Wastewater Disposal Study (**Appendix E**), the City of Scottville's municipal water and wastewater systems will serve the Custer Site under Water Supply Option 1 and Wastewater Treatment Option 1 at the Tribe's sole cost. This will require water and wastewater pipelines to be installed from the Custer Site to the City of Scottville, which is approximately 3 miles west of the Custer Site, as shown in **Figure 4.14-2**.

Indirect Effects

The following section describes potential effects associated with the construction of the infrastructure improvements described above required to serve Alternative D. These infrastructure improvements would be as described for Water Supply Option 1 and Wastewater Treatment Option 1 in **Section 4.10**.

Geology and Soils

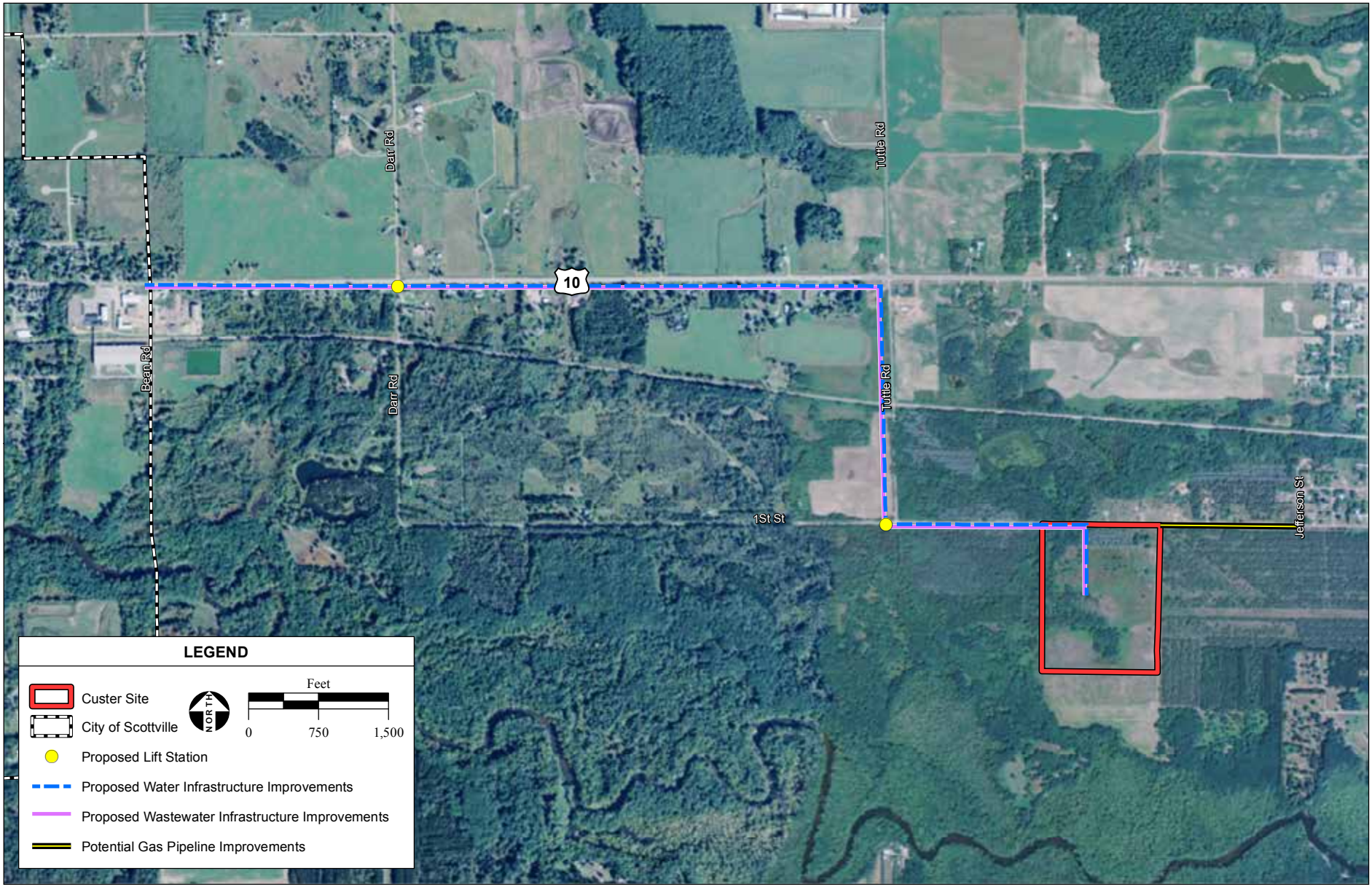
The expansion of the City of Scottville's water and wastewater infrastructure would require excavation and the introduction of backfill material. Potential impacts include increased potential for soil erosion due to the ground disturbance during construction. Construction of utility improvements over one acre would be required to comply with the NPDES General Construction Permit Program.

With standard construction practices and specifications required by the County and the NPDES permit program, there would be no indirect effects to geology and soils as a result of water and wastewater infrastructure improvements under Alternative D Water Supply Option 1 and Wastewater Treatment Option 1.

Water Resources

Construction

The development of facility and improvements could affect water resources due to grading and construction activities and an increase in impervious surfaces. Potential effects include an increase in



SOURCE: Fleis & Vandenbrink, 2016; USDA NAIP Aerial Photograph, 7/21/2014; AES, 6/30/2016

Figure 4.14-2
Alternative D Off-Site Improvements

surface runoff and increased erosion, which could adversely affect surface water quality due to increases in sediment from surface runoff and roadway pollutants such as grease and oil.

Construction of utility improvements for Alternative D Water Supply Option 1 and Wastewater Treatment Option 1 that exceed one acre of ground disturbance would also be required to comply with the NPDES General Construction Permit Program. A SWPPP would be developed that would include soil erosion and sediment control practices to reduce the amount of exposed soil, prevent runoff from flowing across disturbed areas, slow runoff from the site, and remove sediment from the runoff.

Effects to runoff volumes resulting from the increase in impervious roadways would be minimal due to the limited extent of above ground improvements. With compliance with the soil erosion and sediment control practices identified in the SWPPP, effects of Alternative D Water Supply Option 1 and Wastewater Treatment Option 1 to water resources would be less than significant. Mitigation measures are presented in **Section 5.0** that would further reduce the potential for significant stormwater runoff to impact water quality.

Operation

There would be no significant indirect effects to groundwater or surface water quality as a result of off-site utility improvements under Alternative D Water Supply Option 1 and Wastewater Treatment Option 1.

Air Quality

The area of off-site water and wastewater infrastructure improvements for Alternative D Water Supply Option 1 and Wastewater Treatment Option 1would not be of a size to create air quality effects. Construction generated dust and emissions will be controlled by BMPs mandated by the State of Michigan. Construction emissions would be negligible given the small area of disturbance and temporary nature of construction activities. As improvements would take place within an area in attainment for all CAPs, corresponding air effects would not be significant for Alternative D Water Supply Option 1 and Wastewater Treatment Option 1.

Biological Resources

The construction of water and wastewater lines will occur along largely disturbed roadside areas. It is not likely that any wetlands or other Waters of the U.S. or any state or federally-listed species will be disturbed by the water and sewer line construction. However, appropriate surveys to comply with the CWA and other state and federal laws will be performed and, if special status species, wetlands, or other Waters of the U.S. are located within the project area, appropriate mitigation measures will to occur. Compliance with these laws and the associated mitigation measures will reduce the indirect effects to biological resources effects to less-than-significant levels.

Cultural Resources

No prehistoric or historic period cultural resources are known to occur within or adjacent to the proposed off-site water and wastewater infrastructure improvements for Alternative D Water Supply Option 1 and Wastewater Treatment Option 1 (**Appendix H**); however, there is a possibility that previously unknown

cultural resources will be encountered during ground disturbing activities. This would be a potentially significant impact. Mitigation measures are presented in **Section 5.6** for the treatment of unanticipated archaeological discoveries. With the implementation of the proposed mitigation measures, no significant impacts to cultural resources are likely to result from off-site water and wastewater infrastructure improvements under Alternative D Water Supply Option 1 and Wastewater Treatment Option 1.

Socioeconomic Conditions

The Tribe would seek to enter into an agreement similar to the MSA (**Appendix B**) to compensate the City of Scottville and City of Ludington for providing water and wastewater services. Therefore, there would be no indirect effects to socioeconomic conditions as a result of off-site water and wastewater infrastructure improvements under Alternative D Water Supply Option 1 and Wastewater Treatment Option 1.

Transportation/Circulation

Water facility construction activities within road right-of-ways would be limited in scale and duration, resulting only in short-term disturbances to traffic flows. If construction activities require temporary lane closures to accommodate construction equipment, a traffic management plan would be prepared in accordance with the jurisdictional agency requirements, thus avoiding potentially adverse temporary effects. Therefore, there would be no significant indirect effects to the transportation and circulation network as a result of off-site water and wastewater infrastructure improvements under Alternative D Water Supply Option 1 and Wastewater Treatment Option 1.

Land Use

Construction of off-site water and wastewater infrastructure improvements for Alternative D Water Supply Option 1 and Wastewater Treatment Option 1 would not result in adverse land use effects because the proposed improvements involve the expansion of existing City water facilities. There would be no indirect effects to land use as a result of off-site water and wastewater infrastructure improvements under Alternative D Water Supply Option 1 and Wastewater Treatment Option 1.

Public Services

No effects to police, fire protection, or emergency medical services are expected as access to homes and businesses would be maintained during the construction period. Therefore, there would be no indirect effects to public services as a result of water and wastewater infrastructure improvements under Alternative D Water Supply Option 1 and Wastewater Treatment Option 1.

Noise

Construction activities resulting from off-site water and wastewater infrastructure improvements may result in temporary noise impacts. County regulation through installation of noise abatement equipment is expected to control such impacts. Therefore, no significant indirect noise impacts would occur as a result of off-site water and wastewater infrastructure improvements under Alternative D Water Supply Option 1 and Wastewater Treatment Option 1.

Hazardous Materials

Construction of the proposed water and wastewater infrastructure improvements could potentially result in hazardous materials effects. The accidental release of hazardous materials used during grading and construction activities could pose a hazard to construction employees, surrounding residents, and the environment. However, these hazards, which are common to construction activities, would be minimized with adherence to State and federal statutes and standard operating procedures, such as refueling in designated areas, storing hazardous materials in approved containers, clearing of dried vegetation, and proper initiation of response and clean-up measures. Potential indirect hazardous materials impacts from the construction of off-site water and wastewater infrastructure improvements for Alternative D Water Supply Option 1 and Wastewater Treatment Option 1 are therefore to be less than significant.

Aesthetics

As the proposed off-site water and wastewater infrastructure improvements for Alternative D Water Supply Option 1 and Wastewater Treatment Option 1would include pipelines located underground, significant indirect effects to aesthetics would not occur as a result of Alternative D Water Supply Option 1 and Wastewater Treatment Option 1. However, two sanitary lift stations would be constructed, one at the intersection of East First Street and Tuttle Road, and the other at the intersection of South Darr Road and State Street. These would involve changes to nearby viewsheds, but the impact would be less than significant due to the limited size of the aboveground components of the lift stations.

4.14.4 INDIRECT EFFECTS FROM NATURAL GAS PIPELINE IMPROVEMENTS FOR THE CUSTER SITE (ALTERNATIVE D)

Improvements

As described in **Section 4.10**, assuming DTE Gas Company may serve Alternative D, the Custer Site would be connected to an existing natural gas pipeline located on East First Street. This will require gas pipelines to be installed from the Custer Site to the existing pipeline, which is located at the intersection of Jefferson Street and East First Street approximately 1,500 feet east of the Custer Site, as shown in **Figure 4.14-2**.

Indirect Effects

The following section describes potential effects associated with the construction of the infrastructure improvements described above required to serve Alternative D. These infrastructure improvements would be as described in **Section 4.10**.

Geology and Soils

The natural gas pipeline improvements would require excavation and the introduction of backfill material. Potential impacts include increased potential for soil erosion due to the ground disturbance during construction. Construction of utility improvements over one acre would be required to comply with the NPDES General Construction Permit Program.

With standard construction practices and specifications required by the County and the NPDES permit program, there would be no indirect effects to geology and soils as a result of the natural gas pipeline improvements under Alternative D.

Water Resources

Construction

The natural gas pipeline improvements could affect water resources due to grading and construction activities and an increase in impervious surfaces. Potential effects include an increase in surface runoff and increased erosion, which could adversely affect surface water quality due to increases in sediment from surface runoff and roadway pollutants such as grease and oil.

Construction activities that exceed one acre of ground disturbance would also be required to comply with the NPDES General Construction Permit Program. A SWPPP would be developed that would include soil erosion and sediment control practices to reduce the amount of exposed soil, prevent runoff from flowing across disturbed areas, slow runoff from the site, and remove sediment from the runoff.

Effects to runoff volumes resulting from the increase in impervious roadways would be minimal due to the limited extent of above ground improvements. With compliance with the soil erosion and sediment control practices identified in the SWPPP, effects of Alternative D to water resources would be less than significant. Mitigation measures are presented in **Section 5.0** that would further reduce the potential for significant stormwater runoff to impact water quality.

Operation

There would be no significant indirect effects to groundwater or surface water quality as a result of off-site gas utility improvements under Alternative D.

Air Quality

The area of the natural gas pipeline improvements for Alternative D would not be of a size to create air quality effects. Construction generated dust and emissions will be controlled by BMPs mandated by the State of Michigan. Construction emissions would be negligible given the small area of disturbance and temporary nature of construction activities. As improvements would take place within an area in attainment for all CAPs, corresponding air effects would not be significant for Alternative D.

Biological Resources

The construction of the natural gas pipeline improvements will occur along largely disturbed roadside areas. It is not likely that any wetlands or other Waters of the U.S. or any state or federally-listed species will be disturbed by the gas pipeline construction. However, appropriate surveys to comply with the CWA and other state and federal laws will be performed and, if special-status species, wetlands, or other Waters of the U.S. are located within the project area, appropriate mitigation measures will to occur. Compliance with these laws and the associated mitigation measures will reduce the indirect effects to biological resources effects to less-than-significant levels.

Cultural Resources

No prehistoric or historic period cultural resources are known to occur within or adjacent to the proposed natural gas pipeline improvements for Alternative D (**Appendix H**); however, there is a possibility that previously unknown cultural resources will be encountered during ground disturbing activities. This would be a potentially significant impact. Mitigation measures are presented in **Section 5.6** for the treatment of unanticipated archaeological discoveries. With the implementation of the proposed mitigation measures, no significant impacts to cultural resources are likely to result from off-site gas infrastructure improvements under Alternative D.

Socioeconomic Conditions

The Tribe would enter into a standard consumer agreement to compensate DTE Gas Company for providing gas services to the Custer Site. Therefore, there would be no indirect effects to socioeconomic conditions as a result of the natural gas pipeline improvements under Alternative D.

Transportation/Circulation

Construction activities within road right-of-ways associated with the natural gas pipeline improvements would be limited in scale and duration, resulting only in short-term disturbances to traffic flows. If construction activities require temporary lane closures to accommodate construction equipment, a traffic management plan would be prepared in accordance with the jurisdictional agency requirements, thus avoiding potentially adverse temporary effects. Therefore, there would be no significant indirect effects to the transportation and circulation network as a result of the natural gas pipeline improvements under Alternative D.

Land Use

Construction of the natural gas pipeline improvements for Alternative D would not result in adverse land use effects because the proposed improvements involve the expansion of existing gas facilities. There would be no indirect effects to land use as a result of the natural gas pipeline improvements under Alternative D.

Public Services

No effects to police, fire, or emergency medical services are expected as access to homes and businesses would be maintained during the construction period. Therefore, there would be no indirect effects to public services as a result of the natural gas pipeline improvements under Alternative D.

Noise

Construction activities resulting from the natural gas pipeline improvements may result in temporary noise impacts. County regulation through installation of noise abatement equipment is expected to control such impacts. Therefore, no significant indirect noise impacts would occur as a result of the natural gas pipeline improvements under Alternative D.

Hazardous Materials

Construction of the natural gas pipeline improvements could potentially result in hazardous materials effects. The accidental release of hazardous materials used during grading and construction activities could pose a hazard to construction employees, surrounding residents, and the environment. However, these hazards, which are common to construction activities, would be minimized with adherence to State and federal statutes and standard operating procedures, such as refueling in designated areas, storing hazardous materials in approved containers, clearing of dried vegetation, and proper initiation of response and clean-up measures. Potential indirect hazardous materials impacts from the construction of the natural gas pipeline improvements for Alternative D are therefore to be less than significant.

Aesthetics

As the natural gas pipeline improvements for Alternative D would include pipelines located underground, significant indirect effects to aesthetics would not occur as a result of Alternative D.

4.14.5 GROWTH-INDUCING EFFECTS

NEPA requires that an EIS analyze "growth inducing effects" (40 CFR §1502.16 [b], 40 CFR §1508.8 [b]). A growth inducing effect is defined as one that fosters economic or population growth, or the construction of additional housing. Direct growth inducement is possible if a project contains a component that by definition would lead to "growth," such as new commercial or residential development. None of the project alternatives includes direct growth inducement. Indirect growth inducement could result if a project established substantial new permanent employment opportunities (e.g., new commercial, industrial, or governmental enterprises) or if it would remove obstacles to population growth (e.g., expansion of a wastewater treatment plant that could allow more construction in the service area). This section assesses the potential for indirect growth inducement for each development alternative.

Alternative A – Proposed Project

Development of Alternative A would result in temporary employment opportunities from construction and permanent employment opportunities from operation. These opportunities would result from direct as well as indirect and induced effects. Construction opportunities would be temporary in nature, and would not be anticipated to result in the permanent relocation of employees into Muskegon County.

Section 4.7.1 determined that the employment impact would result in an annual total of approximately 1,624 employment positions, including direct, indirect, and induced opportunities. Of these, the majority of positions are anticipated to be filled with people already residing within the region and, therefore, would not require new housing. As discussed in **Section 4.7.1**, Alternative A is estimated to increase housing demand by 168 units, or 2.0 percent of the projected 8,600 vacant housing units[1] in Muskegon County in 2019 (**Appendix I**; Innovation Group, 2015). Therefore, based on regional housing stock projections, and current trends in local housing market data, there are anticipated to be more than enough

[1] This vacant housing projection is estimated based on the 2014 vacancy rate (11.6 percent) and the 2019 total housing projection for Muskegon County.

vacant housing units to support potential impacts to the regional labor market under Alternative A. As such, Alternative A would not stimulate regional housing development. A significant adverse growth-inducing impact to the housing market would not occur with Alternative A.

The potential for commercial growth resulting from the development of Alternative A would result from fiscal output generated throughout Muskegon County. Under Alternative A, this output would be generated from direct, indirect, and induced economic activity. Businesses in the vicinity of the Muskegon Site would generate growth in the form of indirect output resulting from expenditures on goods and services at other area businesses. In addition, employees from Alternative A would generate growth from induced output resulting from expenditures on goods and services at other area businesses. Indirect and induced output could stimulate further commercial growth; however, such demand would be diffused and distributed among a variety of different sectors and businesses in Muskegon County. As such, significant regional commercial growth inducing impacts would not be anticipated to occur with Alternative A.

Development in Fruitport Township or other areas within Muskegon County would be subject to the constraints of their respective general plans, local ordinances, and other planning documents. New projects resulting from any induced effect would be subject to appropriate governmental review. As discussed above, the minimal amount of commercial growth that may be induced by Alternative A would not result in significant adverse environmental growth-inducing effects.

Alternative B – Reduced Intensity Alternative

Development of Alternative B would generate new employment opportunities that could result in additional housing and commercial demand. **Section 4.7.2** determined that the employment impact would result in an annual total of approximately 1,128 employment positions, including direct, indirect, and induced opportunities. Similar to Alternative A, the majority of positions are anticipated to be filled with people already residing within the region and, therefore, would not require new housing. Based on regional housing stock projections, and current trends in local housing market data, there are anticipated to be substantially more than enough vacant homes to support potential impacts to the regional labor market under Alternative B. As such, Alternative B is not expected to stimulate regional housing development and significant regional commercial growth would not be anticipated to occur.

Development in Fruitport Township or other areas within Muskegon County would be subject to the constraints of their general plans, local ordinances, and other planning documents. New projects resulting from any induced effect would be subject to appropriate project-level environmental analysis. As discussed above, the minimal amount of commercial growth that may be induced by Alternative B would not result in significant adverse environmental effects.

Alternative C – Non-Gaming Alternative

Development of Alternative C would generate new employment opportunities that could result in additional housing and commercial demand. **Section 4.7.3** determined that the employment impact of Alternative C would result in an annual total of approximately 318 employment positions, including direct, indirect, and induced opportunities. Similar to Alternative A, the majority of positions are

anticipated to be filled with people already residing within the region and, therefore, would not require new housing. Based on regional housing stock projections, and current trends in local housing market data, there are anticipated to easily be more than enough vacant homes to support potential impacts to the regional labor market under Alternative C. As such, Alternative C is not expected to stimulate regional housing development and a significant adverse induced impact to the housing market would not occur.

Development in Fruitport Township or other areas within Muskegon County would be subject to the constraints of their general plans, local ordinances, and other planning documents. New projects resulting from any induced effect would be subject to appropriate project-level environmental analysis. As discussed above, the minimal amount of commercial growth that may be induced by Alternative C would not result in significant adverse environmental effects.

Alternative D – Custer Site Alternative

Development of Alternative D would generate new employment opportunities that could result in additional housing and commercial demand. **Section 4.7.3** determined that the employment impact of Alternative D would result in an annual total of approximately 400 employment positions, including direct, indirect, and induced opportunities. Similar to Alternative A, the majority of positions are anticipated to be filled with people already residing within the region and, therefore, would not require new housing. Alternative D is estimated to increase housing demand by 12 units, or 0.23 percent of the projected 5,200 vacant housing units[2] in Mason County in 2019 (**Appendix I**; Innovation Group, 2015). Based on regional housing stock projections, and current trends in local housing market data, there are anticipated to easily be more than enough vacant homes to support potential impacts to the regional labor market under Alternative D. As such, Alternative D would not stimulate regional housing development and a significant adverse induced impact to the housing market would not occur.

Development in Custer Township or other areas within Mason County would be subject to the constraints of their general plans, local ordinances, and other planning documents. New projects resulting from any induced effect would be subject to appropriate governmental review. As discussed above, the minimal amount of commercial growth that may be induced by Alternative D would not result in significant adverse environmental effects.

Alternative E – No Action/No Development Alternative

Under the No Action/No Development Alternative, a change in the current land use of the site is not reasonably foreseeable. None of the adverse or beneficial induced effects identified for the development alternatives (Alternatives A, B, C, and D) would be anticipated to occur.

[2] This vacant housing projection is estimated based on the 2014 vacancy rate (29.7 percent) and the 2019 total housing projection for Mason County.

4.15 CUMULATIVE EFFECTS

4.15.1 INTRODUCTION

Cumulative effects are defined as effects to the environment resulting from the incremental effect of the Proposed Action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (40 Code of Federal Regulations [CFR] §1508.7). Appendix 19 of Bureau of Indian Affairs' (BIA's) National Environmental Policy Act (NEPA) Guidebook (2012) is United States Environmental Protection Agency's (USEPA's) guide for "Consideration of Cumulative Impacts in USEPA review of NEPA documents." This guide states that the NEPA document must identify all the cumulative future actions that are known and explain the effects that are not known but are 'reasonably foreseeable.' The criterion for excluding future actions is whether they are 'speculative.' Speculative effects could require the change of zoning or be contrary to documented plans, such as master plans or commercial development zones.

