

**FINAL
ENVIRONMENTAL ASSESSMENT**

**DOE'S PROPOSED FINANCIAL
ASSISTANCE TO DOW KOKAM MI, LLC
TO MANUFACTURE ADVANCED LITHIUM
POLYMER BATTERIES FOR HYBRID AND
ELECTRIC VEHICLES AT MIDLAND,
MICHIGAN**

**U.S. Department of Energy
National Energy Technology Laboratory**



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ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CE	Consumers Energy
DOE	U.S. Department of Energy (also called the Department)
EA	environmental assessment
Energy Act	Energy Independence and Security Act of 2007
EPA	U.S. Environmental Protection Agency
FR	Federal Register
MDEQ	Michigan Department of Environmental Quality
MCV	Midland Cogeneration Venture Limited Partnership
NMP	n-methylpyrrolidone
NEPA	National Environmental Policy Act, as amended
NWI	National Wetlands Inventory
Recovery Act	<i>American Recovery and Reinvestment Act of 2009</i> , as amended
Stat.	United States Statutes at Large
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service

COVER SHEET

RESPONSIBLE AGENCY: U.S. Department of Energy (DOE)

TITLE: *Final Environmental Assessment: DOE's Proposed Financial Assistance to Dow Kokam MI, LLC to Manufacture Advanced Lithium Polymer Batteries for Hybrid and Electric Vehicles at Midland, Michigan*

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Abstract: DOE prepared this EA to evaluate the potential environmental impacts of providing two types of financial assistance to Dow Kokam MI, LLC to construct and operate the Midland Battery Park for manufacturing of advanced lithium polymer batteries for hybrid and electric vehicles: (1) a grant under Funding Opportunity Announcement DE-FOA 0000026, *Recovery Act – Electric Drive Vehicle Battery and Component Manufacturing Initiative* and (2) a loan pursuant to Section 136 of the *Energy Independence and Security Act of 2007* as an automotive component supplier promoting improved fuel economy in light-duty vehicles. As the name of the grant Funding Opportunity Announcement indicates, the grant would be made from funds appropriated by the *American Recovery and Reinvestment Act of 2009* (Recovery Act; Public Law 111-5, 123 Stat. 115). This EA analyzes the potential impacts of the proposed construction and operation of the battery manufacturing facility by Dow Kokam MI, LLC, the two proposed federal actions (a grant and a loan), and the alternatives to the proposed project.

The Midland Battery Park would be constructed on a 50-acre vacant site in Midland, Michigan, that is zoned industrial and surrounded by other industrial and commercial facilities. The new battery manufacturing facility would be about 770,000 square feet in size and would require a new 1- to 2-mile-long electric transmission line. DOE evaluated 15 resource areas in this EA and identified no significant adverse impacts for DOE's proposed actions, which would facilitate construction of the Midland Battery Park. With the following exceptions, impacts to the resource areas and issues examined would not occur or would be negligible.

- The proposed project site would be located in an area where soils were previously contaminated with dioxin and near areas with shallow groundwater contaminated with vinyl chloride and Freon 11. Concentrations of dioxin at the site are within acceptable limits for

industrial uses and due care requirements would be implemented during construction to minimize risks of exposure. Discharge permit requirements for the safe handling and treatment of contaminated groundwater would be implemented during temporary dewatering to excavate and install detention basins and underground utilities.

- Over nine acres of isolated non-jurisdictional wetlands would be filled to construct the facility. The state of Michigan determined that these wetlands are not regulated under Federal or State laws. Detention basins would be created to temporarily store on-site storm water runoff and replace the main function of these low value wetlands. DOE determined that grading and filling these wetlands would not cause significant adverse impacts.
- A new transmission line could be a risk to migratory birds and could impact nearby wetlands and sensitive species. However, the transmission line should be designed to avoid these wetlands and protected species and common design standards should be implemented to minimize risks to migratory birds.

Beneficial economic impacts would occur from increased employment opportunities and spending in the local economy. The use of batteries produced at this facility would increase the use of electric and hybrid vehicles, which would help reduce emissions of greenhouse gases from vehicles and reduce the nation's dependence on foreign oil.

Availability: This EA is available on DOE's National Energy Technology Laboratory web site at <http://www.netl.doe.gov/publications/others/nepa/ea.html>.