A cumulative effects analysis broadens the scope of analysis to include effects beyond those attributable solely to the implementation of the alternatives. The purpose of the cumulative effects analysis, as stated by the Council on Environmental Quality (CEQ) "is to ensure that federal decisions consider the full range of consequences" (CEQ, 1997b). The process of analyzing cumulative effects, or impacts, requires consideration of cumulative effects issues in each of the traditional components of the Environmental Impact Statement (EIS), including scoping, describing the affected environment, and determining environmental consequences. The incorporation of cumulative effects analysis also aids in the development of alternatives and appropriate mitigation measures.

The analysis in this section considers the incremental effects of the project alternatives on specific resources, ecosystems, and human communities that could occur in conjunction with other reasonably foreseeable actions, projects, and trends. As recommended by CEQ's *Considering Cumulative Effects*, only those potential cumulative effects that are considered to be relevant or consequential have been discussed in depth (CEQ, 1997b).

4.15.2 CUMULATIVE SETTING

The cumulative setting includes past, present, and reasonably foreseeable future actions not part of the Proposed Action, but related to cumulative effects. This includes projected growth and zoning as detailed in the Muskegon County Comprehensive Plan (Muskegon County, 2013), Mason County Master Plan (Mason County, 2014), and the buildout of the Township of Fruitport (Township), the Village of Custer, and the City of Scottville. There is one residential development project proposed in the vicinity of the Muskegon Site (Odeno Housing Project). There are no major development projects proposed and/or currently being constructed in the vicinity of the Custer Site.

Odeno Housing Project

The Tribe is planning to develop an approximately 120-acre property with approximately 300 housing units at the intersection of Sheridan Drive and Mt. Garfield Road, approximately 1.2 miles southeast of the Muskegon Site. The housing community would provide homes approximately 2,600 square feet (sf) in size. The project includes walking rails, wildlife corridors, gazebos, parks, and water features in open space common areas. On August 22, 2016, the Fruitport Township board granted preliminary development approval for the project (Fruitport Township, 2016a), and on September 26, 2016, the board adopted the Public Water and Sanitary Sewer Extension Agreement for the project (Fruitport Township, 2016b). Construction began in March 2017 (McGuire, 2017). Phasing of the project would occur over the next five years.

4.15.3 ALTERNATIVE A – PROPOSED PROJECT

The effects of the Alternative A in conjunction with the cumulative setting discussed in **Section 4.15.2**, are presented below. Effects are described for each of the subject areas of the environment described in other portions of this EIS.

Geology and Soils

Cumulative effects associated with geology and soil resources may occur as a result of future developments in combination with Alternative A. Topographic changes may be cumulatively significant if the topography contributes significantly to environmental quality with respect to drainage, habitat, public safety, or other values. Soil loss could be cumulatively considerable if the project alone would not result in significant loss of topsoil, but taken together with all other developments may result in significant depletion of available soils. Local permitting requirements for construction would address regional geotechnical and topographic conflicts, seismic hazards, and resource extraction availability. Approved developments would be required to follow applicable local permitting procedures. In addition, the project and all other developments that disturb one acre or more must comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) Construction General Permit, which requires that various strategies be implemented to address water quality degradation by preventing erosion, as outlined in **Section 5.2**. Therefore, implementation of Alternative A would not result in significant cumulative effects to geology or soils.

Water Resources

Stormwater

Cumulative effects to water resources may occur as the result of buildout of the County Comprehensive Plan, including future developments in combination with Alternative A. Examples of potential effects include increased sedimentation, increased pollution and increased stormwater flows. Stormwater discharges from residential and industrial areas are of concern in managing surface water quality. Pollutants that accumulate in the dry summer months, such as oil and grease, asbestos, pesticides, and herbicides, may create water quality problems due to their presence in high concentrations during the first major storm event.

Changes in runoff characteristics may increase stream volumes, increase stream velocities, increase peak discharges, shorten the time to peak flows, and lessen groundwater contributions to stream base-flows during non-precipitation periods. Urban areas, such as the Township of Fruitport also have sources of non-point source pollution that can affect regional water quality. Construction and implementation of proposed development projects may also affect water quality by increasing sedimentation and pollution, and increasing stormwater flows. However, the projects would include erosion control measures in compliance with the NPDES permit program and Michigan Department of Environmental Quality (MDEQ) regulations. In addition, Alternative A would treat all stormwater on site, consistent with current conditions, and would therefore not contribute to non-point source pollution. Therefore, implementation of Alternative A would not result in significant cumulative effects to stormwater.

Groundwater

Groundwater Supply

Buildout of the County Comprehensive Plan could result in cumulative effects to groundwater if the total groundwater demand of approved projects, including future developments and Alternative A, exceeds the recharge capacity of the groundwater source. As discussed in **Section 3.3**, the Township obtains its primary water supplies from surface water from Lake Michigan. Under Water Supply Option 1, Alternative A would obtain municipal water from the Township. Therefore, Alternative A Water Supply Option 1 would not result in significant cumulative effects on groundwater supply.

Under Water Supply Option 2, Alternative A would install on-site wells for necessary water supply. This option would not result in cumulative effects on groundwater supply in the area with the addition of future developments due to the high static water levels in the area and the lack of significant existing or planned groundwater use in the area by others.

Groundwater Quality

Under Wastewater Treatment Option 1, wastewater generated by Alternative A would be collected by the Township's wastewater collection system and treated by the Muskegon County Wastewater Management System. The System includes a pre-aeration tank, two complete-mix 42-million gallon (MG) extended aeration cells with a retention time of one day each, two aerated 100-MG settling lagoons with a retention time of two days, two 850-acre storage lagoons with 5.1 billion gallons of storage capacity, 5,100 acres irrigated crop land for final treatment, and 200 miles of underdrains to return the clean water to local rivers and lakes. The system would continue to operate in accordance with its NPDES Permit (Permit No. MI0027391) issued by MDEQ. Therefore, the impact to groundwater quality from wastewater under Wastewater Treatment Option 1 would be less than significant.

Under Wastewater Treatment Option 2, wastewater generated by Alternative A would be treated on site in a packaged wastewater treatment system. On-site disposal would be accomplished through an approximately 100,000-sf leach field that would allow treated wastewater to percolate into the soil. Treated wastewater would be further filtered through the soil and would not degrade groundwater quality. Therefore, Alternative A Wastewater Treatment Option 2 would not have significant adverse cumulative effects on groundwater quality.

Air Quality

Operational Vehicle and Area Emissions

Operation of Alternative A would result in the generation of mobile emissions from patron, employee, and delivery vehicles, as well as stationary source emissions from combustion of natural gas in boilers and other equipment. Emission estimates for the cumulative year 2040 are provided in **Table 4.15-1**. Detailed calculations of mobile and stationary source emissions are included in **Appendix O**. The USEPA approved Motor Vehicle Emission Simulator (MOVES) air quality model was used to estimate emissions in the year 2040. Increased gas mileage from trucks and vehicles in the future is accounted for in the MOVES model. The increase in future gas mileage is attributed to improved fuel efficiency technology and stricter federal and state regulations.

TABLE 4.15-1
2040 OPERATION EMISSIONS – ALTERNATIVE A

Sources	Criteria Pollutants					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Tons per Year					
Stationary Source	0	2	1	0	0	0
Mobile Source	4	25	135	0	8	2
Total Emissions	***4***	***27***	***136***	***0***	***8***	***2***
Conformity *de minimis* Levels	N/A	N/A	N/A	N/A	N/A	N/A

Notes: N/A = Not Applicable; *de minimis* levels are not applicable due to attainment status (refer to **Section 3.4**)
Totals may not add due to rounding.
Source: USEPA, 2014b.

Past, present, and future development projects contribute to a region's air quality conditions on a cumulative basis; therefore, by its very nature, air pollution is largely a cumulative impact. If a project's individual emissions contribute toward exceedance of the National Ambient Air Quality Standards (NAAQS), then the project's cumulative impact on air quality would be significant. In developing attainment designations for criteria air pollutants (CAPs), the USEPA considers the regions past, present, and future emission levels. As stated in **Section 3.4**, the Muskegon Site and vicinity is in attainment for all CAPs, therefore, air quality in the region would not be cumulatively impacted. Additionally, Best Management Practices (BMPs) provided in **Section 2.3.3** would minimize CAP emissions from operation of Alternative A. Alternative A would not contribute to a significant cumulative effect to air quality in the year 2040.

Carbon Monoxide Hot Spot Analysis

Hot Spot Analysis is conducted on intersections that would have a level of service (LOS) of D, E, or F after mitigation (USEPA, 2010). After the implementation of recommended mitigation for Alternative A, no intersection would have an LOS or an increase in delay in the cumulative year 2040 that would warrant a Hot Spot Analysis. No significant cumulative impacts would occur and no further analysis is needed.

Pollutants of Concern

Methodology

For the purpose of quantifying GHG emissions, all GHGs are standardized in carbon dioxide equivalents (CO_2e). This is calculated by converting other warming gasses by their heat-capturing ratio to carbon dioxide (CO_2). As shown in **Table 4.15-2**, CO_2 is used as the base and is given a value of one. Methane (CH_4) has the ability to capture 21 times more heat than CO_2; therefore, CH_4 is given a CO_2e value of 21. Emissions are multiplied by the CO_2e value to achieve an overall GHG emission value. By providing a common measurement, CO_2e provides a means for presenting the relative overall effectiveness of emission reduction measures for various GHGs. Development of Alternative A would result in an increase in GHG emissions related to mobile sources (trips generated), area sources (components of Alternative A that directly emit GHGs), and indirect sources related to electricity, solid waste, wastewater processing, and water transport.

TABLE 4.15-2
GREENHOUSE GAS CO_2 EQUIVALENTS

Gas	CO_2e Value
CO_2	1
CH_4	21
N_2O	310
HFCs/PFCs[1]	6,500
SF_6[1]	23,900

Notes: CO_2e = Carbon dioxide equivalent; CH_4 = methane, N_2O = nitrous oxide; HFCs/PFCs = hydroflourocarbons/perflourocarbons; SF_6 = sulfur hexaflouride
1 – High global warming potential pollutants
Source: IPCC, 2013.

GHG Emission Estimates and Reduction Measures

EMFAC 2011 and USEPA's AP-42 emission factors were used to estimate construction and area project-related GHG emissions. USEPA's MOVES 2014 emissions modeling software was used to estimate mobile GHG emissions. Indirect emissions, which include electricity use, water conveyance, and wastewater treatment, were estimated using the USEPA's AP-42 emission factors. Construction emissions totaling approximately 4,123 short tons (ST) of CO_2e were amortized over 20 years and added to operational emissions. As shown in **Table 4.15-3**, Alternative A would result in direct GHG emissions at 1,865 metric tons (MT) of CO_2e per year, and indirect emissions of 52,456 MT of CO_2e per year. As stated in **Section 3.4**, the project area is not sensitive to the adverse impacts associated with climate change. . Furthermore, reasonable BMPs have been identified in **Section 2.3.3** to reduce GHG emissions, as shown in **Table 4.15-4** below.

Alternative A would implement BMPs to reduce the GHG emissions associated with the project. The BMPs for which the GHG reduction can be quantified are presented in **Table 4.15-4** above. Additionally, non-quantifiable BMPs are also summarized and included in **Section 2.3.3**. Improvements in fuel economy are accounted for in the MOVES air quality model, and therefore not included in project-level BMPs. Both the BMPs summarized in **Table 4.15-4** above and the entire suite presented in full in

Section 2.3.3 would reduce project-related emissions. Therefore, Alternative A would have a less-than-significant cumulative effect with mitigation on GHG emissions.

TABLE 4.15-3
ALTERNATIVE A PROJECT-RELATED GHG EMISSIONS

Sources	CO_2e Emissions (ST)	Conversion Factor (ST/MT)	GHG Emissions in CO_2e (MT per year)[4]
Direct			
Amortized Construction	206	0.91	188
Operational			1,677
		Subtotal	***1,865***
Indirect			
Mobile	52,652	0.91	47,913
Electricity Usage[1]			3,957
Water Conveyance/ Wastewater Treatment[2]			75
Solid Waste Disposal[3]			511
		Subtotal	***52,456***
		Total Project-Related GHG Emissions	**54,321**

Notes: ST = short tons; MT = metric tons; CO_2e = carbon dioxide equivalent
1 - Based on 5,531 MWh per year.
2 - Based on water use plus wastewater generation per year from **Section 4.10**.
3 - Based on 1,114 MT of solid waste per year.
4 - Rounded to nearest metric ton. Totals may not add due to rounding.
Source: USEPA, 2014b; USEPA, 1995.

TABLE 4.15-4
BMPS FOR GHG EMISSIONS – ALTERNATIVE A

Item	GHG Emissions in CO_2e (MT per year)
Total Project-Related GHG Emissions	**54,321**
Reduce Construction Equipment Idling 1% of Construction (**Air Quality BMP [B][1]**)	-2
Install Low Flow Facilities 5% Water/Wastewater (**Air Quality BMP [C][3]**)	-4
Reduce Waste Stream by 25% (**Air Quality BMP [C][7]**)	-128
Install Energy Efficient Lighting 2% (**Air Quality BMP [C][4]**)	-79
GHG Emissions Remaining after Reduction from Operational BMPs	***54,108***

Notes: ST = short tons; MT = metric tons; CO_2e = carbon dioxide equivalent
Source: USEPA, 2014b; USEPA, 1995.

Biological Resources

Cumulative effects to biological resources would occur if Alternative A, in conjunction with buildout of the County and City Comprehensive Plans noted in **Section 4.15.2**, would result in a significant effect to federally-listed species, contribute to a reduction in the number of a listed species that would affect the species long-term sustainability, cause development that permanently disturbs a wildlife corridor, results

in an effect to sensitive habitat that is of regional significance, or result in a conflict with regional conservation goals.

Wildlife and Habitats

As identified in **Section 4.5**, the Muskegon Site does not contain sensitive habitats. The habitats present within the Muskegon Site provide limited resources for wildlife, since they are likely inhabited by animal species accustomed to human disturbances. As such, Alternative A would add no significant effects, either cumulatively or incrementally, to sensitive habitats.

Federally-Listed Species

Alternative A, in combination with urban growth in the area, would not have a significant cumulative effect on federally-listed plants or wildlife after mitigation measures outlined in **Section 5.5** are implemented. Alternative A would not contribute, either cumulatively or incrementally, to effects to federally-listed species.

Migratory Birds

Alternative A, in combination with urban growth in the area, would not have a significant cumulative effects to nesting migratory birds after mitigation measures outlined in **Section 5.5** are implemented. Alternative A would not result in significant cumulative effects to nesting migratory birds.

Wetlands and/or Waters of the U.S.

With the mitigation measures listed in **Section 5.5**, no significant cumulative impacts to wetlands or Waters of the U.S. would occur as a result of Alternative A. If jurisdictional wetlands are found to exist within the Muskegon Site and impacts to them occur, appropriate compensatory mitigation would be required according to permit requirements. Other development projects in the area would also be required to implement similar mitigation. Therefore, Alternative A would not result in cumulative effects to wetlands or Waters of the U.S.

Cultural Resources

Significant cumulative effects to cultural resources would occur if archaeological sites were lost, damaged, or destroyed without appropriate recordation or data recovery. Cultural resources are afforded substantial protection through the federal regulations in the National Historic Preservation Act of 1966 (NHPA) and State and local historic preservation guidance. Improvements from cumulative projects involving federal funding and approval would be subject to Section 106 of the NHPA. If an archaeological site was uncovered during the construction of Alternative A, impacts to the site in combination with impacts to other archaeological sites in the region could be cumulatively significant. However, implementation of mitigation measures identified in **Section 5.6**, as well as protections under state and federal law, would eliminate significant cumulative effects to cultural resources.

Socioeconomic Conditions

Cumulative socioeconomic effects could occur in the project area as the result of developments that affect the lifestyle and economic well-being of residents. Alternative A would introduce new economic activity to Muskegon County, which is a beneficial effect to the region. When considered with the buildout of the County Comprehensive Plan, Alternative A may contribute towards cumulative socioeconomic effects, including impacts to the local labor market, housing availability, increased costs due to problem gambling, and impacts to local government. These effects would occur as the region's economic and demographic characteristics change, as the population grows, and as specific industries expand or contract. Planning documents for the Township and Muskegon County will continue to designate land uses for businesses, industry, and housing, as well as plan public services for anticipated growth in the region. Further, potential socioeconomic effects of Alternative A would be lessened through implementation of the BMPs provided in **Section 2.3.3** and mitigation measures described in **Section 5.7**. Therefore, Alternative A would not contribute to significant adverse cumulative socioeconomic effects.

Transportation

In the cumulative year 2040, Alternative A in combination with regional growth would result in the addition of vehicle traffic to local intersections. A Traffic Impact Study (TIS) prepared for the proposed alternatives is provided in **Appendix J**. This section incorporates the results of the TIS and describes the number of trips that would be generated by each alternative in the cumulative year 2040 and any potential adverse effects that would occur to intersections within the study area. Traffic effects resulting from the proposed alternatives were analyzed using trip generation rates for similar casino developments and Fleis & Vandenbrink's professional judgment, as well as rates provided by the Institute of Transportation Engineers (ITE) *Trip Generation Manual* 9th Edition, 2012 (refer to **Section 4.8.1**).

2040 Cumulative Baseline Traffic Conditions

Cumulative traffic conditions were estimated using the Michigan Department of Transportation (MDOT) travel demand forecast models and growth rates as well as historical traffic volumes in the area. Traffic volumes were estimated by applying a background annual growth rate of 0.08 percent to all 2025 Future Year baseline traffic volumes for the Muskegon Site to represent the increase of traffic from 2025 Future Year conditions (refer to **Section 4.8.1** for a description of 2025 Future Year baseline traffic volumes). See **Appendix J** for a detailed discussion of background operations.

Under 2040 cumulative conditions, all study intersections are projected to operate acceptably at LOS D or better without the addition of project traffic except for the following:

- Northbound (NB) right turn movement at the signalized intersection of Harvey Street & Hile Road;
- NB left turn movement at the signalized intersection of Harvey Street & Independence Drive;
- Southbound (SB) through movement and all left turn movements at the signalized intersection of Harvey Street & Sternberg Road;
- SB shared through/right turn movement at the signalized intersection of Harvey Street & Pontaluna Road;
- Stop controlled westbound (WB) Interstate 96 (I-96) off-ramp approach to Airline Highway;

- Stop controlled eastbound (EB) I-96 off-ramp left turn movement to Hile Road;
- Stop controlled NB United States Highway 31 (US-31) off-ramp approach to Sternberg Road;
- All-way stop controlled (AWSC) intersection of Pontaluna Road with the NB US-31 ramps; and
- Stop controlled SB US-31 off-ramp left turn movement to Pontaluna Road.

Under 2040 cumulative conditions, all study roadway segments and freeway facilities are projected to operate acceptably at LOS D or better without the addition of project traffic.

2040 Cumulative Traffic Conditions Plus Alternative A

To assess the impacts of Alternative A on transportation facilities in the study area, the projected number of trips generated by Alternative A was added to 2040 cumulative year baseline traffic volumes.

Intersection Analysis

Table 4.15-5 shows the Friday PM peak hour intersection delay and LOS at each of the study intersections with the addition of Alternative A traffic under 2040 cumulative conditions; the following study intersection movements are projected to operate at an unacceptable LOS:

- Signalized intersection of Harvey Street & Hile Road;
- NB left turn movement at the signalized intersection of Harvey Street & Independence Drive;
- WB approach and EB left turn movement at the signalized intersection of Harvey Street & Sternberg Road;
- SB through/right turn movement at the signalized intersection of Harvey Street & Pontaluna Road;
- Stop controlled WB I-96 off-ramp approach to Airline Highway;
- Stop controlled East Lake Road approach at WB I-96 Off-Ramp to Airline Highway;
- Stop controlled left turn movement from the SB US-31 Off-Ramp approach to Airline Highway;
- Stop controlled left turn movement from the EB I-96 Off-Ramp approach to Hile Road;
- Stop controlled NB US-31 off-ramp approach to Sternberg Road;
- AWSC intersection of Pontaluna Road with the NB US-31 Ramps;
- Stop controlled left turn movement from the SB US-31 Off-Ramp to Pontaluna Road; and
- Stop controlled casino site driveway approach to Harvey Street.

It should be noted that the intersection of Pontaluna Road/US-31 would operate unacceptably with or without the addition of Alternative A, and Alternative A would increase traffic to this intersection. MDOT has recently completed improvements to this intersection, including the construction of additional left and right turn lanes; however, the SB left turn movement from the SB US-31 Off-Ramp would continue to operate at LOS E or F. Further, SimTraffic network simulations indicate acceptable traffic operations and 95th percentile vehicle queue lengths for the WB and SB movements to be 8 and 4 vehicles, respectively, which is not significant. Therefore, impacts at this intersection are less than cumulatively considerable and the Tribe is not required to pay a fair share towards improvements at this intersection.

TABLE 4.15-5
2040 CUMULATIVE PLUS ALTERNATIVE A INTERSECTION DEALY AND LOS

Intersection	Control	Approach	2040 Cumulative		2040 Cumulative Plus Alternative A	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. Airline Highway & Airport Road	Signalized	Overall	22.7	C	24.1	C
2. Airline Highway & Hile Road	Signalized	Overall	16.1	B	17.4	B
3. Harvey Street & Hile Road	Signalized	Overall	30.2	C	211.9	F
4. Grand Haven Road & Hile Road	Signalized	Overall	13.6	B	13.8	B
5. Harvey Street & East Ellis Road	Signalized	Overall	10.8	B	11.1	B
6. Harvey Street & Independence Drive	Signalized	Overall	40.3	D	438.	D
7. Harvey Street & Sternberg Road	Signalized	Overall	50.7	D	54.8	D
8. Grand Haven Road & Sternberg Road	Signalized	Overall	29.8	C	30.0	C
9. Harvey Street & Mount Garfield Road	Signalized	Overall	24.3	C	24.3	C
10. Harvey Street & Pontaluna Road	Signalized	Overall	32.8	C	34.2	C
11. Grand Haven Road & Pontaluna Road	Signalized	Overall	28.8	C	28.8	C
12. Airline Highway & Sternberg Road	Signalized	Overall	17.8	B	18.0	B
13. Airline Highway & Farr Road	Signalized	Overall	16.7	B	17.1	B
14. Airport Road & NB BR US-31 On-Ramp	Free-Flow	EB LT	8.7	A	8.7	A
15. Airline Highway & WB I-96 Off-Ramp	SSSC	NB	39.0	E	163.5	F
		SB	27.6	D	120.3	F
16. Airline Highway & SB US-31 Ramps	SSSC	SB	20.3	C	77.1	F
17. Airline Highway & NB US-31 On-Ramp	Free-Flow	EB LT	8.1	A	8.1	A
18. Hile Road & EB I-96 Ramps	SSSC	NB	38.9	E	629.8	F
19. Hile Road & NB US-31 Off-Ramp	SSSC	NB	11.9	B	13.1	B
20. Sternberg Road & NB US-31 Ramps	SSSC	NB	202.1	F	254.8	F
21. Sternberg Road & NB US-31 Off-Ramp to WB Sternberg Road	SSSC	SB	11.9	B	12.4	B
22. Sternberg Road & SB US-31 Ramps	SSSC	SB	13.1	B	13.1	B
23. Pontaluna Road & NB US-31 Ramps	AWSC	Overall	48.1	E	49.9	E
24. Pontaluna Road & SB US-31 Off-Ramp	SSSC	SB	45.0	E	45.0	E
25. Pontaluna Road & SB US-31 On-Ramp	Free-Flow	WB LT	10.1	B	10.1	B
26. Farr Road & WB I-96 Off-Ramp	SSSC	NB	12.7	B	13.2	B
27. Farr Road & WB I-96 On-Ramp	Free-Flow	WB LT	7.5	A	7.5	A
28. Airline Highway & EB I-96 Ramps	SSSC	EB	31.4	D	31.4	D
29. Hile Road & Site Drive	SSSC	EB	DOES NOT EXIST		59.0	F

Notes: LT = left turn; SSSC = side-street stop controlled; AWSC = all-way stop controlled
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

The increase in traffic generated by Alternative A under 2040 cumulative conditions would contribute to unacceptable traffic operations at the above study intersections. Without mitigation, these intersections would contribute to unacceptable traffic operations under 2040 cumulative conditions; however, implementation of mitigation measures provided in **Section 5.8** would restore the intersections to

acceptable conditions. Upon implementation of recommended mitigation, Alternative A would not contribute towards significant cumulative effects on traffic and circulation. See Table 32 in **Appendix J** for a summary of study intersection delay and LOS after implementation of recommended mitigation measures under 2040 cumulative conditions with Alternative A.

Roadway Segment Analysis

Table 4.15-6 shows the Friday PM peak hour volume-to-capacity ratios (V/C) and LOS for each of the study roadway segments with the addition of Alternative A traffic under 2040 cumulative conditions.

TABLE 4.15-6
2040 CUMULATIVE PLUS ALTERNATIVE A ROADWAY SEGMENT V/C RATIO AND LOS

Roadway Segment	Direction	2040 Cumulative		2040 Cumulative Plus Alternative A	
		V/C	LOS	V/C	LOS
1. Harvey Street - Hile Road to East Ellis Road	NB	0.54	D	0.77	E
	SB	0.44	D	0.80	E
2. Harvey Street - East Ellis Road to Independence Drive	NB	0.21	C	0.25	C
	SB	0.20	C	0.22	C
3. Harvey Street - Independence Drive to Sternberg Road	NB	0.38	D	0.40	D
	SB	0.34	D	0.36	D
4. Sternberg Road - Harvey Street to NB US-31	EB	0.39	C	0.40	C
	WB	0.48	D	0.50	D
5. Hile Road - Harvey Street to Airline Highway	EB	0.55	D	0.74	D
	WB	0.35	C	0.58	C
6. Airline Highway - Hile Road to US-31	EB	0.43	D	0.47	D
	WB	0.41	C	0.64	C
7. Airline Highway - US-31 to Airport Road	EB	0.47	D	0.47	D
	WB	0.26	D	0.27	D

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

With the addition of Alternative A-related traffic, the following study roadway segments are projected to operate at an unacceptable LOS under 2040 cumulative conditions:

- NB and SB Harvey Street between Hile Road and Ellis Road.

Since the completion of the TIS, Harvey Street has been widened to five lanes between Hile Road and Ellis Road. This, along with mitigation measure provided in **Section 5.8** regarding lane striping and adjustments of signal timing, ensures that Alternative A would not contribute towards significant cumulative effects on traffic and circulation.

Freeway Facility Analysis

Table 4.15-7 shows the Friday PM peak hour density and LOS for each of the study freeway facilities with the addition of Alternative A traffic under 2040 cumulative conditions.

As shown in **Table 4.15-7**, all study freeway facilities would continue to operate acceptably at LOS D or better during the Friday PM peak hour under 2040 cumulative conditions with the addition of Alternative A traffic. Therefore, Alternative A would not contribute towards significant cumulative effects on traffic and circulation.

TABLE 4.15-7
2040 CUMULATIVE PLUS ALTERNATIVE A FREEWAY FACILITY DELAY AND LOS

Freeway Segment / Ramp / Weave Segment	2040 Cumulative		2040 Cumulative Plus Alternative A	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
NB US-31				
1. South of Pontaluna Road	17.9	B	18.7	C
2. Pontaluna Road Off-Ramp	21.4	C	22.4	C
3. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	13.9	B	14.4	B
4. Pontaluna Road On-Ramp	18.1	B	18.8	B
5. Pontaluna Road On-Ramp to EB Sternberg Road Off-Ramp	16.1	B	16.7	B
6. EB Sternberg Road Off-Ramp	19.0	B	19.7	B
7. EB Sternberg Road Off-Ramp to WB Sternberg Road Off-Ramp	14.1	B	14.5	B
8. WB Sternberg Road Off-Ramp	17.0	B	17.5	B
9. WB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	13.0	B	13.3	B
10. Sternberg Road On-Ramp to Hile Road Off-Ramp	18.7	C	19.1	C
11. Hile Road Off-Ramp to EB US-31 BR On-Ramp *(Weave)*	21.3	C	21.3	C
12. EB US-31 BR On-Ramp to WB US-31 BR Off-Ramp *(Weave)*	17.1	B	17.1	B
13. WB US-31 BR Off-Ramp to WB I-96 / Airline Highway On-Ramps	17.3	B	17.3	B
14. WB I-96 / Airline Highway On-Ramps	25.2	C	25.5	C
NB US-31 FREEWAY FACILITY	**17.5**	**B**	**18.1**	**C**
SB US-31				
1. North of Airline Highway	21.8	C	22.3	C
2. Airline Highway Off-Ramp	25.7	C	26.2	C
3. Airline Highway Off-Ramp to Airline Highway On-Ramp	17.8	B	18.0	B
4. Airline Highway On-Ramp to EB I-96 Off-Ramp *(Weave)*	15.2	B	15.6	B
5. EB I-96 Off-Ramp to EB I-96 On-Ramp *(Weave)*	14.0	B	14.1	B
6. EB I-96 On-Ramp to WB Sternberg Road Off-Ramp	13.1	B	13.2	B
7. WB Sternberg Road Off-Ramp to EB Sternberg Road Off-Ramp	15.7	B	15.7	B
8. EB Sternberg Road Off-Ramp	20.3	C	20.4	C
9. EB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	8.2	A	8.3	A
10. Sternberg Road On-Ramp	11.9	B	12.5	B
11. Sternberg Road On-Ramp to Pontaluna Road Off-Ramp	10.7	A	11.3	B
12. Pontaluna Road Off-Ramp	12.6	B	13.2	B
13. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	8.9	A	9.5	A
14. Pontaluna Road On-Ramp	13.2	B	13.8	B

Freeway Segment / Ramp / Weave Segment	2040 Cumulative		2040 Cumulative Plus Alternative A	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
15. Pontaluna Road On-Ramp to south of Pontaluna Road	11.8	B	12.3	B
SB US-31 FREEWAY FACILITY	**14.7**	**B**	**15.1**	**B**
EB I-96				
1. Grand Haven Road to SB US-31 Off-Ramp	9.4	A	9.7	A
2. SB US-31 Off-Ramp	11.4	B	11.7	B
3. SB US-31 Off-Ramp to SB US-31 On-Ramp	4.5	A	4.8	A
4. SB US-31 On-Ramp to NB US-31 Off-Ramp *(Weave)*	8.5	A	8.9	A
5. Hile Road Off-Ramp	11.7	B	12.3	B
6. Hile Road Off-Ramp to Hile Road On-Ramp	8.6	A	8.6	A
7. Hile Road On-Ramp	10.8	B	12.4	B
8. Hile Road On-Ramp to Airline Highway Off-Ramp	9.6	A	11.1	B
9. Airline Highway Off-Ramp	11.4	B	13.1	B
10. Airline Highway Off-Ramp to Airline Highway On-Ramp	7.9	A	9.4	A
11. Airline Highway On-Ramp	10.5	B	12.2	B
12. Airline Highway On-Ramp to east of Airline Highway	9.4	A	10.9	A
EB I-96 FREEWAY FACILITY	**9.6**	**A**	**10.9**	**A**
WB I-96				
1. East of Airline Highway to Farr Road / Airline Highway Off-Ramp	10.4	A	12.7	B
2. Farr Road / Airline Highway Off-Ramp	12.4	B	15.1	B
3. Farr Road / Airline Highway Off-Ramp to Farr Road On-Ramp	8.4	A	10.5	A
4. Farr Road / Airline Highway On-Ramp	10.9	B	13.2	B
5. Farr Road / Airline Highway On-Ramp to NB US-31 Off-Ramp	9.8	A	11.9	B
6. NB US-31 Off-Ramp	11.9	B	14.5	B
7. NB US-31 Off-Ramp to NB US-31 On-Ramp	3.3	A	5.5	A
8. NB US-31 On-Ramp to Airline Highway Off-Ramp *(Weave)*	6.8	A	8.8	A
9. Airline Highway Off-Ramp to Airport Road On-Ramp	6.9	A	6.9	A
10. Airport Road On-Ramp	10.6	B	10.8	B
WB I-96 FREEWAY FACILITY	**9.6**	**A**	**11.5**	**B**

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

Transit Facilities

As discussed in **Section 4.8**, because sufficient parking is available on site and Alternative A would not add passengers to the bus system in excess of capacity, mitigation included in **Section 5.8** would ensure that the Tribe offers to enter into an agreement with Muskegon Area Transit System (MATS) to optimize routes and timing, including constructing a bus stop on the Muskegon Site, if requested by MATS. Therefore, no significant cumulative effects would occur to transit facilities as a result of Alternative A.

Bicycle and Pedestrian Facilities

Under 2040 cumulative conditions, it is not anticipated that bicycle and pedestrian facilities in the vicinity of the Muskegon Site would change. Because sufficient parking is available on site and sidewalk and bicycle facilities under 2040 cumulative conditions are not anticipated to change, no significant adverse effects would occur to bicycle or pedestrian facilities as a result of Alternative A.

Land Use

Development in the County is guided by the Muskegon County Comprehensive Plan (Muskegon County, 2013) and the Township Zoning Ordinance. As discussed in **Section 3.9.2**, the Muskegon Site and surrounding areas are located within the Township; and areas within the City of Norton Shores are located to the west. The Muskegon Site is zoned for shopping center and development of Alternative A will be consistent with surrounding commercial land uses, and past commercial land uses of the site. While Alternative A would not be subject to local land use policies, as discussed in **Section 4.9**, with the BMPs presented in **Section 2.3.3** and mitigation listed in **Section 5.8**, Alternative A would not disrupt neighboring land uses, prohibit access to neighboring parcels (see discussion on circulation above), or otherwise conflict with neighboring land uses. Alternative A would not contribute to significant cumulative land use effects.

Agriculture

The Farmland Protection Policy Act (FPPA) is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. The Muskegon Site is not currently being used for agricultural production, and it is not eligible for protection under FPPA. In addition, the Muskegon Site is not zoned for agriculture. Implementation of Alternative A would not contribute to significant cumulative effects to agricultural lands.

Public Services

Water Supply

Water Supply Option 1

The Water Supply and Demand Study assumes 0.1 percent flat growth for Fruitport Township and the City of Norton Shores through 2037. As discussed in **Section 4.10**, a Water Supply and Demand Study concluded that the Township would have sufficient capacity to serve the projected demands of the buildout of Alternative A. Projects approved for connection to the Township's water system would have to pay the appropriate water capital connection charges and monthly service fees. This fair share compensation would allow the Township to expand its water supply infrastructure as necessary to serve other proposed projects. Further, the Tribe, Township, and County entered into a Municipal Services Agreement (MSA; **Appendix B**), which would ensure the provision of water to the Muskegon Site and the payment of fair share fees by the Tribe. Therefore, compliance with these policies will require that growth is appropriately phased to ensure that sufficient resources are available. With the implementation of mitigation measures outlined in **Section 5.10**, Water Supply Option 1 would not result in cumulative significant effects to the Township's water supply system.

As discussed in **Section 1.5.2**, the Tribe shall pay water capital connection charges and monthly service fees. Projects approved for connection to the Township's water system would have to contribute to the extension of the Township's water distribution system to their respective sites. With the implementation of mitigation measures outlined in **Section 5.10**, Water Supply Option 1 would not result in significant cumulative effects to the Township's water distribution system.

Water Supply Option 2

Under Water Supply Option 2 the Muskegon Site would not connect to the Township's water distribution system; therefore, Alternative A would not have any effect on the Township's water distribution system or the City of Muskegon's Filtration Plant. Therefore, this cumulative impact would be less than significant under Water Supply Option 2.

Wastewater

Wastewater Treatment Option 1

As discussed in **Section 4.10**, the Township has the capacity to treat wastewater flows generated from Alternative A through the Muskegon County Wastewater Treatment Facility (MCWTF). Projects approved for connection to the Township's sewer system would have to pay the appropriate sewer capital connection charges and monthly service fees. This fair share compensation would allow the Township to expand its sewer infrastructure and MCWTF as necessary to serve other proposed projects. With the implementation of mitigation measures outlined in **Section 5.10**, Alternative A would not result in cumulative significant effects to the Township's sewer and water treatment system.

As discussed in **Section 1.5.2**, the Tribe shall pay wastewater capital connection charges and monthly service fees. With the implementation of mitigation measures outlined in **Section 5.10**, Alternative A would not result in cumulative significant effects to the Township's sewer collection system.

Wastewater Treatment Option 2

Under Wastewater Treatment Option 2 the Muskegon Site would not connect to the Township's wastewater infrastructure; therefore, Alternative A would not have any effect on the Township's wastewater infrastructure or the MCWTF. Therefore, this cumulative impact would be less than significant under Wastewater Treatment Option 2.

Solid Waste

The Muskegon County Landfill, owned and operated by Muskegon County, has an available capacity of 1.1 million cubic yards of municipal solid waste, capable of accommodating Alternative A and other cumulative development in the area. Growth resulting from buildout of the County's Comprehensive Plan would increase disposal of solid waste to the Muskegon County Landfill. Projected solid waste generation for Alternative A is considered a small contribution to the waste stream and is not expected to dramatically decrease the life expectancy of the disposal site and landfills and, therefore, Alternative A would not result in significant cumulative effects to solid waste services.

Law Enforcement

The Fruitport Township Police Department (FPD) provides law enforcement services for the Township. The FPD would provide law enforcement services for Alternative A and cumulative development in the Township. With implementation of the conditions of the MSA, as discussed in **Section 5.10**, development of Alternative A would not result in significant cumulative effects on public law enforcement.

Fire Protection and Emergency Medical Services

The Fruitport Fire Department (FPFD) provides fire protection and emergency medical services to the Township. New development in the Township, including Alternative A, would receive fire protection and emergency medical services from the FPFD. Future development and buildout of the Township would result in increased demands on the FPFD. With implementation of the conditions of the MSA, as discussed in **Section 5.10**, development of Alternative A would not result in significant cumulative effects on fire protection or emergency medical services.

Electricity, Natural Gas, and Telecommunications

Individual projects would be responsible for paying development or user fees to receive electrical or natural gas services. These fees would expand the capacity of electricity, natural gas, and telecommunications providers as necessary to supply each individual project. Consumers Energy and DTE Energy would provide electricity and natural gas to the Muskegon Site, respectively. Therefore, Alternative A would not contribute to a potential for significant cumulative effects to energy providers.

Noise

The following identifies possible impacts from project related noise sources in the cumulative year 2040 for Alternative A, including traffic; heating, ventilation, and air conditioning (HVAC) systems; parking structure and lots; and deliveries.

Traffic Noise

The primary source of noise in the cumulative year 2040 near the Muskegon Site is generated by traffic in the cumulative year 2040. As described in **Section 3.11**, the level of traffic noise depends on: l) the volume of the traffic, 2) the speed of the traffic, and 3) the number of trucks in the flow of the traffic. It is not anticipated that speed in the vicinity of the Muskegon Site or the mix of trucks in the traffic would change during the operational phase; however, in the cumulative year 2040 baseline traffic volumes would increase. Cumulative traffic conditions were estimated using the MDOT travel demand forecast models and growth rates in the area.

Traffic volumes were estimated by applying a background growth rate of 0.08 percent to all 2025 traffic volumes for the Muskegon Site to represent the increase of traffic from 2025 conditions to 2040 cumulative conditions (see **Appendix J**). The baseline traffic volumes for the Muskegon Site are shown in **Table 4.15-8**.

Cumulative noise impacts due the Proposed Project in addition to background growth rates would result in ambient noise levels along I-96, East Hile Road, Harvey Street, and East Ellis Road of 52.5, 60.8, 54.7, and 63.8 A-weighted decibels (dBA) equivalent noise level (Leq), respectively. These ambient noise levels remain below the Federal Highway Administration (FHWA) threshold of 67 dBA Leq for residential noise receptors; therefore, the cumulative noise impact of Alternative A would be less than significant.

TABLE 4.15-8
2040 CUMULATIVE TRAFFIC VOLUMES ON MUSKEGON SITE ROADWAYS

Roadway	Baseline Traffic Volume (PM Peak Hour Trips)	2040 Calculated Traffic Volume (Without Project)[1]
Interstate 96	2,340	2,404
East Hile Road	261	268
Harvey Street	1,235	1,269
East Ellis Road	9	9

Notes: 1 – The calculated traffic volume has been rounded to the nearest integer.
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

Vibration and Other Noise Sources

The potential for cumulative impacts associated with vibration and other noise sources would be the same as the direct effects of Alternative A described in **Section 4.11.1**. Significant cumulative effects would not occur.

Hazardous Materials

As discussed in **Section 4.12**, with the incorporation of the BMPs outlined in **Section 5.12**, implementation of Alternative A would not result in direct effects associated with hazardous materials management. Cumulative growth, described within **Section 4.15.2**, would be required to follow applicable federal and state regulations concerning hazardous materials management, including the implementation of construction BMPs dealing with hazardous materials management through the NPDES permitting process. With the implementation of BMPs outlined in **Section 2.3.3**, Alternative A would not result in significant cumulative effects associated with hazardous materials.

Aesthetics

Cumulative growth resulting from buildout of the Township and of the County Comprehensive Plan would result in effects to visual resources. Cumulative effects would include a shift from open, undeveloped lots to views of developed areas, as well as an increase in the density of urban uses within the Township. Development in the County and Township is required to be consistent with applicable Comprehensive Plan designations and policies. Cumulative development in the Township would also need to comply with the Township's ordinances. Most of the buildings would be four stories with the exception of a 100-foot tall hotel near the southeastern corner of the Muskegon Site. Screening features would be integrated into the design of Alternative A, and landscaping would be used to enhance the visual character of the facilities and integrate natural elements. While development on the site would represent a

shift from open space to commercial development, it would be visually compatible with urban land uses in the project vicinity and would be generally consistent with local policies related to design, landscaping, sign, and lighting ordinances. Potential cumulative effects to visual resources would be less than significant.

4.15.4 ALTERNATIVE B – REDUCED INTENSITY ALTERNATIVE

The effects of the Alternative B in conjunction with the cumulative setting discussed in **Section 4.15.2**, are presented below. Effects are described for each of the subject areas of the environment described in other portions of this EIS.

Geology and Soils

Cumulative effects associated with geology and soil resources resulting from Alternative B would be similar to Alternative A (refer to **Section 4.15.3**). Therefore, implementation of Alternative B would not result in significant cumulative effects to geology or soils.

Water Resources

Stormwater

Cumulative effects to water resources may occur as the result of buildout of the County Comprehensive Plan, including future developments in combination with Alternative B. Examples of potential effects include increased sedimentation, increased pollution and increased stormwater flows as discussed above for Alternative A.

Alternative B would treat all stormwater on site, consistent with current conditions, and would therefore not contribute to non-point source pollution. Therefore, implementation of Alternative B would not result in significant cumulative effects to stormwater.

Groundwater

Groundwater Supply

Buildout of the County Comprehensive Plan could result in cumulative effects to groundwater if the total groundwater demand of approved projects including future developments and Alternative B, exceeds the recharge capacity of the groundwater source. As discussed in **Section 3.3** the Township obtains its primary water supplies from surface water from Lake Michigan, and static water levels in the area of the site are relatively high. Therefore, Alternative B would not result in significant cumulative effects on groundwater supply.

Groundwater Quality

Under Wastewater Treatment Option 1, wastewater generated by Alternative B would be collected by the Township's wastewater collection system and treated by the Muskegon County Wastewater Management System just as with Alternative A. The system would continue to operate in accordance with its NPDES Permit (Permit No. MI0027391) issued by the MDEQ. Therefore, the impact to ground water quality from wastewater under Wastewater Treatment Option 1 would be less than significant.

Under Wastewater Treatment Option 2, wastewater generated by Alternative B, which is less than Alternative A, would be treated on site in a packaged wastewater treatment system. On-site disposal would be accomplished through an approximately 100,000-sf leach field that would allow treated wastewater to drain into the soil. Treated wastewater would be further filtered through the soil and would not contribute to groundwater quality. Therefore, Alternative B Wastewater Treatment Option 2 would not be significant adverse cumulative effects to groundwater quality.

Air Quality

The methodology to assess cumulative impacts for Alternative B is the same as under Alternative A. Refer to **Section 4.15.3**.

Operational Vehicle and Area Emissions

Operation of Alternative B would result in the generation of criteria emissions. Mobile emissions from patron, employee, and delivery vehicles, as well as combustion of natural gas in boilers and other equipment at the Muskegon Site are provided in **Table 4.15-9**. Detailed calculations of vehicle and stationary source emissions are included in **Appendix O**.

TABLE 4.15-9
2040 OPERATION EMISSIONS – ALTERNATIVE B

Sources	Criteria Pollutants					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Tons per Year					
Stationary Source	0	2	1	0	0	0
Mobile Source	3	15	80	0	5	0
Total Emissions	***3***	***17***	***81***	***0***	***5***	***0***
Conformity *de minimis* Levels	N/A	N/A	N/A	N/A	N/A	N/A

Notes: N/A = Not Applicable; *de minimis* levels are not applicable due to attainment status (refer to **Section 3.4**). Totals may not add due to rounding.
Source: USEPA, 2014b, USEPA, 1995.

If a project's individual emissions contribute toward exceedance of the NAAQS, then the project's cumulative impact on air quality would be significant. In developing attainment designations for CAPs, the USEPA considers the regions past, present and future emission levels. As stated in **Section 3.4** and **4.15.3**, the Muskegon Site and vicinity is in attainment for all CAPs, therefore, air quality in the region is not cumulatively impacted. BMPs provided in **Section 2.3.3** would minimize CAP emissions from operation of Alternative B. Alternative B would not contribute to a significant cumulative effect to air quality in the cumulative year 2040.

Carbon Monoxide Hot Spot Analysis

After the implementation of recommended mitigation for Alternative B, no intersection would have an LOS or an increase in delay in the cumulative year 2040 that would warrant a Hot Spot Analysis. No significant cumulative impacts would occur and no further analysis is needed.

Pollutants of Concern

Methodology

Methodology for Alternative B is the same as Alternative A. Refer to **Section 4.15.3**.

GHG Emission Estimates and Reduction Measures

Construction emissions of approximately 3,510 ST of CO_2e were amortized over 20 years and added to operational emissions. **Table 4.15-10** estimates Alternative B direct GHG emissions at 492 MT of CO_2e per year and indirect emissions of 31,165 MT of CO_2e per year. As stated in **Section 3.4**, the project area is not sensitive to the adverse impacts associated with climate change. . Furthermore, reasonable BMPs have been identified in **Section 2.3.3** to reduce GHG emissions, as shown in **Table 4.15-11** below.

TABLE 4.15-10
ALTERNATIVE B PROJECT-RELATED GHG EMISSIONS

Alternative B	CO_2e Emissions (ST)	Conversion Factor (ST/MT)	GHG Emissions in CO_2e (MT)[4]
Direct			
Amortized Construction	176	0.91	160
Operational			332
		Subtotal	***492***
Indirect			
Mobile	31,262	0.91	28,449
Electricity Usage[1]			2,421
Water Conveyance/ Wastewater Treatment[2]			38
Solid Waste Disposal[3]			257
		Subtotal	***31,165***
		Total Project-Related Emissions	**31,657**

Notes: ST = short tons; MT = metric tons; CO_2e = carbon dioxide equivalent
1 - Based on 3,385 MWh per year.
2 - Based on water use plus wastewater generation per year from **Section 4.10**.
3 - Based on 560 MT of solid waste per year.
4 - Rounded to nearest metric ton. Totals may not add due to rounding
Source: USEPA, 2014b; USEPA, 1995.

TABLE 4.15-11
BMPS FOR GHG EMISSIONS – ALTERNATIVE B

Item	GHG Emissions in CO_2e (MT per year)
Total Project-Related GHG Emissions	**31,657**
Reduce Construction Equipment Idling 1% of Construction (**Air Quality BMP [B][1]**)	-2
Install Low Flow Facilities 5% Water/Wastewater (**Air Quality BMP [C][3]**)	-2
Reduce Waste Stream by 25% (**Air Quality BMP [C][7]**)	-64
Install Energy Efficient Lighting 2% (**Air Quality BMP [C][4]**)	-48
GHG Emissions Remaining after Reduction from Operational BMPs	***31,541***

Notes: ST = short tons; MT = metric tons; CO_2e = carbon dioxide equivalent
Source: USEPA, 2014b; USEPA, 1995.

Alternative B would implement BMPs to reduce the GHG emissions associated with the project. The BMPs for which the GHG reduction can be quantified are presented in **Table 4.15-11** above. Additionally, non-quantifiable BMPs are also summarized and included in **Section 2.3.3**. Improvements in fuel economy are accounted for in the MOVES air quality model, and therefore not included in project-level BMPs. Both the BMPs summarized in **Table 4.15-11** above and the entire suite presented in full in **Section 2.3.3** would reduce project-related emissions. Therefore, Alternative A would have a less-than-significant cumulative effect with mitigation on GHG emissions.

Biological Resources

Cumulative effects associated with biological resources resulting from Alternative B would be similar to Alternative A (refer to **Section 4.15.3**). Therefore, implementation of Alternative B would not result in significant cumulative effects to biological resources.

Cultural Resources

Similar to Alternative A, if an archaeological site was uncovered during construction of Alternative B, impacts to of the site in combination with impacts to other archaeological sites in the region could be cumulatively significant. However, implementation of mitigation measures identified in **Section 5.6**, as well as protections under state and federal law, would eliminate significant cumulative effects to cultural resources.

Socioeconomic Conditions

Similar to Alternative A, Alternative B would introduce new economic activity to Muskegon County. Alternative B's specific cumulative effects would be similar to, but lesser than those of Alternative A due to Alternative B's reduced size and scope. See **Section 4.7** and **Section 4.15.3** for additional information. Alternative B would not contribute to significant cumulative socioeconomic effects.

Transportation

2040 Cumulative Traffic Conditions Plus Alternative B

To assess the impacts of Alternative B on transportation facilities in the study area, the projected number of trips generated by Alternative B was added to 2040 cumulative baseline traffic volumes, as described in **Section 4.15.3**.

Intersection Analysis

Table 4.15-12 shows the Friday PM peak hour intersection delay and LOS at each of the study intersections with the addition of Alternative B traffic under 2040 cumulative conditions.

TABLE 4.15-12
2040 CUMULATIVE PLUS ALTERNATIVE B INTERSECTION DELAY AND LOS

Intersection	Control	Approach	2040 Cumulative		2040 Cumulative Plus Alternative B	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. Airline Highway & Airport Road	Signalized	Overall	22.7	C	23.5	C
2. Airline Highway & Hile Road	Signalized	Overall	16.1	B	16.8	B
3. Harvey Street & Hile Road	Signalized	Overall	30.2	C	104.6	F
4. Grand Haven Road & Hile Road	Signalized	Overall	13.6	B	13.8	B
5. Harvey Street & East Ellis Road	Signalized	Overall	10.8	B	10.9	B
6. Harvey Street & Independence Drive	Signalized	Overall	40.3	D	42.3	D
7. Harvey Street & Sternberg Road	Signalized	Overall	50.7	D	52.9	D
8. Grand Haven Road & Sternberg Road	Signalized	Overall	29.8	C	29.9	C
9. Harvey Street & Mount Garfield Road	Signalized	Overall	24.3	C	24.3	C
10. Harvey Street & Pontaluna Road	Signalized	Overall	32.8	C	33.4	C
11. Grand Haven Road & Pontaluna Road	Signalized	Overall	28.8	C	28.8	C
12. Airline Highway & Sternberg Road	Signalized	Overall	17.8	B	17.9	B
13. Airline Highway & Farr Road	Signalized	Overall	16.7	B	16.8	B
14. Airport Road & NB BR US-31 On-Ramp	Free-Flow	EB LT	8.7	A	8.7	A
15. Airline Highway & WB I-96 Off-Ramp	SSSC	NB	39.0	E	71.3	F
		SB	27.6	D	44.0	E
16. Airline Highway & SB US-31 Ramps	SSSC	SB	20.3	C	50.2	F
17. Airline Highway & NB US-31 On-Ramp	Free-Flow	EB LT	8.1	A	8.1	A
18. Hile Road & EB I-96 Ramps	SSSC	NB	38.9	E	114.6	F
19. Hile Road & NB US-31 Off-Ramp	SSSC	NB	11.9	B	12.4	B
20. Sternberg Road & NB US-31 Ramps	SSSC	NB	202.1	F	227.2	F
21. Sternberg Road & NB US-31 Off-Ramp to WB Sternberg Road	SSSC	SB	11.9	B	12.2	B
22. Sternberg Road & SB US-31 Ramps	SSSC	SB	13.1	B	13.1	B
23. Pontaluna Road & NB US-31 Ramps	AWSC	Overall	48.1	E	48.9	E
24. Pontaluna Road & SB US-31 Off-Ramp	SSSC	SB	45.0	E	45.0	E
25. Pontaluna Road & SB US-31 On-Ramp	Free-Flow	WB LT	10.1	B	10.1	B
26. Farr Road & WB I-96 Off-Ramp	SSSC	NB	12.7	B	12.9	B
27. Farr Road & WB I-96 On-Ramp	Free-Flow	WB LT	7.5	A	7.5	A
28. Airline Highway & EB I-96 Ramps	SSSC	EB	31.4	D	31.4	D
29. Hile Road & Site Drive	SSSC	EB	DOES NOT EXIST		22.9	C

Notes: LT = left turn; SSSC = side-street stop controlled; AWSC = all-way stop controlled
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

With the addition of Alternative B-related traffic, the following study intersection movements are projected to operate at an unacceptable LOS under 2040 cumulative conditions:

- Signalized intersection of Harvey Street & Hile Road;

- NB left turn movement at the signalized intersection of Harvey Street & Independence Drive;
- WB approach, EB left turn movement, and SB through movement at the signalized intersection of Harvey Street & Sternberg Road;
- SB shared through/right turn movements at the signalized intersection of Harvey Street & Pontaluna Road;
- Stop controlled WB I-96 Off-Ramp approach to Airline Highway;
- Stop controlled East Lake Road at WB I-96 Off-Ramp approach to Airline Highway;
- Stop controlled left turn movement from the SB US-31 Off-Ramp approach to Airline Highway;
- Stop controlled left turn movement from the EB I-96 Off-Ramp approach to Hile Road;
- Stop controlled NB US-31 Off-Ramp approach to Sternberg Road;
- AWSC intersection of Pontaluna Road with the NB US-31 Ramps; and
- Stop controlled left turn movement from the SB US-31 Off-Ramp to Pontaluna Road.

It should be noted that the intersection of Pontaluna Road/US-31 would operate unacceptably with or without the addition of Alternative B, and Alternative B would increase traffic to this intersection. MDOT has recently completed improvements to this intersection, including the construction of additional left and right turn lanes; however, the SB left turn movement from the SB US-31 off-ramp would continue to operate at LOS E or F. Further, SimTraffic network simulations indicate acceptable traffic operations and 95th percentile vehicle guest lengths for the WB and SB movements to be 10 and 4 vehicles, respectively, which is not significant. Therefore, impacts at this intersection are less than cumulatively considerable and the Tribe is not required to pay a fair share towards improvements at this intersection.

The increase in traffic generated by Alternative B under 2040 cumulative conditions would contribute to unacceptable traffic operations at the above study intersections. Without mitigation, these intersections would contribute to unacceptable traffic operations under 2040 cumulative conditions; however, implementation of mitigation measures provided in **Section 5.8** would restore the intersections to acceptable conditions. Upon implementation of recommended mitigation, Alternative B would not contribute towards significant cumulative effects on traffic and circulation. See Table 52 in **Appendix J** for a summary of study intersection delay and LOS after implementation of recommended mitigation measures under 2040 cumulative conditions.

Roadway Segment Analysis

Table 4.15-13 shows the Friday PM peak hour V/C and LOS for each of the study roadway segments with the addition of Alternative B traffic under 2040 cumulative conditions.

With the addition of Alternative B-related traffic, the following study roadway segments are projected to operate at an unacceptable LOS under 2040 cumulative conditions:

- NB and SB Harvey Street between Hile Road and Ellis Road.

Since the completion of the TIS, Harvey Street has been widened to five lanes between Hile Road and Ellis Road. This, along with mitigation measure provided in **Section 5.8** regarding lane striping and

adjustments of signal timing, ensures that Alternative B would not contribute towards significant cumulative effects on traffic and circulation.

TABLE 4.15-13
2040 CUMULATIVE PLUS ALTERNATIVE B ROADWAY SEGMENT V/C RATIO AND LOS

Roadway Segment	Direction	2040 Cumulative		2040 Cumulative Plus Alternative B	
		V/C	LOS	V/C	LOS
1. Harvey Street - Hile Road to East Ellis Road	NB	0.54	D	0.66	E
	SB	0.44	D	0.59	E
2. Harvey Street - East Ellis Road to Independence Drive	NB	0.21	C	0.22	C
	SB	0.20	C	0.21	C
3. Harvey Street - Independence Drive to Sternberg Road	NB	0.38	D	0.39	D
	SB	0.34	D	0.35	D
4. Sternberg Road - Harvey Street to NB US-31	EB	0.39	C	0.40	C
	WB	0.48	D	0.50	D
5. Hile Road - Harvey Street to Airline Highway	EB	0.55	D	0.58	D
	WB	0.35	C	0.48	D
6. Airline Highway - Hile Road to US-31	EB	0.43	D	0.45	D
	WB	0.41	C	0.51	C
7. Airline Highway - US-31 to Airport Road	EB	0.47	D	0.47	D
	WB	0.26	D	0.26	D

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

Freeway Facility Analysis

Table 4.15-14 shows the Friday PM peak hour density and LOS for each of the study freeway facilities with the addition of Alternative B traffic under 2040 cumulative conditions.

TABLE 4.15-14
2040 CUMULATIVE PLUS ALTERNATIVE B FREEWAY FACILITY DELAY AND LOS

Freeway Segment / Ramp / Weave Segment	Without Casino		With Casino	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
NB US-31				
1. South of Pontaluna Road	17.9	B	18.2	C
2. Pontaluna Road Off-Ramp	21.4	C	21.9	C
3. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	13.9	B	14.1	B
4. Pontaluna Road On-Ramp	18.1	B	18.4	B
5. Pontaluna Road On-Ramp to EB Sternberg Road Off-Ramp	16.1	B	16.4	B
6. EB Sternberg Road Off-Ramp	19.0	B	19.3	B
7. EB Sternberg Road Off-Ramp to WB Sternberg Road Off-Ramp	14.1	B	14.3	B
8. WB Sternberg Road Off-Ramp	17.0	B	17.2	B
9. WB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	13.0	B	13.1	B
10. Sternberg Road On-Ramp to Hile Road Off-Ramp	18.7	C	18.8	C

Freeway Segment / Ramp / Weave Segment	Without Casino		With Casino	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
11. Hile Road Off-Ramp to EB US-31 BR On-Ramp *(Weave)*	21.3	C	21.3	C
12. EB US-31 BR On-Ramp to WB US-31 BR Off-Ramp *(Weave)*	18.1	B	18.1	B
13. WB US-31 BR Off-Ramp to WB I-96 / Airline Highway On-Ramps	17.3	B	17.3	B
14. WB I-96 / Airline Highway On-Ramps	25.2	C	25.4	C
NB US-31 FREEWAY FACILITY	**17.5**	**B**	**17.8**	**B**
SB US-31				
1. North of Airline Highway	21.8	C	22.1	C
2. Airline Highway Off-Ramp	25.7	C	26.0	C
3. Airline Highway Off-Ramp to Airline Highway On-Ramp	17.8	B	17.9	B
4. Airline Highway On-Ramp to EB I-96 Off-Ramp *(Weave)*	15.2	B	15.4	B
5. EB I-96 Off-Ramp to EB I-96 On-Ramp *(Weave)*	14.0	B	14.0	B
6. EB I-96 On-Ramp to WB Sternberg Road Off-Ramp	13.1	B	13.2	B
7. WB Sternberg Road Off-Ramp to EB Sternberg Road Off-Ramp	15.7	B	15.7	B
8. EB Sternberg Road Off-Ramp	20.3	C	20.3	C
9. EB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	8.2	A	8.3	A
10. Sternberg Road On-Ramp	11.9	B	12.2	B
11. Sternberg Road On-Ramp to Pontaluna Road Off-Ramp	10.7	A	11.0	A
12. Pontaluna Road Off-Ramp	12.6	B	12.9	B
13. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	8.9	A	9.2	A
14. Pontaluna Road On-Ramp	13.2	B	13.5	B
15. Pontaluna Road On-Ramp to south of Pontaluna Road	11.8	B	12.1	B
SB US-31 FREEWAY FACILITY	**14.7**	**B**	**14.9**	**B**
EB I-96				
1. Grand Haven Road to SB US-31 Off-Ramp	9.4	A	9.6	A
2. SB US-31 Off-Ramp	11.4	B	11.5	B
3. SB US-31 Off-Ramp to SB US-31 On-Ramp	4.5	A	4.7	A
4. SB US-31 On-Ramp to NB US-31 Off-Ramp *(Weave)*	8.5	A	8.7	A
5. Hile Road Off-Ramp	11.7	B	12.0	B
6. Hile Road Off-Ramp to Hile Road On-Ramp	8.6	A	8.6	A
7. Hile Road On-Ramp	10.8	B	11.7	B
8. Hile Road On-Ramp to Airline Highway Off-Ramp	9.6	A	10.5	A
9. Airline Highway Off-Ramp	11.4	B	12.4	B
10. Airline Highway Off-Ramp to Airline Highway On-Ramp	7.9	A	8.8	A
11. Airline Highway On-Ramp	10.5	B	11.5	B
12. Airline Highway On-Ramp to east of Airline Highway	9.4	A	10.3	A
EB I-96 FREEWAY FACILITY	**9.6**	**A**	**10.4**	**A**
WB I-96				
1. East of Airline Highway to Farr Road / Airline Highway Off-Ramp	10.4	A	11.5	B
2. Farr Road / Airline Highway Off-Ramp	12.4	B	13.6	B
3. Farr Road / Airline Highway Off-Ramp to Farr Road On-Ramp	8.4	A	9.4	A

Freeway Segment / Ramp / Weave Segment	Without Casino		With Casino	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
4. Farr Road / Airline Highway On-Ramp	10.9	B	11.9	B
5. Farr Road / Airline Highway On-Ramp to NB US-31 Off-Ramp	9.8	A	10.8	A
6. NB US-31 Off-Ramp	11.9	B	13.1	B
7. NB US-31 Off-Ramp to NB US-31 On-Ramp	3.3	A	4.3	A
8. NB US-31 On-Ramp to Airline Highway Off-Ramp *(Weave)*	6.8	A	7.7	A
9. Airline Highway Off-Ramp to Airport Road On-Ramp	6.9	A	6.9	A
10. Airport Road On-Ramp	10.6	B	10.7	B
WB I-96 FREEWAY FACILITY	**9.6**	**A**	**10.5**	**A**
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).				

As shown in **Table 4.15-14**, all study freeway facilities would continue to operate acceptably at LOS D or better during the Friday PM peak hour under 2040 cumulative conditions with the addition of Alternative B traffic. Therefore, Alternative B would not contribute towards significant cumulative effects on traffic and circulation.

Transit Facilities

Under 2040 cumulative conditions, transit facilities in the vicinity of the Muskegon Site under Alternative B would be the same as Alternative A. Refer to **Section 4.15.3**. No significant cumulative effects would occur to transit facilities as a result of Alternative B.

Bicycle and Pedestrian Facilities

Under 2040 cumulative conditions, bicycle, and pedestrian facilities in the vicinity of the Muskegon Site under Alternative B would be the same as Alternative A. Refer to **Section 4.15.3**. No significant cumulative effects would occur to bicycle or pedestrian facilities as a result of Alternative B.

Land Use

Cumulative effects associated with land use resulting from Alternative B would be similar to Alternative A (refer to **Section 4.15.3**). With mitigation, Alternative B would not disrupt neighboring land uses, prohibit access to neighboring parcels, or otherwise conflict with neighboring land uses. Alternative B would not contribute to significant cumulative land use effects.

Agriculture

Cumulative effects associated with agricultural resources resulting from Alternative B would be similar to Alternative A (refer to **Section 4.15.3**). Alternative B would not convert designated agricultural land to urban uses and, therefore, it would not contribute to significant cumulative effects to agricultural lands.

Public Services

Cumulative impacts to public services are similar to those described for Alternatives A (refer to **Section 2.15-3**), although demand for services would be slightly reduced due to the smaller scale of the alternative. Commitments in the MSA (**Appendix B**) would also apply to Alternative B. Cumulative effects would be less than significant.

Noise

The following identifies possible impacts from project related noise sources in the cumulative year 2040 for Alternative B, such as traffic, HVAC systems, parking structure and lots, and deliveries.

Traffic Noise

Traffic volumes were estimated by applying a background annual growth rate of 0.08 percent to all 2025 traffic volumes for the Muskegon Site to represent the increase of traffic from 2025 conditions to 2040 cumulative conditions (see **Appendix J**). The baseline traffic volumes and predicted 2040 traffic volumes (without the project) for the Muskegon Site are shown in **Table 4.15-8**.

Cumulative noise impacts due Alternative B in addition to background growth rates would result in ambient noise levels along I-96, East Hile Road, Harvey Street, and East Ellis Road of 52.3, 59.4, 54.0, and 61.9 dBA Leq, respectively. These ambient noise levels remain below the FHWA threshold of 67 dBA Leq for residential noise receptors; therefore, the cumulative noise impact of Alternative B would be less than significant.

Vibration and Other Noise Sources

The potential for cumulative impacts associated with vibration and other noise sources would be the same as the direct effects of the project described in **Section 4.11**. Significant cumulative effects would not occur.

Hazardous Materials

Cumulative effects associated with hazardous materials resulting from Alternative B would be similar to those under Alternative A (refer to **Section 4.15.3**). With the implementation of BMPs outlined in **Section 2.3.3**, Alternative B would not result in significant cumulative impacts to hazardous materials management.

Aesthetics

Cumulative effects associated with aesthetics resulting from Alternative B would be similar to Alternative A (refer to **Section 4.15.3**), although reduced due to the smaller scale of the project and the absence of a 100-foot tall hotel tower and other structures. Potential cumulative effects to visual resources from Alternative B would be less than significant.

4.15.5 ALTERNATIVE C – NON-GAMING ALTERNATIVE

The effects of the Alternative C in conjunction with the cumulative setting discussed in **Section 4.15.2**, are presented below. Effects are described for each of the subject areas of the environment described in other portions of this EIS.

Geology and Soils

Cumulative effects associated with geology and soils resulting from Alternative C would be similar to Alternative A (refer to **Section 4.15.3**). Therefore, implementation of Alternative C would not result in significant cumulative effects to geology or soils.

Water Resources

Stormwater

Cumulative effects to water resources may occur as the result of buildout of the County Comprehensive Plan, including future developments in combination with Alternative C. Examples of potential effects include increased sedimentation, increased pollution and increased stormwater flows as discussed above for Alternative A.

Alternative C would treat all stormwater on site, consistent with current conditions, and would therefore not contribute to non-point source pollution. Therefore, implementation of Alternative C would not result in significant cumulative effects to stormwater.

Groundwater

Groundwater Supply

Buildout of the County Comprehensive Plan could result in cumulative effects to groundwater if the total groundwater demand of approved projects including future developments and Alternative C, exceeds the recharge capacity of the groundwater source. As discussed in **Section 3.3** the Township obtains its primary water supplies from surface water from Lake Michigan. Therefore, Alternative C would not result in significant cumulative effects on groundwater supply.

Groundwater Quality

Under Wastewater Treatment Option 1, wastewater generated by Alternative C would be collected by the Township's wastewater collection system and treated by the Muskegon County Wastewater Management System just as with Alternatives A and B. The system would continue to operate in accordance with its NPDES Permit (Permit No. MI0027391) issued by the MDEQ. Therefore, the impact to groundwater quality from wastewater under Wastewater Treatment Option 1 would be less than significant.

Under Wastewater Treatment Option 2, wastewater generated by Alternative C would be treated on site in a packaged wastewater treatment system as under Alternative A and B. Therefore, Alternative C Wastewater Treatment Option 2 would not be significant adverse cumulative effects to groundwater quality.

Air Quality

The methodology to assess cumulative impacts for Alternative C is the same as under Alternative A. Refer to **Section 4.15.3**.

Operational Vehicle and Area Emissions

Operation of Alternative C would result in the generation of CAP emissions. Mobile emissions from patron, employee, and delivery vehicles, as well as combustion of natural gas in boilers and other equipment at the Muskegon Site are provided in **Table 4.15-15**. Detailed calculations of vehicle and stationary source emissions are included in **Appendix O**.

TABLE 4.15-15
2040 OPERATION EMISSIONS – ALTERNATIVE C

Sources	Criteria Pollutants					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Tons per Year					
Stationary Source	0	2	1	0	0	0
Mobile Source	2	6	36	0	2	0
Total Emissions	***2***	***8***	***37***	***0***	***2***	***0***
Conformity *de minimis* Levels	N/A	N/A	N/A	N/A	N/A	N/A

Notes: N/A = Not Applicable; *de minimis* levels are not applicable due to attainment status (refer to **Section 3.4**). Totals may not add due to rounding.
Source: USEPA, 2014b; USEPA, 1995.

As stated in **Section 3.4** and **4.15.3**, the Muskegon Site and vicinity is in attainment for all CAPs, therefore, air quality in the region is not cumulatively impacted. BMPs provided in **Section 2.3.3** would minimize CAP emissions from operation of Alternative C. Alternative C would not contribute to a significant cumulative effect to air quality in the year 2040.

Carbon Monoxide Hot Spot Analysis

After the implementation of recommended mitigation for Alternative C, no intersection would have an LOS or an increase in delay in the cumulative year 2040 that would warrant a Hot Spot Analysis. No significant cumulative impacts would occur and no further analysis is needed.

Pollutants of Concern

Methodology

Methodology for Alternative C is the same as Alternative A (refer to **Section 4.15.3**).

GHG Emission Estimates and Reduction Measures

Construction emissions totaling approximately 3,363 ST of CO_2e were amortized over 20 years and added to operational emissions. **Table 4.15-16** estimates Alternative C direct GHG emissions at 1,062 MT of CO_2e per year and indirect emissions of 20,200 MT of CO_2e per year. As stated in **Section 3.4**, the project area is not sensitive to the adverse impacts associated with climate change. Furthermore,

reasonable BMPs have been identified in **Section 2.3.3** to reduce GHG emissions, as shown in **Table 4.15-17** below.

TABLE 4.15-16
ALTERNATIVE C PROJECT-RELATED GHG EMISSIONS

Alternative C	CO_2e Emissions (ST)	Conversion Factor (ST/MT)	GHG Emissions in CO_2e (MT)[4]
Direct			
Amortized Construction	168	0.91	153
Operational			909
		Subtotal	***1,062***
Indirect			
Mobile	11,280	0.91	10,265
Electricity Usage[1]			11,897
Water Conveyance / Wastewater Treatment[2]			5
Solid Waste Disposal[3]			33
		Subtotal	***22,200***
		Total Project-Related GHG Emissions	**23,261**

Notes: ST = short tons; MT = metric tons; CO_2e = carbon dioxide equivalent
1 - Based on 16,632 MWh per year.
2 - Based on water use plus wastewater generation per year from **Section 4.10**.
3 - Based on 71 MT of solid waste per year.
4 - Rounded to nearest metric ton. Totals may not add due to rounding.
Source: USEPA, 2015b; USEPA, 2014b; USEPA, 1995.

TABLE 4.15-17
BMPS FOR GHG EMISSIONS – ALTERNATIVE C

Item	GHG Emissions in CO_2e (MT per year)
Total Project-Related GHG Emissions	**23,261**
Reduce Construction Equipment Idling 1% of Construction (**Air Quality BMP [B][1]**)	-2
Install Low Flow Facilities 5% Water/Wastewater (**Air Quality BMP [C][3]**)	-0.3
Reduce Waste Stream by 25% (**Air Quality BMP [C][7]**)	-8
Install Energy Efficient Lighting 2% (**Air Quality BMP [C][4]**)	-238
GHG Emissions Remaining after Reduction from Operational BMPs	***23,013***

Notes: ST = short tons; MT = metric tons; CO_2e = carbon dioxide equivalent
Source: USEPA, 2014b; USEPA, 1995.

Alternative C would implement BMPs to reduce the GHG emissions associated with the project. The BMPs for which the GHG reduction can be quantified are presented in **Table 4.15-17** above. Additionally, non-quantifiable BMPs are also summarized and included in **Section 2.3.3**. Improvements in fuel economy are accounted for in the MOVES air quality model, and therefore not included in project-level BMPs. Both the BMPs summarized in **Table 4.15-17** above and the entire suite presented in full in

Section 2.3.3 would reduce project-related emissions. Therefore, Alternative C would have a less-than-significant cumulative effect with mitigation on GHG emissions.

Biological Resources

Cumulative effects associated with biological resources resulting from Alternative C would be similar to Alternative A (refer to **Section 4.15.3**). Therefore, implementation of Alternative C would not result in significant cumulative effects to biological resources.

Cultural Resources

Similar to Alternative A, if an archaeological site was uncovered during construction of Alternative C, impacts to the site in combination with impacts to other archaeological sites could be cumulatively significant. However, implementation of mitigation measures identified in **Section 5.6**, as well as protections under state and federal law, would eliminate significant cumulative effects to cultural resources.

Socioeconomic Conditions

Similar to Alternative A, Alternative C would introduce new economic activity to Muskegon County. Alternative C's specific cumulative effects would be similar to those of Alternative A, but to a lesser degree. See **Section 4.7** and **Section 4.15.3** for additional information. Alternative C would not contribute to significant cumulative socioeconomic effects.

Transportation

2040 Cumulative Traffic Conditions Plus Alternative C

To assess the impacts of Alternative C on transportation facilities in the study area, the projected number of trips generated by Alternative C was added to 2040 cumulative baseline traffic volumes.

Intersection Analysis

Table 4.15-18 shows the Friday PM peak hour intersection delay and LOS at each of the study intersections with the addition of Alternative C traffic under 2040 cumulative conditions.

With the addition of Alternative C-related traffic, the following study intersection movements are projected to operate at an unacceptable LOS under 2040 cumulative conditions:

- Signalized intersection of Harvey Street & Hile Road;
- NB left turn movement at the signalized intersection of Harvey Street & Independence Drive;
- Signalized intersection of Harvey Street & Sternberg Road;
- SB shared through/right turn movements at the signalized intersection of Harvey Street & Pontaluna Road;
- Stop controlled WB I-96 Off-Ramp approach to Airline Highway;
- Stop controlled SB US-31 Off-Ramp approach to Airline Highway;
- Stop controlled left turn movement from the EB I-96 Off-Ramp approach to Hile Road;

- Stop controlled NB US-31 Off-Ramp approach to Sternberg Road;
- AWSC intersection of Pontaluna Road with the NB US-31 Ramps;
- Stop controlled left turn movement from the SB US-31 Off-Ramp left turn movement to Pontaluna Road; and
- Proposed site driveway to Harvey Street.

TABLE 4.15-18
2040 CUMULATIVE PLUS ALTERNATIVE C INTERSECTION DELAY AND LOS

Intersection	Control	Approach	2040 Cumulative		2040 Cumulative Plus Alternative C	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. Airline Highway & Airport Road	Signalized	Overall	22.7	C	27.4	C
2. Airline Highway & Hile Road	Signalized	Overall	16.1	B	17.3	B
3. Harvey Street & Hile Road	Signalized	Overall	30.2	C	65.9	E
4. Grand Haven Road & Hile Road	Signalized	Overall	13.6	B	14.7	B
5. Harvey Street & East Ellis Road	Signalized	Overall	10.8	B	12.6	B
6. Harvey Street & Independence Drive	Signalized	Overall	40.3	D	51.7	D
7. Harvey Street & Sternberg Road	Signalized	Overall	50.7	D	61.4	E
8. Grand Haven Road & Sternberg Road	Signalized	Overall	29.8	C	30.9	C
9. Harvey Street & Mount Garfield Road	Signalized	Overall	24.3	C	24.5	C
10. Harvey Street & Pontaluna Road	Signalized	Overall	32.8	C	34.5	C
11. Grand Haven Road & Pontaluna Road	Signalized	Overall	28.8	C	29.0	C
12. Airline Highway & Sternberg Road	Signalized	Overall	17.8	B	18.5	B
13. Airline Highway & Farr Road	Signalized	Overall	16.7	B	16.7	B
14. Airport Road & NB BR US-31 On-Ramp	Free-Flow	EB LT	8.7	A	8.8	A
15. Airline Highway & WB I-96 Off-Ramp	SSSC	NB	39.0	E	47.5	E
		SB	27.6	D	30.7	D
16. Airline Highway & SB US-31 Ramps	SSSC	SB	20.3	C	24.6	C
17. Airline Highway & NB US-31 On-Ramp	Free-Flow	EB LT	8.1	A	8.2	A
18. Hile Road & EB I-96 Ramps	SSSC	NB	38.9	E	145.3	F
19. Hile Road & NB US-31 Off-Ramp	SSSC	NB	11.9	B	12.8	B
20. Sternberg Road & NB US-31 Ramps	SSSC	NB	202.1	F	260.0	F
21. Sternberg Road & NB US-31 Off-Ramp to WB Sternberg Road	SSSC	SB	11.9	B	12.6	B
22. Sternberg Road & SB US-31 Ramps	SSSC	SB	13.1	B	13.6	B
23. Pontaluna Road & NB US-31 Ramps	AWSC	Overall	48.1	E	52.0	F
24. Pontaluna Road & SB US-31 Off-Ramp	SSSC	SB	45.0	E	59.3	E
25. Pontaluna Road & SB US-31 On-Ramp	Free-Flow	WB LT	10.1	B	10.1	B
26. Farr Road & WB I-96 Off-Ramp	SSSC	NB	12.7	B	13.3	B
27. Farr Road & WB I-96 On-Ramp	Free-Flow	WB LT	7.5	A	7.5	A
28. Airline Highway & EB I-96 Ramps	SSSC	EB	31.4	D	31.4	D
29. Hile Road & Site Drive	SSSC	EB	DOES NOT EXIST		140.4	F

Notes: LT = left turn; SSSC = side-street stop controlled; AWSC = all-way stop controlled
Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

It should be noted that the intersection of Pontaluna Road/US-31 would operate unacceptably with or without the addition of Alternative C, and Alternative C would increase traffic to this intersection. MDOT has recently completed improvements to this intersection, including the construction of additional left and right turn lanes; however, the SB left turn movement from the SB US-31 off-ramp would continue to operate at LOS E or F. Further, SimTraffic network simulations indicate acceptable traffic operations and 95th percentile vehicle queue lengths from the WB and SB movements to be 10 and 4 vehicles, respectively, which is not significant. Therefore, impacts at this intersection are less than significant and the Tribe is not required to pay a fair share towards improvements at this intersection.

The increase in traffic generated by Alternative C under 2040 cumulative conditions would contribute to unacceptable traffic operations at the above study intersections. Without mitigation, these intersections would contribute to unacceptable traffic operations under 2040 cumulative conditions; however, implementation of mitigation measures provided in **Section 5.8** would restore the intersections to acceptable conditions. Upon implementation of recommended mitigation, Alternative C would not contribute towards significant cumulative effects on traffic and circulation. See Table 72 in **Appendix J** for a summary of study intersection delay and LOS after implementation of recommended mitigation measures under 2040 cumulative conditions.

Roadway Segment Analysis

Table 4.15-19 shows the Friday PM peak hour V/C and LOS for each of the study roadway segments with the addition of Alternative C traffic under 2040 cumulative conditions.

TABLE 4.15-19
2040 CUMULATIVE PLUS ALTERNATIVE C ROADWAY SEGMENT V/C RATIO AND LOS

Roadway Segment	Direction	2040 Cumulative		2040 Cumulative Plus Alternative C	
		V/C	LOS	V/C	LOS
1. Harvey Street - Hile Road to East Ellis Road	NB	0.54	D	0.65	E
	SB	0.44	D	0.55	D
2. Harvey Street - East Ellis Road to Independence Drive	NB	0.21	C	0.25	C
	SB	0.20	C	0.26	D
3. Harvey Street - Independence Drive to Sternberg Road	NB	0.38	D	0.42	D
	SB	0.34	D	0.40	D
4. Sternberg Road - Harvey Street to NB US-31	EB	0.39	C	0.41	C
	WB	0.48	D	0.51	D
5. Hile Road - Harvey Street to Airline Highway	EB	0.55	D	0.60	D
	WB	0.35	C	0.42	D
6. Airline Highway - Hile Road to US-31	EB	0.43	D	0.46	D
	WB	0.41	C	0.43	D
7. Airline Highway - US-31 to Airport Road	EB	0.47	D	0.50	D
	WB	0.26	D	0.26	D

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

With the addition of Alternative C-related traffic, the following study roadway segment is projected to operate at an unacceptable LOS under 2040 cumulative conditions:

- NB Harvey Street between Hile Road and Ellis Road.

Since the completion of the TIS, Harvey Street has been widened to five lanes between Hile Road and Ellis Road. This, along with mitigation measure provided in **Section 5.8** regarding lane striping and adjustments of signal timing, ensures that Alternative C would not contribute towards significant cumulative effects on traffic and circulation.

Freeway Facility Analysis

Table 4.15-20 shows the Friday PM peak hour density and LOS for each of the study freeway facilities with the addition of Alternative C traffic under 2040 cumulative conditions.

TABLE 4.15-20
2040 CUMULATIVE PLUS ALTERNATIVE C FREEWAY FACILITY DELAY AND LOS

Freeway Segment / Ramp / Weave Segment	2040 Cumulative		2040 Cumulative Plus Alternative C	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
NB US-31				
1. South of Pontaluna Road	17.9	B	18.1	C
2. Pontaluna Road Off-Ramp	21.4	C	21.7	C
3. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	13.9	B	14.1	B
4. Pontaluna Road On-Ramp	18.1	B	18.5	C
5. Pontaluna Road On-Ramp to EB Sternberg Road Off-Ramp	16.1	B	16.4	B
6. EB Sternberg Road Off-Ramp	19.0	B	19.4	B
7. EB Sternberg Road Off-Ramp to WB Sternberg Road Off-Ramp	14.1	B	14.2	B
8. WB Sternberg Road Off-Ramp	17.0	B	17.2	B
9. WB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	13.0	B	13.1	B
10. Sternberg Road On-Ramp to Hile Road Off-Ramp	18.7	C	18.8	C
11. Hile Road Off-Ramp to EB US-31 BR On-Ramp *(Weave)*	21.3	C	21.3	C
12. EB US-31 BR On-Ramp to WB US-31 BR Off-Ramp *(Weave)*	18.1	B	18.1	B
13. WB US-31 BR Off-Ramp to WB I-96 / Airline Highway On-Ramps	17.3	B	17.3	B
14. WB I-96 / Airline Highway On-Ramps	25.2	C	25.3	C
NB US-31 FREEWAY FACILITY	**17.5**	**B**	**17.7**	**B**
SB US-31				
1. North of Airline Highway	21.8	C	21.9	C
2. Airline Highway Off-Ramp	25.7	C	25.8	C
3. Airline Highway Off-Ramp to Airline Highway On-Ramp	17.8	B	17.8	B
4. Airline Highway On-Ramp to EB I-96 Off-Ramp *(Weave)*	15.2	B	15.2	B
5. EB I-96 Off-Ramp to EB I-96 On-Ramp *(Weave)*	14.0	B	14.0	B
6. EB I-96 On-Ramp to WB Sternberg Road Off-Ramp	13.1	B	13.1	B
7. WB Sternberg Road Off-Ramp to EB Sternberg Road Off-Ramp	15.7	B	15.7	B

Freeway Segment / Ramp / Weave Segment	2040 Cumulative		2040 Cumulative Plus Alternative C	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
8. EB Sternberg Road Off-Ramp	20.3	C	20.3	C
9. EB Sternberg Road Off-Ramp to Sternberg Road On-Ramp	8.2	A	8.2	A
10. Sternberg Road On-Ramp	11.9	B	12.2	B
11. Sternberg Road On-Ramp to Pontaluna Road Off-Ramp	10.7	A	11.0	A
12. Pontaluna Road Off-Ramp	12.6	B	13.0	B
13. Pontaluna Road Off-Ramp to Pontaluna Road On-Ramp	8.9	A	9.2	A
14. Pontaluna Road On-Ramp	13.2	B	13.4	B
15. Pontaluna Road On-Ramp to south of Pontaluna Road	11.8	B	12.0	B
SB US-31 FREEWAY FACILITY	**14.7**	**B**	**14.8**	**B**
EB I-96				
1. Grand Haven Road to SB US-31 Off-Ramp	9.4	A	9.9	A
2. SB US-31 Off-Ramp	11.4	B	11.9	B
3. SB US-31 Off-Ramp to SB US-31 On-Ramp	4.5	A	5.0	A
4. SB US-31 On-Ramp to NB US-31 Off-Ramp *(Weave)*	8.5	A	8.8	A
5. Hile Road Off-Ramp	11.7	B	12.3	B
6. Hile Road Off-Ramp to Hile Road On-Ramp	8.6	A	8.6	A
7. Hile Road On-Ramp	10.8	B	10.9	B
8. Hile Road On-Ramp to Airline Highway Off-Ramp	9.6	A	9.7	A
9. Airline Highway Off-Ramp	11.4	B	11.5	B
10. Airline Highway Off-Ramp to Airline Highway On-Ramp	7.9	A	8.0	A
11. Airline Highway On-Ramp	10.5	B	10.6	B
12. Airline Highway On-Ramp to east of Airline Highway	9.4	A	9.5	A
EB I-96 FREEWAY FACILITY	**9.6**	**A**	**9.8**	**A**
WB I-96				
1. East of Airline Highway to Farr Road / Airline Highway Off-Ramp	10.4	A	10.5	A
2. Farr Road / Airline Highway Off-Ramp	12.4	B	12.5	B
3. Farr Road / Airline Highway Off-Ramp to Farr Road On-Ramp	8.4	A	8.5	A
4. Farr Road / Airline Highway On-Ramp	10.9	B	11.0	B
5. Farr Road / Airline Highway On-Ramp to NB US-31 Off-Ramp	9.8	A	9.9	A
6. NB US-31 Off-Ramp	11.9	B	12.0	B
7. NB US-31 Off-Ramp to NB US-31 On-Ramp	3.3	A	3.4	A
8. NB US-31 On-Ramp to Airline Highway Off-Ramp *(Weave)*	6.8	A	6.9	A
9. Airline Highway Off-Ramp to Airport Road On-Ramp	6.9	A	6.9	A
10. Airport Road On-Ramp	10.6	B	10.9	B
WB I-96 FREEWAY FACILITY	**9.6**	**A**	**9.7**	**A**

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

As shown in **Table 4.15-20**, all study freeway facilities would continue to operate acceptably at LOS D or better during the Friday PM peak hour under 2040 cumulative conditions with the addition of Alternative

C traffic. Therefore, Alternative C would not contribute towards significant cumulative effects on traffic and circulation.

Transit Facilities

Under 2040 cumulative conditions, transit facilities in the vicinity of the Muskegon Site under Alternative C would be the same as Alternative A. Refer to **Section 4.15.3**. No significant cumulative effects would occur to transit facilities as a result of Alternative C.

Bicycle and Pedestrian Facilities

Under 2040 cumulative conditions, bicycle, and pedestrian facilities in the vicinity of the Muskegon Site under Alternative C would be the same as Alternative A. Refer to **Section 4.15.3**. No significant cumulative effects would occur to bicycle or pedestrian facilities as a result of Alternative C.

Land Use

Cumulative effects associated with land use resulting from Alternative C would be similar to Alternative A (refer to **Section 4.15.3**). With mitigation, Alternative C would not disrupt neighboring land uses, prohibit access to neighboring parcels, or otherwise conflict with neighboring land uses. Alternative C would not contribute to significant cumulative land use effects.

Agriculture

Cumulative effects associated with agricultural resources resulting from Alternative C would be similar to Alternative A (refer to **Section 4.15.3**). As with Alternative A, Alternative C would not convert designated agricultural land to urban uses and, therefore, it would not contribute to significant cumulative effects to agricultural lands.

Public Services

No agreement with the Township has been made at this time to provide water supply, wastewater service, law enforcement, and fire services to the site under Alternative C; however, it is assumed that an agreement similar to the MSA provided in **Appendix B** would be executed prior to construction of Alternative C. Cumulative impacts to public services are similar to those described for Alternatives A. While some uses under Alternative C differ, the same public services would be utilized. With implementation of the conditions of an agreement with the Township, as discussed in **Section 5.10**, development of Alternative C would not result in significant effects on water supply, wastewater service, public law enforcement, fire protection, or emergency response services. The cumulative effect would be less than significant.

Noise

The following identifies possible impacts from project related noise sources in the cumulative year 2040 for Alternative C, such as traffic, HVAC systems, parking structure and lots, and deliveries.

Traffic Noise

Traffic volumes were estimated by applying a background annual growth rate of 0.08 percent to all 2025 traffic volumes for the Muskegon Site to represent the increase of traffic from 2025 conditions to 2040 cumulative conditions (see **Appendix J**). The baseline traffic volumes for the Muskegon Site are shown in **Table 4.15-8**.

Cumulative noise impacts due Alternative C in addition to background growth rates would result in ambient noise levels along I-96, East Hile Road, Harvey Street, and East Ellis Road of 51.8, 58.6, 54.5, and 54.7 dBA Leq, respectively. These ambient noise levels remain below the FHWA threshold of 67 dBA Leq for residential noise receptors, therefore the cumulative noise impact of Alternative C would be less than significant.

Vibration and Other Noise Sources

The potential for cumulative impacts associated with vibration and other noise sources would be the same as the direct effects of the project described in **Section 4.11**. Significant cumulative effects would not occur.

Hazardous Materials

Cumulative effects associated with hazardous materials resulting from Alternative C would be similar to those under Alternative A (refer to **Section 4.15.3**). With the implementation of BMPs outlined in **Section 2.3.3**, Alternative C would not result in significant cumulative impacts to hazardous materials management.

Aesthetics

Cumulative effects associated with aesthetics resulting from Alternative C would be similar to Alternative A (refer to **Section 4.15.3**), but reduced since only one-story retail buildings would be developed. Potential cumulative effects to visual resources would be less than significant.

4.15.6 ALTERNATIVE D – CUSTER SITE ALTERNATIVE

The effects of the Alternative D in conjunction with the cumulative setting discussed in **Section 4.15.2**, are presented below. Effects are described for each of the subject areas of the environment described in other portions of this EIS.

Geology and Soils

Cumulative effects associated with geology and soil resources may occur as a result of future developments in combination with Alternative D. Topographic changes may be cumulatively significant if the topography contributes significantly to environmental quality with respect to drainage, habitat, public safety, or other values. Soil loss could be cumulatively considerable if the project alone would not result in significant loss of topsoil, but taken together with all other developments may result in significant depletion of available soils. Local permitting requirements for construction would address

regional geotechnical and topographic conflicts, seismic hazards, and resource extraction availability. Approved developments would be required to follow applicable local permitting procedures. In addition, the project and all other developments that disturb one acre or more must comply with the requirements of the NPDES Construction General Permit, which requires that various strategies be implemented to address water quality degradation by preventing erosion, as outlined in **Section 5.2**. Therefore, implementation of Alternative D would not result in significant cumulative effects to geology or soils.

Water Resources

Stormwater

Cumulative effects to water resources may occur as the result of buildout of the County Comprehensive Plan, including future developments in combination with Alternative D. Examples of potential effects include increased sedimentation, increased pollution and increased stormwater flows. Changes in runoff characteristics may increase stream volumes, increase stream velocities, increase peak discharges, shorten the time to peak flows, and lessen groundwater contributions to stream base-flows during non-precipitation periods. Construction and implementation of proposed development projects may also affect water quality by increasing sedimentation and pollution, and increasing stormwater flows. However, the projects would include erosion control measures in compliance with the NPDES permit program and MDEQ regulations. In addition, Alternative D would treat all stormwater on site, consistent with current conditions, and would therefore not contribute to non-point source pollution. Therefore, implementation of Alternative D would not result in significant cumulative effects to stormwater.

Groundwater

Groundwater Supply

Buildout of the County Comprehensive Plan could result in cumulative effects to groundwater if the total groundwater demand of approved projects including future developments and Alternative D would exceed the recharge capacity of the groundwater source. This is the BIA's criteria for determining significance of impact of the alternatives. The BIA's criteria also include compliance with mandates for the protection of water quality.

The Town of Custer gets its water from the City of Scottville, which obtains its water from the City of Ludington where water is supplied by Lake Michigan, a surface water source. Under Water Supply Option 1, Alternative D would require connection to Ludington's water supply through Scottville approximately 3.0 miles away, increasing construction activities that could affect sedimentation. Therefore, Alternative D Water Supply Option 1 would not result in significant cumulative effects on groundwater supply.

Under Water Supply Option 2, Alternative D would require the installation of on-site wells to supply the proposed development with water. This option would increase groundwater use in the vicinity and could potentially impact nearby groundwater wells. However, due to the ordinary high static water level in the area, cumulative effects on groundwater supply would be minimal and not significant.

Groundwater Quality

Under Water Supply Option 1, potable water would be provided by the City of Scottville. As described in **Section 3.10**, the City of Scottville relies on Lake Michigan surface water purchased from the City of Ludington and treated in the Ludington Water Treatment Plant (LWTP). Alternative D would not have significant cumulative impacts to aquifers under Water Supply Option 1, as no groundwater would be used for the project.

Under Water Supply Option 2, on-site wells would supply the project with water for domestic use, emergency supply, and fire protection. Due to the high static water levels of nearby wells in the aquifer, and the lack of other existing or planned groundwater users in the area, cumulative impacts to groundwater levels as the result of Alternative D under Water Supply Option 2 would be less than significant.

Air Quality

The methodology to assess cumulative impacts for Alternative D is the same as under Alternative A. Refer to **Section 4.15.3**.

Operational Vehicle and Area Emissions

Operation of Alternative D would result in the generation of CAP emissions. Mobile emissions from patron, employee, and delivery vehicles, as well as combustion of natural gas in boilers and other equipment at the Custer Site are provided in **Table 4.15-21**. Detailed calculations of vehicle and stationary source emissions are included in **Appendix O**.

TABLE 4.15-21
2040 OPERATION EMISSIONS – ALTERNATIVE D

Sources	Criteria Pollutants					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Tons per Year					
Stationary Source	0	2	1	0	0	0
Mobile Source	1	4	20	0	1	0
Total Emissions	***1***	***5***	***21***	***0***	***1***	***0***
Conformity *de minimis* Levels	N/A	N/A	N/A	N/A	N/A	N/A

Notes: N/A = Not Applicable; *de minimis* levels are not applicable due to attainment status (refer to **Section 3.4**).
Totals may not add due to rounding.
Source: USEPA, 2014b; USEPA, 1995.

As stated in **Section 3.4** and **4.15.3**, the Custer Site is in a region of attainment for all CAPs, therefore, air quality in the region is not cumulatively impacted. BMPs provided in **Section 2.3.3** would minimize CAP emissions from operation of Alternative D. With mitigation, Alternative D would not contribute to a significant cumulative effect to air quality in the cumulative year 2040.

Carbon Monoxide Hot Spot Analysis

After the implementation of recommended mitigation for Alternative D, no intersection would have an LOS or an increase in delay in the cumulative year 2040 that would warrant a Hot Spot Analysis. No significant cumulative impacts would occur and no further analysis is needed.

Pollutants of Concern

Methodology

Methodology for Alternative D is the same as Alternative A (refer to **Section 4.15.3**).

GHG Emission Estimates and Reduction Measures

Construction emissions totaling approximately 685 ST of CO_2e were amortized over 20 years and added to operational emissions. **Table 4.15-22** estimates Alternative D direct GHG emissions at 340 MT of CO_2e per year and indirect emissions of 8,492 MT of CO_2e per year. As stated in **Section 3.4**, the project area is not sensitive to the adverse impacts associated with climate change. . Furthermore, reasonable BMPs have been identified in **Section 2.3.3** to reduce GHG emissions, as shown in **Table 4.15-23** below.

TABLE 4.15-22
ALTERNATIVE D PROJECT-RELATED GHG EMISSIONS

Alternative D	CO_2e Emissions (ST)	Conversion Factor (ST/MT)	GHG Emissions in CO_2e (MT)[4]
Direct			
Amortized Construction	34	0.91	31
Operational			309
		Subtotal	***340***
Indirect			
Mobile	6,868	0.91	6,250
Electricity Usage[1]			2,033
Water Conveyance/ Wastewater Treatment[2]			20
Solid Waste Disposal[3]			189
		Subtotal	***8,492***
		Total Project-Related GHG Emissions	**8,831**

Notes: ST = short tons; MT = metric tons; CO_2e = carbon dioxide equivalent
1 - Based on 2,842 MWh per year.
2 - Based on water use plus wastewater generation per year from **Section 4.10**.
3 - Based on 411 MT of solid waste per year.
4 - Rounded to nearest metric ton. Totals may not add due to rounding.
Source: USEPA, 2015b; USEPA, 2014b; USEPA, 1995.

Alternative D would implement BMPs to reduce the GHG emissions associated with the project. The BMPs for which the GHG reduction can be quantified are presented in **Table 4.15-23**. Additionally, non-quantifiable BMPs are also summarized and included in **Section 2.3.3**. Improvements in fuel economy are accounted for in the MOVES air quality model, and therefore not included in project-level BMPs. Both the BMPs summarized in **Table 4.15-23** and the entire suite presented in full in **Section 2.3.3** would

reduce project-related emissions. Therefore, Alternative D would have a less-than-significant cumulative effect with mitigation on GHG emissions.

TABLE 4.15-23
BMPS FOR GHG EMISSIONS – ALTERNATIVE D

Item	GHG Emissions in CO_2e (MT per year)
Total Project-Related GHG Emissions	**8,831**
Reduce Construction Equipment Idling 1% of Construction (**Air Quality BMP [B][1]**)	-0.3
Install Low Flow Facilities 5% Water/Wastewater (**Air Quality BMP [C][3]**)	-1
Reduce Waste Stream by 25% (**Air Quality BMP [C][7]**)	-47
Install Energy Efficient Lighting 2% (**Air Quality BMP [C][4]**)	-41
GHG Emissions Remaining after Reduction from Operational BMPs	***8,742***

Notes: ST = short tons; MT = metric tons; CO_2e = carbon dioxide equivalent
Source: USEPA, 2014b; USEPA, 1995.

Biological Resources

Cumulative effects to biological resources would occur if Alternative D, in conjunction with buildout of the County and City Comprehensive Plans noted in **Section 4.15.2**, would result in a significant effect to federally listed species, contribute to a reduction in the number of a listed species that would affect the species long-term sustainability, cause development that permanently disturbs a wildlife corridor, results in an effect to sensitive habitat that is of regional significance, or results in a conflict with regional conservation goals.

Wildlife and Habitats

As identified in **Section 4.5**, the Custer Site does not contain sensitive habitats. Although the habitats present within the Custer Site provide resources for wildlife, they are part of a large contiguous area of undeveloped land. As such, Alternative D adds no significant effects cumulatively or incrementally to sensitive habitats.

Federally-Listed Species

Alternative D, in combination with urban growth in the area, would not have a significant cumulative effect on federal listed plants or wildlife, after mitigation measures outlined in **Section 5.5** are implemented. Therefore, Alternative D would not contribute, either cumulatively or incrementally, to effects to federally-listed species.

Migratory Birds

Alternative D, in combination with urban growth in the area, would not have a significant cumulative effect to nesting migratory birds, after mitigation measures outlined in **Section 5.5** are implemented. Therefore, Alternative D would not result in significant cumulative effects to nesting migratory birds.

Wetlands and/or Waters of the U.S.

With the mitigation measures listed in **Section 5.5**, no significant cumulative impacts to wetlands or Waters of the U.S. would occur as a result of Alternative D. If jurisdictional wetlands are found to exist within the Custer Site and impacts to them occur, appropriate compensatory mitigation would be required according to permit requirements. Other development projects in the area would also be required to implement similar mitigation. Therefore, Alternative D would not result in cumulative effects to wetlands.

Cultural Resources

Numerous prehistoric archaeological sites are located in the southern half of the Custer Site, and eight historic period sites are located along the northern edge, one of which (20MN230, represents the remains of a farm, including a barn, silo, shed, and residence foundation). However, 20MN230 does not represent an historic property under Section 106. Furthermore, improvements from cumulative projects involving federal funding and approval would be subject to Section 106 of the NHPA. Similar to Alternative A, if an archaeological site was uncovered during construction of Alternative D, impacts to the site in combination with impacts to other archaeological sites could be cumulatively significant. However, implementation of mitigation measures identified in **Section 5.6**, in combination with protections under state and federal law, would eliminate significant cumulative effects to cultural resources.

Socioeconomic Conditions

Alternative D would introduce new economic activity to Mason County. Alternative D's specific cumulative effects would be similar to those of Alternative A, though the effects would accrue in Mason County rather than Muskegon County and would be significantly less because of the reduced size of the casino. See **Section 4.7** and **Section 4.15.3** for additional information. Alternative D would not contribute to significant cumulative socioeconomic effects.

Transportation

In the year 2040, Alternative D combined with regional growth would result in the addition of vehicle traffic to local intersections. A TIS prepared for the proposed alternatives is provided in **Appendix J**. This section incorporates the results of the TIS and describes the number of trips that would be generated by each alternative in the cumulative year 2040 and any potential adverse effects that would occur to intersections within the study area. Traffic effects resulting from the proposed alternatives were analyzed using trip generation rates for similar casino developments, as well as rates provided by the ITE *Trip Generation Manual* 9th Edition, 2012 (refer to **Section 4.8.1**).

2040 Cumulative Traffic Conditions Plus Alternative D

To assess the impacts of Alternative D on transportation facilities in the study area, the projected number of trips generated by Alternative D was added to 2040 cumulative baseline traffic volumes. Traffic volumes were estimated by applying a background annual growth rate of 0.11 percent to all 2025 Future Year baseline traffic volumes for the Custer Site to represent the increase of traffic from 2025 Future

Year conditions (refer to **Section 4.8.1** for a description of 2025 Future Year baseline traffic volumes). See **Appendix J** for a detailed discussion of background operations.

Under 2040 cumulative conditions, all study intersections, roadway segments, and freeway facilities are projected to operate acceptably at LOS D or better without the addition of project traffic.

Intersection Analysis

Table 4.15-24 shows the Friday PM peak hour intersection delay and LOS at each of the study intersections with the addition of Alternative D traffic under 2040 cumulative conditions.

TABLE 4.15-24
2040 CUMULATIVE PLUS ALTERNATIVE D INTERSECTION DELAY AND LOS

Intersection	Control	Approach	2040 Cumulative		2040 Cumulative Plus Alternative D	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. US-10 & SB US-31 Entrance Ramp	Signalized	Overall	3.7	A	3.9	A
2. US-10 / US-31 & Brye Road	Signalized	Overall	20.4	C	20.8	C
3. US-10 / US-31 & Stiles Road	Signalized	Overall	6.2	A	6.3	A
4. US-10 (State Street) & Main Street	Signalized	Overall	11.6	B	11.8	B
5. US-10 & NB to EB US-31 Exit Ramp	SSSC	NB	14.7	B	15.5	C
6. US-10 & US-31	SSSC	SB	11.0	B	11.3	B
7. US-10 & Custer Road / Main Street	SSSC	NB	15.0	C	22.3	C
		SB	13.6	B	15.6	C
8. Custer Road & First Street	SSSC	EB	9.8	A	11.0	B
		WB	8.7	A	8.7	A
9. First Street & Site Drive	SSSC	NB	DOES NOT EXIST		8.7	A

Notes: SSSC = side-street stop controlled
Source: Fleis & Vandenbrink, 2016c (**Appendix** J).

As shown in **Table 4.15-24**, all study intersections would continue to operate acceptably at LOS D or better during the Friday PM peak hour under 2040 cumulative conditions with the addition of Alternative D traffic. Therefore, Alternative D would not contribute towards significant cumulative effects on traffic and circulation.

Roadway Segment Analysis

Table 4.15-25 shows the Friday PM peak hour V/C and LOS for each of the study roadway segments with the addition of Alternative D traffic under 2040 cumulative conditions.

As shown in **Table 4.15-25**, all study roadway segments would continue to operate acceptably at LOS D or better during the Friday PM peak hour under 2040 cumulative conditions with the addition of Alternative D traffic. Therefore, Alternative D would not contribute towards significant cumulative effects on traffic and circulation.

TABLE 4.15-25
2040 CUMULATIVE PLUS ALTERNATIVE D ROADWAY SEGMENT V/C RATIO AND LOS

Roadway Segment	Direction	2040 Cumulative		2040 Cumulative Plus Alternative D	
		V/C	LOS	V/C	LOS
1. US-10 - Custer Road to Bean Road	EB	0.27	B	0.32	B
	WB	0.18	B	0.23	B
2. US-10 - Bean Road to US-31	EB	0.36	D	0.40	D
	WB	0.32	D	0.35	D
3. US-10 - US-31 to Brye Road	EB	0.31	B	0.32	B
	WB	0.21	B	0.23	B
4. US-10 - Brye Road to SB US-31 Ramp	EB	0.33	B	0.34	B
	WB	0.31	B	0.32	B

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

Freeway Facility Analysis

Table 4.15-26 shows the Friday PM peak hour density and LOS for each of the study freeway facilities with the addition of Alternative D traffic under 2040 cumulative conditions.

TABLE 4.15-26
2040 CUMULATIVE PLUS ALTERNATIVE D FREEWAY FACILITY DELAY AND LOS

Freeway Segment / Ramp	2040 Cumulative		2040 Cumulative Plus Alternative D	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
NB US-31				
1. NB US-31 Exit Ramp to EB US-10	1.4	A	1.8	A
2. NB US-31 Exit Ramp to WB US-10	8.9	A	9.3	A

Source: Fleis & Vandenbrink, 2016c (**Appendix J**).

As shown in **Table 4.15-26**, all study freeway facilities would continue to operate acceptably at LOS D or better during the Friday PM peak hour under 2040 cumulative conditions with the addition of Alternative D traffic. Therefore, Alternative D would not contribute towards significant cumulative effects on traffic and circulation.

Transit Facilities

As discussed in **Section 4.8**, because sufficient parking is available on site and there are no transit systems that serve the Custer Site, no significant cumulative effects would occur to transit facilities as a result of Alternative D.

Bicycle and Pedestrian Facilities

Under 2040 cumulative conditions, it is not anticipated that bicycle and pedestrian facilities in the vicinity of the Custer Site would change. Because sufficient parking is available on site and sidewalk and bicycle

facilities under 2040 cumulative conditions are not anticipated to change, no significant adverse effects would occur to bicycle or pedestrian facilities as a result of Alternative D.

Land Use

Development in the County is guided by the Mason County Master Plan (Mason County, 2014) and the County Zoning Ordinance. As discussed in **Section 3.9.2**, the Custer Site and surrounding is located within Custer Township. The Custer Site is currently held in federal trust and is not subject to local land use policies. As discussed in **Section 4.9**, with the BMPs presented in **Section 2.3.3** and mitigation listed in **Section 5.8**, Alternative D would not disrupt neighboring land uses, prohibit access to neighboring parcels (see discussion on circulation above), or otherwise conflict with neighboring land uses. Alternative D would not contribute to significant cumulative land use effects.

Agriculture

The FPPA is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. The Custer Site is not currently being used for agricultural production, and it is not eligible for protection under the FPPA. In addition, the Custer Site is currently held in federal trust. Implementation of Alternative D would not contribute to significant cumulative effects to agricultural lands.

Public Services

Water Supply

Water Supply Option 1

No agreement with the City of Scottville (City) has been made at this time to provide water supply, wastewater service, law enforcement, and fire services to the site under Alternative D; however, it is assumed that an agreement similar to the MSA provided in **Appendix B** would be executed prior to construction of Alternative D. As discussed in **Section 4.10**, a Water Supply and Demand Study concluded that the City would have sufficient capacity to serve the projected demands of the buildout of Alternative A. Projects approved for connection to the City's water system would have to pay the appropriate water capital connection charges and monthly service fees. This fair share compensation would allow the City to expand its water supply infrastructure as necessary to serve other proposed projects. Therefore, compliance with these policies will require that growth is appropriately phased to ensure that sufficient resources are available. With the implementation of mitigation measures outlined in **Section 5.10**, Water Supply Option 1 would not result in cumulative significant effects to the City's water supply system.

Water Supply Option 2

Under Water Supply Option 2 the Custer Site would not connect to the City's water distribution system; therefore, Alternative D would not have any effect on the City's water distribution system or the LWTP. Therefore, this cumulative impact would be less than significant under Water Supply Option 2.

Wastewater

Wastewater Treatment Option 1

No agreement with the City has been made at this time to provide water supply, wastewater service, law enforcement, and fire services to the site under Alternative D; however, it is assumed that an agreement similar to the MSA provided in **Appendix B** would be executed prior to construction of Alternative D. As discussed in **Section 4.10**, the City has the capacity to treat wastewater flows generated from Alternative D through the Ludington Wastewater Treatment Plant (LWWTP). Projects approved for connection to the City's sewer system would have to pay the appropriate sewer capital connection charges and monthly service fees. This fair share compensation would allow the City to expand its sewer infrastructure and LWWTP as necessary to serve other proposed projects. With the implementation of mitigation measures outlined in **Section 5.10**, Alternative D would not result in cumulative significant effects to the City's sewer and water treatment system.

Wastewater Treatment Option 2

Under Wastewater Treatment Option 2 the Custer Site would not connect to the City's wastewater infrastructure; therefore, this cumulative impact would be less than significant under Wastewater Treatment Option 2.

Solid Waste

The Manistee County Landfill, owned and operated by Manistee County, has an available capacity of 9.2 million cubic yards of municipal solid waste, capable of accommodating Alternative D and other cumulative development in the area. Growth resulting from buildout of the County's Master Plan would increase disposal of solid waste to the Manistee County Landfill. Projected solid waste generation for Alternative D is considered a small contribution to the waste stream and is not expected to dramatically decrease the life expectancy of the disposal site and landfills and, therefore, Alternative D would not result in significant cumulative effects to solid waste services in the geographic area of the cumulative effects zone.

Law Enforcement

The Scottville Police Department (SPD) provides law enforcement services within Custer Township. The SPD would provide law enforcement services for Alternative D and cumulative development in Custer Township. With implementation mitigation measures discussed in **Section 5.10**, development of Alternative D would not result in significant effects on public law enforcement.

Fire Protection and Emergency Medical Services

The Scottville Fire Department (SFD) would provide fire protection and emergency medical services. New development, including Alternative D, would receive fire protection and emergency medical services from the SFD. Future development and buildout of the County Comprehensive Plan would result in increased demands on the SFD. With implementation of the conditions of the MSA, as discussed in **Section 5.10**, development of Alternative D would not result in significant effects on fire protection or emergency medical services.

Electricity, Natural Gas, and Telecommunications

Individual projects would be responsible for paying development or user fees to receive electrical or natural gas services. These fees would expand the capacity of electricity, natural gas, and telecommunications providers as necessary to supply each individual project. Consumers Energy and DTE Energy would provide electricity and natural gas to the Custer Site. Therefore, Alternative D would not contribute to a potential for significant cumulative effects to energy providers.

Noise

The following identifies possible impacts from project related noise sources in the cumulative year 2040 for Alternative D, such as traffic, HVAC systems, parking structure and lots, and deliveries.

Traffic Noise

The primary source of noise in the area is generated by traffic in the cumulative year 2040. The level of traffic noise depends on: l) the volume of the traffic, 2) the speed of the traffic, and 3) the number of trucks in the flow of the traffic. It is not anticipated that speed in the vicinity of the Custer Site or the mix of trucks in the traffic would change during the operational phase; however, in the cumulative year 2040 baseline traffic volumes would increase. Cumulative traffic conditions were estimated using the MDOT travel demand forecast models and growth rates in the area.

Traffic volumes were estimated by applying a background annual growth rate of 0.11 percent to all 2025 traffic volumes for the Custer Site to represent the increase of traffic from 2025 conditions to 2040 cumulative conditions (see **Appendix J**). Therefore, 2040 traffic volumes in the vicinity of the Custer Site would be approximately 90.7 PM peak hour trips.

Cumulative noise impacts due to Alternative D in addition to background growth rates would result in ambient noise levels of 73.4 dBA Leq, in the vicinity of the Custer Site. These ambient noise levels would be above the FHWA threshold of 67 dBA Leq for residential noise receptors, therefore the cumulative noise impact of Alternative D would be significant. There are no feasible mitigation measures that could reduce this impact; therefore, increases in operational noise due to increased traffic volumes under Alternative D is considered a significant and unavoidable cumulative impact.

Vibration and Other Noise Sources

The potential for cumulative impacts associated with vibration and other noise sources would be the same as the direct effects of the project described in **Section 4.11**. Significant cumulative effects would not occur.

Hazardous Materials

Cumulative effects associated with hazardous materials resulting from Alternative D would be similar to Alternative A (refer to **Section 4.15.3**). With the implementation of BMPs outlined in **Section 2.3.3**, Alternative D would not result in significant cumulative impacts to hazardous materials management.

Aesthetics

Cumulative growth resulting from build-out of the County's Master Plan would result in effects to visual resources. Cumulative effects would include a shift from open, undeveloped lots to views of developed areas, as well as an increase in the density of urban uses within the County. Development in the County is required to be consistent with applicable Master Plan designations and policies. All of the buildings under Alternative D would be one story in height. Screening features would be integrated into the design of Alternative D, and landscaping would be used to enhance the visual character of the facilities and integrate natural elements. Development on the site would represent a shift from open space to commercial development and would be visually incompatible with rural land uses in the project vicinity. Potential cumulative effects to visual resources would be significant, with no available mitigation.

4.15.7 ALTERNATIVE E – NO ACTION/NO DEVELOPMENT ALTERNATIVE

Under Alternative E, it is assumed that the alternative sites would not be developed and current land uses would continue. Therefore, Alternative E would not result in significant cumulative effects.

SECTION 5.0

MITIGATION MEASURES

SECTION 5.0
MITIGATION MEASURES

5.1 INTRODUCTION

The Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) Regulations state that an EIS must discuss means to mitigate adverse environmental impacts (40 Code of Federal Regulations [CFR] § 1502.16) and define mitigation as "avoiding the impact altogether by not taking a certain action or parts of an action; minimizing impacts by limiting the degree or magnitude of the action and its implementation, rectifying the impact by repairing, rehabilitating, or restoring the affected environment, reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, compensating for the impact by replacing or providing substitute resources or environments" (40 Code of Federal Regulations [CFR] §1508.20). These principles have been applied to guide design and siting criteria for the project alternatives.

As described more fully in **Section 2.0**, alternatives integrate regulatory requirements, conditions of the Municipal Services Agreement (MSA) and Best Management Practices (BMPs) into the overall project design in an effort to minimize the potentially adverse environmental effects identified in **Section 4.0**, including indirect and cumulatively adverse effects. When appropriate, mitigation measures have been recommended. Relevant regulatory requirements, conditions of the MSA, and mitigation measures to address identified significant environmental impacts are summarized below. All mitigation is enforceable because it is 1) inherent to the project design, 2) required by the MSA (**Appendix B**), and/or 3) required through provisions of federal, State, or local statutes, where applicable. Other BMPs and project design features that would lessen environmental effects and that would be implemented by the Tribe in accordance with tribal regulations and development plans are described in **Section 2.0**.

5.2 GEOLOGY AND SOILS

The following mitigation measure shall be implemented in accordance with federal regulatory requirements for Alternatives A, B, C, and D:

A. The Tribe shall obtain coverage under the United States Environmental Protection Agency (USEPA) General Construction National Pollutant Discharge Elimination System (NPDES) permit with under the Federal requirements of the Federal Clean Water Act (CWA). As required by the NPDES General Construction Permit, a Stormwater Pollution Prevention Plan (SWPPP) shall be prepared that addresses potential water quality impacts associated with construction and operation of the project alternatives. As required by the NPDES General Construction Permit, the SWPPP shall include provisions for erosion prevention and sediment control and control of other potential pollutants by describing construction practices, stabilization techniques, and structural BMPs that are to be implemented to prevent erosion and minimize sediment transport. BMPs shall be inspected, maintained, and repaired to assure continued performance of their intended function. Reports summarizing the scope of these inspections, the personnel conducting the inspection, the dates of the inspections, major observations relating to the implementation of the

SWPPP, and actions taken as a result of these inspections shall be prepared and retained as part of the SWPPP.

To minimize the potential for erosion to occur on the site, the following items shall be addressed in the SWPPP and implemented pursuant to the NPDES General Construction Permit:

1. Prior to land-disturbing activities, the clearing and grading limits shall be marked clearly, both in the field and on the plans. This can be done using construction fences or by creating buffer zones.
2. Stripped areas shall be stabilized through temporary seeding using dryland grasses.
3. Conveyance channels and severe erosion channels shall be mulched or matted to prevent excessive erosion.
4. Exposed stockpiled soils shall be covered with plastic covering to prevent wind and rain erosion.
5. The construction entrance shall be stabilized by the use of rip-rap, crushed gravel, or other such material to prevent the track-out of dirt and mud.
6. Construction roadways shall be stabilized through the use of frequent watering, stabilizing chemical application, or physical covering of gravel or rip-rap.
7. Filter fences shall be erected at all on-site stormwater exit points and along the edge of graded areas to stabilized non-graded areas and control siltation of on-site stormwater.
8. Dust suppression measures shall be implemented to control the production of fugitive dust and prevent wind erosion of bare and stockpiled soils.
9. Haul roads and staging areas shall be developed to control impacts to on-site soil. All access points, haul roads and staging areas shall be stabilized with crushed rock. Any sediment shall be removed daily and the road structure maintained.
10. Concentrated flows create high potential for erosion; therefore, any slopes shall be protected from concentration flow. This can be done by using gradient terraces, interceptor dikes, and swales, and by installing pipe slope drains or level spreaders. Inlets need to be protected to provide an initial filtering of stormwater runoff; however, any sediment buildup shall be removed so the inlet does not become blocked.
11. The SWPPP shall address maintenance and repair of heavy equipment on-site to remove the potential for pollution from oil, fuel, hydraulic fluid, or any other potential pollutant.
12. Staging areas and haul roads shall be constructed to minimize future over-excavation of deteriorated sub-grade soil.
13. Temporary erosion control measures (such as silt fence, gravel filter berms, straw wattles, sediment/grease traps, mulching of disturbed soil, construction stormwater chemical treatment, and construction stormwater filtration) shall be employed for disturbed areas.
14. Exposed and unworked soils shall be stabilized by the application of effective BMPs. These include, but are not limited to, temporary or permanent seeding, mulching, nets and blankets, plastic covering, sodding, and gradient terraces.

15. The SWPPP shall address the maintenance of both temporary and permanent erosion and sediment control BMPs.

5.3 WATER RESOURCES

As described above in **MM 5.2 (A)**, in accordance with federal regulatory requirements for Alternatives A, B, C, and D, coverage under the NPDES General Construction Permit shall be obtained from the USEPA and a SWPPP shall be prepared. As required by the NPDES General Construction Permit, the SWPPP shall describe construction practices, stabilization techniques, and structural BMPs that are to be implemented to prevent erosion and minimize sediment transport as outlined in **MM 5.2 (A)**.

5.4 AIR QUALITY

The BMPs described in **Section 2.0** will minimize potential effects to air quality resulting from construction and operation of the project alternatives; therefore no mitigation is required.

5.5 BIOLOGICAL RESOURCES

The following mitigation measures shall be implemented in accordance with federal regulatory requirements (Migratory Bird Treaty Act [MBTA] and Endangered Species Act) for Alternatives A, B, C and D:

A. If construction-related activities such as tree removal or grubbing of vegetation occur during the nesting bird season (between March 15 and August 31), a qualified biologist shall conduct a pre-construction survey within the site for active nests for bird species protected under the MBTA. The pre-construction survey shall be conducted within seven days prior to commencement of construction activities. If surveys show that there is no evidence of nests, then no additional mitigation is required as long as construction activities commence within seven days following the survey. If active nests are identified, appropriate, species-specific buffer zones shall be established around the nests. Buffer zones are species dependent, and generally range from 100 to 500 feet from the nest site. The biologist should delimit the buffer zone with construction tape or pin flags and maintain the buffer zone until the end of breeding season or the young have fledged. Guidance from the United States Fish and Wildlife Service (USFWS) will be requested if establishing a buffer zone is impractical. A qualified biologist should monitor nests weekly during construction to evaluate potential nesting disturbance by construction activities. The tree shall not be removed until the biologist determines that the nestlings have successfully fledged.

   If tree removal or grubbing of vegetation occurs outside of the nesting bird season, a nesting bird survey is not required and no further mitigation is required.

B. To avoid potential adverse effects to the eastern massasauga rattlesnake, a qualified biologist shall conduct two pre-construction surveys within all suitable habitats of the site. The surveys shall be conducted in accordance with the USFWS accepted protocol for eastern massasauga (Casper et al., 2001). If the eastern massasauga is not found during the pre-construction surveys,

no further mitigation is required. If eastern massasauga is observed within the site, additional mitigation measures shall be implemented. Additional mitigation measures may include:

1. Relocation of eastern massasauga to suitable habitat in the vicinity of the site;
2. Installation of exclusion fencing around construction areas prior to eastern massasauga den emergence; and/or
3. Environmental awareness training for construction personnel.

The following mitigation measure shall be implemented in accordance with federal regulatory requirements (Endangered Species Act) for Alternatives A, B, and C:

C. To avoid potential adverse effects to the northern long-eared bat and Indiana bat, demolition of unoccupied structures on the Muskegon Site shall occur between November 1 and March 1, which is well outside of the summer roosting seasons of both species: April 1 to September 30 for the northern long-eared bat (USFWS, 2014) and April 1 to October 15 for the Indiana bat (USFWS, 2009).

The following mitigation measure shall be implemented in accordance with federal regulatory requirements (Endangered Species Act) for Alternative D:

D. As the forested areas within the Custer Site provide suitable summer roosting habitat for both the Northern long-eared bat and the Indiana bat, the following mitigation measures are required to avoid potential adverse effects to these species.

   If construction-related activities will occur during the summer roosting season for the Northern long-eared bat (between April 1 to September 30) or the Indiana bat (between April 1 and October 15) (USFWS, 2014; USFWS, 2009), pre-construction surveys within the Custer Site and immediate vicinity for these bat species protected under the Federal Endangered Species Act (FESA) will be required. Both the Northern long-eared bat and the Indiana bat use similar summer roosting habitats; therefore, completing surveys following the *Range-wide Indiana Bat Summer Survey Guidelines* (USFWS, 2015) should also be sufficient to find Northern long-eared bat summer roosting habitat. Prior to any construction on the Custer Site and during the appropriate survey time period (May 15 to August 15), a qualified biologist shall complete the necessary surveys determined through coordination with the local USFWS Field Office following the below listed protocols as presented in the *Range-wide Indiana Bat Summer Survey Guidelines* (USFWS, 2015).

   1. **Presence/Absence Surveys (Netting or Acoustic Surveys).** As of the *2015 Range-wide Indiana Bat Summer Survey Guidelines*, presence/probable absence (P/A) of Indiana bats may be determined by conducting either mist-netting or acoustics, as outlined below. It is the project proponent's choice as to which option to use.
      - A qualified biologist shall conduct mist-netting surveys following the Recovery Unit-based Protocols presented in Appendix B of the *Range-wide Indiana Bat Summer Survey Guidelines* (USFWS, 2015). As the project is within the Midwest Recovery Unit and the

project is non-linear, a minimum of 9 net nights per 123 acres of suitable summer habitat will be required. If no Indiana bats are captured, then no further summer surveys are necessary. If Indiana bats are captured, then either acoustic surveys or further coordination with the USFWS will be required.

- A qualified biologist shall conduct acoustic surveys following protocols presented in Appendix C of the *Range-wide Indiana Bat Summer Survey Guidelines* (USFWS, 2015). As the project is non-linear, a minimum of 4 detector nights per 123 acres of suitable summer habitat will be required. If the acoustic surveys do not positively detect high frequency (HF) calls (≥35 kilo-Hertz [kHz]) or myotid calls, then no further surveys are necessary. If HF or myotid calls are detected then either automated acoustic analysis or further coordination with USFWS are required.
- A qualified biologist shall conduct automated acoustic analyses for each site that had HF or myotid calls from the acoustic surveys or ALL sites if the acoustic surveys were not conducted. This step will be completed using one or more of the currently available "approved" acoustic bat ID programs. If Indiana bat presence is considered unlikely by all of the approved programs used in analysis, then no further summer surveys are necessary. If presence is likely then qualitative analysis of probable Indiana bat calls or further coordination with USFWS are required.
- A qualified biologist shall conduct qualitative analysis of probable Indiana bat calls from the automated acoustic analyses. At a minimum, for each site/night a programs considered Indiana bat presence likely, a qualified biologist will review all files from the night. If the biologist visually confirms there are no Indiana bat calls recorded, then no further summer surveys are necessary. If the biologists confirms there are Indiana bat calls recorded, then either mist-netting surveys or further coordination with USFWS are required.

2. **Conduct Mist-netting Surveys to Capture Indiana Bats.** If netting was not conducted as the P/A method, then netting may be conducted during mist-netting surveys to capture and characterize (e.g., sex, age, reproductive condition) the Indiana bats that are present in an area and to facilitate efforts associated with radio-tracking and emergency surveys, described below. If no Indiana bats are captured, then coordinate with the USFWS. If Indiana bats are captured, then radio-tracking and emergence surveys are required.
3. **Conduct Radio-tracking and Emergence Surveys.** In coordination with the USFWS, a qualified biologist will conduct these surveys following protocols presented in Appendices D and E of the *Range-wide Indiana Bat Summer Survey Guidelines* (USFWS, 2015).

If the above surveys find presence of Indiana bat and/or the northern long-eared bat then additional coordination with the USFWS will determine how to best prevent impacts to these sensitive species.

If construction-related activities only occur outside of the summer roosting season for the northern long-eared bat (between April 1 to September 30) or the Indiana bat (between April 1

and October 15) (USFWS, 2014; USFWS, 2009), then the above described surveys will not be required; however, the following measure will be required:

4. To avoid potential adverse effects to the northern long-eared bat and the Indiana bat, tree removal shall occur between November 1 and March 1, which is well outside of the summer roosting seasons of both species: April 1 to September 30 for the northern long-eared bat (USFWS, 2014) and April 1 to October 15 for the Indiana bat (USFWS, 2009).

The following mitigation measure shall be implemented in accordance with the CWA requirements for Alternatives A, B, C, and D.

E. A formal delineation and verification of wetlands and other Waters of the U.S. shall occur if construction-related activities have the potential to affect aquatic resources on the site. If less than 0.5 acres of potential wetlands are going to be disturbed, project activities may fall under an existing Nationwide Permit. However, greater impacts may require a USEPA 401 water quality certification and a United States Army Corps of Engineers (USACE) 404 permit before wetland impacts occur, and will likely require mitigation for disturbance. All project activities shall comply with these permits, should they be necessary.

5.6 CULTURAL AND PALEONTOLOGICAL RESOURCES

The following mitigation measures shall be implemented in accordance with federal regulatory requirements (National Historic Preservation Act [NHPA], Native American Graves Protection and Repatriation Act [NAGPRA], and Archaeological Resources Protection Act [ARPA]) for Alternatives A, B, C, and D:

A. In the event of any inadvertent discovery of prehistoric or historic archaeological resources or paleontological resources during construction-related earth-moving activities, all such finds shall be subject to Section 106 of the NHPA as amended (36 CFR §800). Specifically, procedures for post-review discoveries without prior planning pursuant to 36 CFR §800.13 shall be followed and this would include re-consulting with SHPO and the nearby community and identifying reasonable and prudent measures to avoid, minimize or mitigate adverse effects to such discoveries.

B. If human remains are discovered during ground-disturbing activities on tribal lands, if applicable, the finds shall be subject to the requirements of the NAGPRA and/or ARPA.

C. In the event of accidental discovery of paleontological materials during ground-disturbing activities, a qualified professional paleontologist shall be contacted to evaluate the significance of the find and collect the materials for curation as appropriate.

5.7 SOCIOECONOMIC CONDITIONS

In addition to BMPs provided in **Section 2.0**, the following mitigation measures shall be implemented pursuant to Section 3.2(b)(ii) the MSA (**Appendix B**) for Alternatives A and B:

A. The Tribe shall fund an annual grant in the amount of $25,000.00, to the Muskegon County Community Mental Health Department for training purposes only. This training will include any certification necessary, as well as in-service training necessary for the Department's psychologists and social workers, in order that they will obtain the necessary expertise to respond to problems that may arise as a result of gambling addictions.

5.8 TRANSPORTATION/CIRCULATION

CONSTRUCTION

To prevent violation of federal, state and local policies related to traffic operations imposed for the protection of the environment (40 CFR 1508.27[b][10]), the following mitigation measure shall be implemented in accordance with the applicable jurisdictional agency's regulatory requirements for Alternatives A, B, C, and D:

A. A traffic control plan shall be prepared to identify where construction routes are proposed, and other standards set forth in the Federal Highway Administration (FHWA), Manual on Uniform Traffic Control Devices for Streets and Highways. The Traffic Management Plan (TMP) shall be submitted to Michigan Department of Transportation (MDOT) and Muskegon County.

OPERATION

To prevent violation of federal, state and local policies related to traffic operations imposed for the protection of the environment (40 CFR 1508.27[b][10]), the following traffic mitigation measures shall be implemented as identified within the Traffic Impact Study (TIS) for the project alternatives (**Appendix J**). Fair share contributions for operational mitigation shall be determined in consultation with the appropriate jurisdiction (i.e. Michigan Department of Transportation [MDOT], Muskegon County, and/or Mason County).

B. Prior to operation of Alternatives A, B, and C the Tribe shall implement and/or pay a fair share contribution to the following mitigation measures:

   1. At the intersection of Airline Highway and Airport Road, add permissive-protected left turn phasing to the northbound (NB) approach and upgrade the existing diagonal span pre-timed signal to a fully actuated box span signal. The Tribe's fair share contribution for this improvement has been calculated at two percent for Alternative A, one percent for Alternative B, and five percent for Alternative C.

   2. At the intersection of Harvey Street and Independence Drive, restripe to provide a shared left/through lane and an exclusive right turn lane on the westbound (WB) approach along with the addition of the associated right turn overlap phase for the eastbound (EB) and WB approaches. The Tribe's fair share contribution for this improvement has been calculated at 7 percent for Alternative A, 4 percent for Alternative B, and 13 percent for Alternative C.

   3. At the intersection of Harvey Street and Sternberg Road, construct a right turn lane on the WB approach; restripe the WB and southbound (SB) approaches to provide dual left turn

lanes; modify the signal phasing to run lead-lag for opposing left turn movements due to conflicting vehicular paths; and add right turn overlap phasing for the EB and WB approaches. The Tribe's fair share contribution for these improvements has been calculated at four percent for Alternative A, two percent for Alternative B, and seven percent for Alternative C.

4. At the intersection of Harvey Street and Pontaluna Road, construct a right turn lane on the SB approach and add an associated right turn overlap phase. The Tribe's contribution for this improvement has been calculated at two percent for Alternative A, one percent for Alternative B, and three percent for Alternative C.
5. At the intersection of Hile Road and the EB Interstate 96 (I-96) Ramps, install a traffic signal; optimize and coordinate the signal with the signal at the intersection of Harvey Street and Airline Highway; and construct a WB left turn lane along Hile Road. The Tribe's fair share contribution for these improvements has been calculated at 46 percent for Alternative A, 24 percent for Alternative B, and 13 percent for Alternative C.
6. At the intersection of Hile Road and the NB United States Highway 31 (US-31) Off-Ramp, relocate the off-ramp approximately 200 feet to the west along Hile Road. The Tribe's fair share contribution for this improvement has been calculated at 1 percent for Alternative A, 6 percent for Alternative B, and 17 percent for Alternative C.
7. At the intersection of EB Sternberg Road with the NB US-31 Off-Ramp, install a traffic signal; optimize and coordinate the signal with the signal at the intersection of Harvey Street and NB US-31; and construct dual right turn lanes on the NB US-31 Off-Ramp approach. The Tribe's fair share contribution for these improvements has been calculated at three percent for Alternative A, two percent for Alternative B, and five percent for Alternative C.

C. Prior to operation of Alternative A the Tribe shall implement and/or pay a fair share contribution to the following mitigation measures:

1. At the intersection of Airline Highway and the WB I-96 Off-Ramp, install a traffic signal with split phasing for the ramp approach; coordinate the signal with the signal at the intersection of Airline Highway and US-31 Ramps; and construct a right turn lane on the off-ramp approach with 150 feet of storage. The Tribe's fair share contribution for these improvements has been calculated at 28 percent for Alternative A.
2. At the intersection of Airline Highway and the SB US-31 Ramps, install a traffic signal with split phasing for the ramp approach; coordinate the signal with the signal at the intersection of Airline Highway and the WB I-96 Off-Ramp; construct a right turn lane on the off-ramp approach with 175 feet of storage; construct a WB left turn lane with 50 feet of storage; remove the existing channelizing island at the SB US-31 Ramps; and construct an EB right turn lane along Airline Highway between the SB US-31 Ramps and WB I-96 Off-Ramp. The Tribe's fair share contribution for these improvements has been calculated at 27 percent for Alternative A.

D. Prior to operation of Alternatives A and B the Tribe shall implement and/or pay a fair share contribution to the following mitigation measures:

   1. At the intersection of Harvey Street and Hile Road, stripe the NB approach to provide an exclusive left turn lane, shared through/right turn lane, and exclusive right turn lane; and install signage along the NB approach indicating that EB I-96 traffic should use the outer right turn lane and EB Hile Road traffic should use the inner right turn lane. Restripe the existing WB shared through/right turn lane to provide a shared left/through/right turn lane; modify signal operations to run EB and WB approaches as split phases; and upgrade the existing diagonal span signal to a fully actuated box span signal with right turn overlap phasing provided for the NB approach. The Tribe's fair share contribution for these improvements has been calculated at 43 percent for Alternative A and 22 percent for Alternative B.

E. Prior to operation of Alternatives A and C the Tribe shall implement and/or pay a fair share contribution to the following mitigation measures:

   1. Install a traffic signal at the intersection of Harvey Street and the proposed site driveway with permissive-protected left turn phasing for the SB left turn movement into the Muskegon Site. The Tribe shall fund the entire cost to install this traffic signal under Alternatives A and C.

F. Prior to operation of Alternatives B and C the Tribe shall implement and/or pay a fair share contribution to the following mitigation measures:

   1. At the intersection of Airline Highway and the WB I-96 Off-Ramp, widen the ramp approach to provide exclusive left and right turn lanes and 150 feet of storage. The Tribe's fair share contribution for these improvements has been calculated at 13 percent for Alternative B and 6 percent for Alternative C.

   2. At the intersection of Airline Highway and the SB US-31 Ramps, widen the ramp approaches to provide exclusive left and right turn lanes and 175 feet of storage. The Tribe's fair share contribution for these improvements has been calculated at 13 percent for Alternative B and 6 percent for Alternative C.

G. Prior to operation of Alternative C the Tribe shall implement and/or pay a fair share contribution to the following mitigation measures:

   1. Restripe the existing WB shared through/right turn lane to provide a shared left/through/right turn lane; modify signal operations to run EB and WB approaches as split phases; and upgrade the existing diagonal span signal to a fully actuated box span signal with right turn overlap phasing provided for the NB approach. The Tribe's fair share contribution for these improvements has been calculated at 18 percent for Alternative C.

H. Prior to the operation of Alternatives A, B, and C traffic signal timing optimization shall be performed at the following intersections:

1. Airline Highway/Hile Road;
2. Grand Haven Road/Hile Road;
3. Harvey Street/East Ellis Road; and
4. Airline Highway/Farr Road.

The following mitigation measure is recommended for Alternatives A, B, and C:

I. The Tribe shall seek to enter into an agreement with Muskegon Area Transit System (MATS) for transit services to the Muskegon Site, in order to optimize bus routes and timing. If requested by MATS, the Tribe shall develop a bus stop and shelter on the Muskegon Site.

5.9 LAND USE COMPATIBILITY

As described in **Section 4.9**, impacts related to land use include air quality and noise effects, congestion of local roads, and alterations to visual resources. Therefore, design features and BMPs presented in **Section 2.3.3** as well as mitigation measures in **Sections 5.8** would reduce adverse impacts regarding land use compatibility.

5.10 PUBLIC SERVICES

The following provisions of the MSA are applicable to Alternatives A and B and would avoid, minimize, or mitigate adverse effects associated with public services:

A. Pursuant to Section 2.3(c) and Section 2.4(c) of the MSA, the Tribe shall pay water and wastewater capital connection charges and monthly service fees in the same manner as usual and customary for all other users of the municipal public water system.

B. Pursuant to Section 2.3(b) of the MSA, the Tribe shall fund the upgrade of the Township's municipal wastewater system to the Muskegon Site.

C. Pursuant to Section 3.1 of the MSA, the Tribe shall make the following non-recurring contributions to the Township:

   1. The Tribe shall contribute $200,000.00 to the Township in recognition of the expenses the Township will incur to properly equip its Police Department and its Fire Department to respond to emergencies at or resulting from the Proposed Project. This shall occur in three annual installments of $66,666.66, with the first such installment due and payable no later than 60 days after the Commencement Date (the first day the Gaming Facility is open to the public), the second installment due and payable on the first anniversary of the Commencement Date, and the third installment due and payable on the third anniversary of the Commencement Date.

   2. The Tribe shall pay the full cost of on-site water main improvements, which shall be constructed by either the Township or the Tribe. The improvements shall be constructed

according to the Township's standards and requirements and they shall be subject to the approval of the Township.

D. Pursuant to Section 3.2 of the MSA, the Tribe shall make the following recurring contributions to the Township:

   1. The Tribe shall make yearly payments to the Township to cover the added personnel, training, and equipment to maintain the necessary police fire service levels.
   2. The Tribe shall pay incident-dependent fees, pursuant to Section 3.2 of the MSA (**Appendix B**), as related to arrests of individuals due to development of the project.
   3. The Tribe shall pay a per day charge to the County for the actual use of beds in the County Jail for the use of all prisoners arrested by the Tribe or the Township, pursuant to Section 3.2 of the MSA (**Appendix B**).

The following mitigation measure is applicable to Alternatives A, B, and C, per Section 2.4 of the MSA, and would mitigate adverse effects associated with water supply infrastructure:

E. The Tribe shall either construct or offer to pay the full actual cost for the Township to construct a new 12-inch diameter water main to replace the existing 8-inch water main along East Ellis Road adjacent to the Muskegon Site, between Harvey Street and Quarterline Road.

The following mitigation measure is applicable to Alternative C, and would avoid, minimize, or mitigate adverse effects associated with water, wastewater, fire protection, and law enforcement services:

F. The Tribe shall seek to enter into an agreement with Fruitport Township for water, wastewater, fire protection, and law enforcement services. The provisions and payments for services within this agreement shall be similar to conditions included within the MSA provided in **Appendix B**.

The following mitigation measure is applicable to Alternative D, and would avoid, minimize, or mitigate adverse effects associated with water, wastewater, fire protection, and law enforcement services:

G. The Tribe shall seek to enter into an agreement with the City of Scottville for water, wastewater, fire protection, and law enforcement services, as appropriate.

5.11 NOISE

The BMPs described in **Section 2.0** will minimize potential effects to noise resulting from construction of the project alternatives; therefore no mitigation is required.

5.12 HAZARDOUS MATERIALS

The BMPs described in **Section 2.0** will minimize potential effects to hazardous materials resulting from construction and operation of the project alternatives; therefore no mitigation is required.

5.13 AESTHETICS

The BMPs described in **Section 2.0** will minimize potential effects to aesthetics resulting from lighting and glare from the project alternatives; therefore no mitigation is required.

SECTION 6.0

CONSULTATION AND COORDINATION/ LIST OF PREPARERS

SECTION 6.0

CONSULTATION AND COORDINATION/LIST OF PREPARERS

6.1 LEAD AGENCY

Bureau of Indian Affairs (BIA)

Timothy LaPointe, Regional Director
Scott Doig, Regional Environmental Scientist, Branch Chief
Felix Kitto, Environmental Protection Specialist
Timothy Guyah, MA, Regional Archaeologist

6.2 COOPERATING AGENCIES

United States Department of Transportation: Federal Highway Administration (FHWA)

Russell Jorgenson, PE, Michigan Division Administrator

United States Environmental Protection Agency (USEPA)

Kenneth A Westlake, Chief

Little River Band of Ottawa Indians (Tribe)

Larry Romanelli, Tribal Ogema

Muskegon County

Terry Sabo, District 8 Board Chair

Fruitport Township

Brian Werschem, Supervisor

6.3 STATE AND LOCAL AGENCIES AND UTILITIES

Michigan Department of Environmental Quality (MDEQ)

Brenda Mecher, Environmental Quality Analyst, Region 3 – Grand Rapids District
John Vanderhoof, Environmental Quality Analyst, Region 4 – Cadillac District

Fruitport Township

Mathew Farrar, Director of Public Utilities

Muskegon Area Transit System (MATS)

Corey Davis, Mobility Coordinator

Michigan Department of Transportation (MDOT), Grand Region
Erick Kind, Region Engineer

Muskegon County Road Commission (MCRC)
Melvin Black, Chair

Mason County Road Commission
Wayne Schoonover, Manager and Director

Consumers Energy
Nicholas Page, Customer Energy Specialist III

DTE Energy
Zachary Kerfoot, Principal Account Manager

6.4 ENVIRONMENTAL CONSULTANTS

Analytical Environmental Services (AES)
David Zweig, PE, is the Principle-in-Charge of AES and has a Civil Engineering Bachelor of Science (BS) from University of California, Berkeley (UC Berkeley), in addition to 30 years of experience. Mr. Zweig is a leading environmental compliance expert focused on preparing legally-defensible National Environmental Policy Act (NEPA) environmental studies for development and infrastructure projects in California and throughout the U.S. He has assisted city, county, and state agencies with the analysis of over 1,000 projects in California, including housing, vineyards, commercial development, transportation, and water/wastewater municipal projects. Mr. Zweig and his staff have also successfully completed hundreds of NEPA documents for federal agencies, including the Bureau of Reclamation, United States Army Corps of Engineers (USACE), BIA, and Bureau of Land Management (BLM). Mr. Zweig was a founding principal of AES in 2001.

Bibiana Alvarez is the Project Manager and has an Environmental Resource Science BS and a minor in Environmental Policy Analysis and Planning from University of California, Davis (UC Davis), in addition to 10 years of experience. Ms. Alvarez is an environmental science specialist experienced in all aspects of preparing NEPA compliance documents. She has accomplished environmental compliance work in seven states across the U.S. for local, state, and federal agencies, as well as an array of private enterprises. Areas of expertise include drafting and analysis of project alternatives, land use, public services and infrastructure, land resources, growth-inducing impact analyses, responding to public and agency comments, budgeting, scheduling, and quality control. Her primary focus is to coordinate with stakeholders, sub-consultants, and the AES team to produce a thorough, technically accurate, legally defensible, and consistent compliance document that is tailored to fulfill the needs of each project.

Aileen Mahoney is the Deputy Project Manager and has an Environmental Science and Management BS and a minor in Watershed Science from UC Davis, in addition to three years of experience in the environmental consulting field. Ms. Mahoney is an environmental analyst with experience preparing NEPA environmental compliance documents for both government agencies and private companies. She

has expertise in impact analysis of geology, soils, hazardous materials, public services, recreation, and utilities, with the majority of her experience being in hydrology and watershed science. Additionally, she has a working knowledge of state and federal environmental policy, and of the needs of tribal clients and BIA.

Katherine Green has an Environmental Science and Management BS and an English Bachelor of Arts from UC Davis, in addition to four years of experience in the environmental consulting field. Ms. Green has extensive experience in the preparation of NEPA documents and associated technical studies for fee-to-trust and federal projects at AES. She has experience with professional research and report preparation and has completed work on a variety of projects throughout the country for federal, state, and local agencies, as well as private clients. Areas of expertise include socioeconomic analysis and hazardous materials investigations, including the preparation of Phase I Environmental Site Assessments (ESAs). In addition to writing and editing NEPA documents and peer-reviewing related technical studies, Ms. Green facilitates project meetings, public hearings, and coordination with lead agencies, project engineers, and subconsultants in support of the completion of NEPA documents.

Kassandra Dickerson has an Environmental Science, Animal Biology, and Analytical Chemistry Bachelor of Arts from University of Dubuque, Iowa, in addition to three years of experience in the environmental consulting field. Ms. Dickerson is an environmental scientist experienced in environmental and biological compliance document preparation, biological pre-construction surveys and monitoring, data analysis, field reconnaissance, and biological identification. Ms. Dickerson has lead field surveys for biological resources on federal and state lands during pre-construction surveys, and specific species public training for construction activities. She has experience in on-going biological monitoring for endangered species including California tiger salamander, Valley Elderberry Longhorn Beetle, and other migratory and sensitive species. Specific areas of expertise include identification of federally and state listed species; identification, monitoring, and habitat suitability for migratory waterfowl; wetland delineation.

Alison Middlekauff has an Environmental Management and Protection BS from California Polytechnic State University (Cal Poly), San Luis Obispo, in addition to three years of experience in the environmental consulting field. Ms. Middlekauff has experience with professional research and report preparation and has completed work on a variety of projects nationwide for various federal, state, and local agencies, as well as private clients. Ms. Middlekauff also has experience with a range of tribal clients, preparing applications and related technical studies for the BIA. Areas of expertise include traffic, noise, soil resources, vineyard development, and documentation and permitting for water rights and agricultural projects that require erosion control plan review and approval. In addition to writing and editing NEPA documents and peer-reviewing related technical studies, Ms. Middlekauff prepares and manages project budgets, facilitates project meetings, and coordinates with lead agencies, project engineers, and subconsultants in support of the completion of NEPA documents.

Erin Quin has a Chemistry BS from University of California, Santa Cruz, in addition to 11 years of experience. Mr. Quinn has extensive experience in air quality modeling and permitting. Mr. Quinn has technical expertise with the assessment of air quality, climate change, and human health risk impacts using CalEEMod, CALINE4, and AerMod. His experience includes preparing emission estimates,

impact analyses, formulation of mitigation programs, and conformity determinations with state air quality plans, and air quality permitting.

Rose Kelly has a Natural Resources Planning BS from Humboldt State University and a Masters of City and Regional Planning from Cal Poly, San Luis Obispo. Ms. Kelly is an environmental planner with expertise in data collection and analysis, field assessment, community development, and technical reports. She has prepared a range of environmental and planning documents for local governments such as specific and general plans and site level environmental compliance and review. Ms. Kelly is experienced in the preparation of NEPA documents including facilitating and responding to public comments. Additionally, she has specific experience in air quality, greenhouse gas (GHG), and water resource accounting for programmatic and site specific environmental analysis. She has served as an environmental analyst on NEPA documents for multiple Native American tribes and public agencies.

Nicholas Bonzey has an Ecology and Environmental Science BS from University of Maine, in addition to 10 years of experience. Mr. Bonzey is a wetland and soil scientist responsible for conducting jurisdictional wetland delineations, soils surveys, Global Positioning Systems (GPS) surveys, water quality assessments, vernal pool surveys, threatened and endangered species surveys, and functional assessments, as well as completing data analysis and reporting in support of state and federal permit applications. He has worked on a variety of natural community and rare plant surveys and projects ranging from general reconnaissance observations to quantitative community and species-specific surveys. These projects have involved natural community mapping and analysis for transportation projects, utility corridors, and development sites. Mr. Bonzey has written documentation including Biological Assessments, Biological Resources Evaluations, and Phase 1 ESAs, required for federal agencies concurrence.

Kaitlan Alonzo has an Evolution, Ecology, and Biodiversity BS from UC Davis, in addition to four years of experience. Ms. Alonzo currently serves as a Biologist II and writer on various NEPA documents for a variety of local, state, and federal agencies, as well as private clients and multiple Native American Tribes. Ms. Alonzo aids in managing and preparing project contracts, budgets, meetings, and coordinating with lead agencies, engineers, and sub consultants on various types of projects. She is also a skilled writer and is experienced in writing and editing NEPA documents as well as peer-reviewing associated technical studies. Completed documents include Environmental Impact Statements (EISs), Biological Assessments and Surveys, Environmental Overviews required for NEPA compliance and federal agency concurrence, and various permit applications.

Justin Demianew has a Wildlife BS from Humboldt State University, in addition to three years of experience. Mr. Demianew is a terrestrial biologist responsible for conducting habitat assessments, threatened and endangered species surveys, wetland delineations, GPS surveys, and functional assessments, as well as completing data analysis and reporting in support of state and federal permit applications. Mr. Demianew has accumulated experience with federal, state, university, and private entities conducting terrestrial and aquatic habitat assessment surveys, pre-construction surveys, and construction monitoring for a variety of species. This includes surveys for small mammals and great grey owls in the Sierra Nevada, gray wolves in the Rocky Mountains, giant garter snakes in the California Central Valley, and tropical passerines in the Peruvian Amazon. Mr. Demianew has written technical

reports including Biological Assessments, EISs, and Environmental Overviews required for NEPA compliance and federal agency concurrence.

Katelyn Peterson has an Evolution, Ecology, and Biodiversity BS and a minor in Wildlife, Fish, and Conservation Biology from UC Davis, in addition to four years of experience. Ms. Peterson is a biologist and state certified environmental scientist with experience in data collection and analyses, as well as conducting wildlife surveys (burrowing owl, western pond turtle, California tiger salamander, black-crowned night heron, snowy egret, salt marsh harvest mice, and multiple bat species), and vegetation monitoring (including rare plant surveys). She has specific experience assessing for potential bat habitat including forested areas (and basal hollows), performing acoustic monitoring surveys to assess bat presence, as well as some experience performing bat mist-netting with permitted individuals. She serves as biologist on various NEPA documents for a variety of local, state, and federal agencies, as well as for multiple Native American tribes. She also has experience performing wetland delineations and assisting with wetland delineation reports for USACE verification for unique wetland complexes and habitats throughout northern California. She has also worked on preparing federal, state, and local permit applications.

Charlane Gross, RPA, has an Antropology Bachelor of Arts and a Social Science Master of Arts (MA) from UC Berkeley, in addition to 30 years of experience. Ms. Gross's range of experience has been acquired by working as both field technician and field director in 15 states and U.S. territories, on both coasts, in the central Plains, and the South Pacific. This exposure has resulted in the widest possible range of experience in all forms of archaeological survey, from shovel testing to pedestrian survey, with the accompanying ability to look at landscape forms and assess the potential for prehistoric cultural sites. Ms. Gross often works with members of the Native American community, and has assisted in the design and planning of construction projects which take Tribal values into account. Ms. Gross has considerable experience in the development and production of cultural resources recordation and management documents including survey, testing, and data recovery reports, National Register of Historic Places (NRHP) evaluations, cultural resources chapters for numerous EISs, General Plans and Specific Plans, and the drafting of burial and cultural resources treatment and management plans. Ms. Gross is also highly skilled in agency, client, and Native American community coordination and consultation.

John Fox has a Business Administration BS from UC Berkeley, and a Master of Business Administration (MBA) from the University of Chicago, in addition to 23 years of experience. Mr. Fox is Chief Operating Officer (COO) of AES. In his capacity of COO, Mr. Fox is responsible for reviewing all legal documents and contracts executed by the company. Mr. Fox is also responsible for executing the company's business plan. Prior to his employment at AES, Mr. Fox was a principal at a private equity real estate fund. Prior to that, Mr. Fox was an investment banking Vice President, first at Bear Stearns & Co. and subsequently at Lehman Brothers. Mr. Fox is a Certified Public Accountant (inactive status) and a licensed real estate broker in the State of California.

Trenton Wilson has an Environmental Toxicology BS from UC Davis. Mr. Wilson is an environmental scientist with over 15 years of experience in performing and managing environmental monitoring projects and providing technical analysis in the development of NEPA compliance documents. Mr. Wilson has worked on numerous environmental project documents, including Environmental Assessments, and EISs.

Areas of expertise include wastewater and recycled water, air quality analysis, hydrology and water quality, geology and soils, traffic, and noise. Mr. Wilson also has experience developing and performing various types and levels of environmental monitoring projects including long-term, multi-faceted monitoring projects, performing technical monitoring studies, preparing technical reports, conducting impact analyses, and developing mitigation protocols.

Dana Hirschberg is a senior graphic designer with knowledge and 16 years of experience with Geographic Information Systems (GIS), graphic presentation software including Microsoft, Adobe CS, AutoCAD, ESRI ArcView and database design. As AES's graphic designer, Mr. Hirschberg is responsible for all graphic depictions of information contained in AES environmental documents for a variety of local, state, and federal agencies, as well as an array of private clients. He also has a background in internet web development and programming.

Glenn Mayfield has a GIS Bachelor of Arts from American River College, in addition to 13 years of experience. Mr. Mayfield has extensive work experience and formal professional training with GIS. His GIS work is diversified across projects requiring large amounts of field GPS data collection, geoprocessing, spatial hydrological and terrain analysis and visualization, digitization and integration of non-spatial data into spatial data databases. Mr. Mayfield's projects include biological and cultural/archaeological surveys involving public database research, infrastructure projects involving engineering CAD surveys data extraction and overlay.

Innovation Group – Socioeconomics

Thomas Zitt, PhD, is the Executive Vice President and has more than 21 years of experience. Mr. Zitt received his doctorate in American Culture Studies from Bowling Green University. Mr. Zitt has excelled at market analytics and high-level strategic planning, earning his reports a reputation for accuracy and reliability unsurpassed in the gaming industry. The depth of his analysis provides tribes, developers and government bodies with the confidence that their decisions are being made on sound economic foundations, and the methodological soundness and comprehensiveness of his expert witness reports have been critical in his clients' success in a number of legal proceedings. His work for tribes extends beyond gaming as he has completed economic diversification and strategic planning studies for tribal councils. Mr. Zitt has assessed the economic, social and fiscal impacts of gaming in numerous developing jurisdictions.

Jennifer Day, Senior Analyst, has more than 5 years of experience, and received a Political Science BS from UW-Eau Claire and earned a Master's of Urban and Regional Planning from the Humphrey Institute of Public Policy at the University of Minnesota. Utilizing her skill-set based in urban planning, Ms. Day provides in-depth analysis to support strategic diversification initiatives for a wide array of clients. She has conducted feasibility analysis, financial forecasting, and highest and best use analysis on a wide variety of projects, including casinos, convention centers, entertainment venues, hotels, retail, and food and beverage offerings. She has found her niche working with clients to examine and quantify the positive impacts of developments on local communities through economic and community impact reports.

Angela Slovachek, Analyst, has more than 3 years of experience, a Bachelor of Arts in Economics and International Development, and a Master's degree in Urban and Regional Planning at the University of

New Orleans. Ms. Slovachek's primary focus has been in the domestic market for both commercial and Native American projects. She has assisted in market analyses, financial forecasts, economic impact studies and diversification strategies for our clients in the Gaming and Hospitality Industries.

Fleis & Vandenbrink – Grading and Drainage, Water, Wastewater, and Traffic

Aaron Catlin was the Land Development Group Manager and Sr. project manager involved in the preparing of the Grading/Drainage and Water/Sewer studies for the EIS of the Little River Casino Project in Muskegon, Michigan. Mr. Catlin has over 40 years of experience specializing in site development engineering and has managed our Land Development Design Group for over 20 years. He has had extensive experience in site planning/design and also manages our Design-Build Construction Group. Mt. Catlin is an Associate at Fleis & Vandenbrink.

Michael Colpetzer, PE, was involved in the preparing of the Grading and Drainage exhibits and calculations for the EIS of the Little River Casino Project in Muskegon, Michigan. Mr. Colpetzer has over 27 years of experience in civil engineering as a licensed Professional Engineer in several jurisdictions. He has had extensive experience in grading and storm water management on a wide variety of projects with commercial, institutional, industrial, and residential developments. Mr. Colpetzer is also a LEED Accredited Professional.

Julie Kroll, PE, PTOE, was involved in the preparing of the Traffic Study for the EIS of the Little River Casino Project in Muskegon, Michigan. Ms. Kroll has over 18 years of experience in a wide variety traffic and transportation engineering projects, including all aspects transportation planning, operations and design. Ms. Kroll has provided the traffic and mobility analyses on hundreds of different Federal, State, and local projects. Ms. Kroll has expertise in freeways, municipal roadways, intersections, and airport traffic engineering and design and has been responsible for all aspects of the project development from planning level analyses to detailed maintaining traffic plans and provisions. As a Senior Project Manager she is responsible for all aspects of the project scoping, analysis, design, and delivery.

Michael Labadie, PE, Group Manager, was involved in preparing the Traffic Study for the EIS of the Little River Casino Project in Muskegon, Michigan. Mr. Labadie has over 35 years of experience in the field of Transportation Engineering. Mr. Labadie has directed many traffic and transportation engineering projects, including intersection operations studies, corridor studies, citywide traffic studies, signal system studies, roadway design projects, development impact studies, EISs, and traffic safety projects. Mr. Labadie served as Transportation Engineering Group Manager responsible for all traffic engineering and transportation planning work, including planning, design, and implementation of traffic operation improvements for communities and private developments.

Michael Mattzela, PE, was involved in the preparation of the Water Demand Supply and Wastewater Disposal reports for the EIS of the Little River Casino Project in Muskegon, Michigan. Mr. Mattzela has over 10 years of experience in civil engineering as a licensed Professional Engineer in several jurisdictions. Mr. Mattzela has had extensive experience in planning, design, and implementation of a diverse range of infrastructure projects representing both rural and urban communities.

Steven Russo, PE, was responsible for technical aspects involved in the preparing of the Traffic Study for the EIS of the Little River Casino Project in Muskegon, Michigan. He has extensive experience completing technical analyses using Synchro and SimTraffic software and is responsible for Quality Control reviews to ensure project accuracy. He has over three years of engineering and planning experience in traffic related projects involving signal optimization, traffic impact studies, signal warrant analyses, and parking studies.

SECTION 7.0

ACRONYMS

SECTION 7.0

ACRONYMS

A

AADT	Average Annual Daily Trips
ACR	Andrews Cultural Resources
ADT	Average Daily Traffic
AES	Analytical Environmental Services
AG	Agricultural
amsl	above mean sea level
APE	Area of Potential Effects
APN	Assessor's Parcel Number
AQD	Air Quality Division
ARPA	Archaeological Resources Protection Act
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
ATM	automatic teller machine
AWSC	all-way stop control

B

B-2	General Business
B-3	Service Business
BA	Biological Assessment
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
BOD	Biochemical Oxygen Demand
BR	Business Route
BS	Bachelor of Science

C

CAA	Clean Air Act
CAP	criteria air pollutant
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	methane
CLEA	Cooperative Law Enforcement Agreement
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COO	Chief Operating Officer

CPSC	Consumer Product Safety Commission
CWA	Clean Water Act

D

dB	decibel
dBA	A-weighted sound level
DOT	United States Department of Transportation
DPM	diesel particulate matter

E

EB	eastbound
EDR	Environmental Data Resources, Inc.
EFH	Essential Fish Habitat
EGD	electronic gaming device
EIS	Environmental Impact Statement
EMFAC	Air Quality Model 2011 Emission Factors
EMS	emergency medical services
EO	Executive Order
ESA	Environmental Site Assessment

F

º F	degrees Fahrenheit
F	Forestry
FBI	Federal Bureau of Investigation
FCIR	Farmland Conversion Impact Rating
FDA	Food and Drug Administration
FE	Federally Endangered
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FPD	Fruitport Township Police Department
FPFD	Fruitport Fire Department
FPPA	Farmland Protection Policy Act
FR	Federal Register
FT	Federally Threatened
FTA	Federal Transit Administration
FTE	full-time equivalent
FWPCA	Federal Water Pollution Control Act

G

GHG	greenhouse gas
GHGRP	Greenhouse Gas Reporting Program
GIS	Geographic Information Systems

GLO	General Land Office
GPD	gallons per day
GPM	gallons per minute
GPS	Global Positioning System
g/vmt	grams per vehicle miles traveled

H

HAP	hazardous air pollutant
HCM	Highway Capacity Manual
HF	high frequency
HVAC	heating, ventilation, and air conditioning
Hz	Hertz

I

I-96	Interstate 96
IGRA	Indian Gaming Regulatory Act
IMPLAN	Impact Analysis for Planning
IRA	Indian Reorganization Act
ISO	International Organization for Standardization
ITE	Institute of Transportation Engineers

K

kHz	kilo-Hertz
km	kilometer

L

Ldn	Day-Night Average Sound Level
Leq	equivalent sound level
LESA	Land Evaluation and Site Assessment
LMTA	Ludington Mass Transportation Authority
LOS	level of service
LRCR	Little River Casino Resort
LT	left turn
LUST	leaking underground storage tank
LWTP	Ludington Water Treatment Plant
LWWTP	Ludington Wastewater Treatment Plant

M

MA	Master of Arts
MACT	maximum achievable control technology
MASN	Michigan Air Sampling Network
MATS	Muskegon Area Transit System
MBA	Master of Business Administration
MBTA	Migratory Bird Treaty Act

MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MCRC	Muskegon County Road Commission
MCWMS	Muskegon County Wastewater Management System
MCWTF	Muskegon County Wastewater Treatment Facility
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MDOT	Michigan Department of Transportation
µg/m^3	micrograms per meter cubed
mg/L	milligrams per liter
MG	million gallons
MGD	million gallons per day
MHC	Michigan Historical Center
mL	milliliters
MMscf	million standard cubic feet
MNFI	Michigan Natural Features Inventory
MOVES	Motor Vehicle Emission Simulator
mph	miles per hour
MSA	Municipal Services Agreement
MSU	Michigan State University
MSW	municipal solid waste
MT	metric tons
MTU	Michigan Technological University
MYA	million years ago

N

NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NAGPRA	Native American Graves Protection and Repatriation Act
NAR	National Association of Realtors
NASS	National Agriculture Statistical Service
NB	northbound
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NMOA	Northern Michigan Ottawa Association
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOI	Notice of Intent
NO_x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRC	National Research Council

NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSR	new source review
NWI	National Wetlands Inventory

O

O_3	ozone
OSHA	Occupational Safety and Health Administration

P

P/A	presence/probable absence
PA	Public Act
Pb	lead
pc/mi/ln	passenger cars per mile per lane
PCB	polychlorinated biphenyl
PM	particulate matter
PM_{10}	particulate matter less than 10 micrometers in diameter
$PM_{2.5}$	particulate matter less than 2.5 micrometers in diameter
ppm	parts per million
PPV	peak particle velocity
PSD	Prevention of Significant Deterioration
PTR	Permanent Traffic Recorder
PUD	Planned Unit Development

R

R-1	Single Family Residential
RCRA	Resource Conservation and Recovery Act
RE	Rural Estate
ROG	reactive organic gas
RR	Recreation Residential
RWS	Regional Water System

S

SB	southbound
SC-1	Shopping Center
SDWA	Safe Drinking Water Act
sf	square feet
SFD	Scottville Fire Department
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	sulfur oxide gases
SPD	Scottville Police Department
SSSC	side-street stop controll

ST	short tons
STP	shovel test pit
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRC	State Water Resource Commission

T

TDC	Traffic Data Collection, Inc.
TIP	Tribal Implementation Plan
TIS	Traffic Impact Study
TMDL	Total Maximum Daily Load
TMIS	Traffic Monitoring Information System
TMP	Traffic Management Plan
TPH	total petroleum hydrocarbons
tpy	tons per year
TRB	Transportation Research Board
Tribe	Little River Band of Ottawa Indians
TSS	Total Suspended Solids

U

UC Berkeley	University of California, Berkeley
UC Davis	University of California, Davis
UIC	Underground Injection Control
US-10	United States Highway 10
US-31	United States Highway 31
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank

V

V/C	volume-to-capacity ratio
VdB	vibration decibel
VOC	volatile organic compound

W

WB	westbound
WMSRDC	West Michigan Shoreline Regional Development Commission

SECTION 8.0

REFERENCES

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