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SUMMARY

The U.S. Department of Energy proposes to provide up to two types of financial assistance to Dow Kokam MI, LLC for a manufacturing facility in Midland County, Michigan. The new facility would become the Midland Battery Park and would manufacture advanced lithium polymer batteries for hybrid and electric vehicles. The facility would have the capacity to manufacture 1.2 billion watt-hours of batteries annually, enough to power 60,000 fully electric and hybrid vehicles operating with an average 20-kilowatt-hour battery system.

For purposes of the *National Environmental Policy Act of 1969*, as amended (42 U.S.C. Section 4321 et seq.), DOE's proposed actions are to provide Dow Kokam MI, LLC with one or both of the following types of financial assistance: a grant under Funding Opportunity Announcement DE-FOA 0000026, *Recovery Act – Electric Drive Vehicle Battery and Component Manufacturing Initiative*, and a loan pursuant to Section 136 of the *Energy Independence and Security Act of 2007* as an automotive component supplier promoting improved fuel economy in light-duty vehicles. As the name of the grant Funding Opportunity Announcement indicates, the grant would be made from funds appropriated by the *American Recovery and Reinvestment Act of 2009* (Public Law 111-5, 123 Stat. 115). DOE will make separate decisions as to each type of financial assistance that Dow Kokam MI, LLC has sought from the Department after DOE has evaluated the potential environmental impacts of constructing and operating the Midland Battery Park.

The Midland Battery Park would be constructed on a 50-acre vacant site in Midland, Michigan. The facility would be about 770,000 square feet in size and would require a new 1- to 2-mile-long electric transmission line. Two route options for the transmission line are considered. At peak operations, about 900 people would be employed, with an annual payroll of \$34 million.

The proposed project site is in an area zoned for industrial use and is surrounded by existing heavy-industrial and commercial development. There would be no impacts to existing and future land uses, and the anticipated levels of noise and traffic during construction and operation of the facility would be negligible. The readily available local public water system, wastewater treatment system, landfill, and other public utilities have sufficient capacity to support this proposed project.

Air emissions during construction and operations would be a minor contribution to emissions in the area. Emissions of greenhouse gases from production of electricity and other energy required to operate the Midland Battery Park would be offset by the reduction of gasoline consumption by electric and hybrid-electric vehicles using batteries produced at the facility.

Construction of the Midland Battery Park would require grading and filling 9.45 acres of isolated, depressional wetlands. This environmental assessment includes a wetlands assessment, as required by DOE regulations for "Compliance with Floodplain and Wetland Environmental Review Requirements" (10 CFR Part 1022). The potential impacts on surface water flow and

sediment transport would be minimized by constructing detention basins to temporarily store storm water and other surface water runoff. The wetlands on the proposed site are not regulated under federal or state laws. In addition, the wetlands are surrounded by urban development, are more than 1.4 miles from the nearest river, have no connection to any other stream or surface water, and have minimal value for wildlife habitat and biodiversity conservation. For these reasons, DOE determined that grading and filling these wetlands would not cause significant adverse impacts.

Construction of detention basins and underground utilities would require temporary dewatering of excavations. Pumping of shallow groundwater would temporarily alter the hydraulic gradient in the area and may cause groundwater south of the project site, which is contaminated with vinyl chloride and Freon 11, to flow toward the site temporarily. Dow Kokam MI, LLC would be required to obtain a discharge permit from the Michigan Department of Environmental Quality and implement associated permit requirements for the safe handling and treatment of contaminated groundwater prior to pumping and discharging the water.

The proposed site is isolated from undisturbed, natural areas, and soils at the site have been disturbed in the past. Therefore, with the following exception, the project would have minimal impacts to biological and cultural resources. One optional route for the electric transmission line would span the Tittabawassee River and could be a hazard to waterfowl and other migratory birds. The location where this power line would cross the river has at least two small wetlands, and a State-protected plant species may occur there. If this route option is chosen, the transmission line would be designed to avoid wetlands and protected species and minimize the risk of collisions and electrocutions by migratory birds.

The City of Midland and the surrounding area would experience long-term beneficial economic impacts from increased employment opportunities and spending in the local economy. Because of the large number of unemployed people in Midland County and surrounding communities, DOE does not anticipate migration of workers into the area, or the associated impacts on housing availability or prices.

The Midland Battery Park would be constructed in an area where soils have been contaminated with dioxin from past manufacturing activities. Concentrations of dioxin in soils at the project site are within the allowable limits set by the Michigan Department of Environmental Quality for construction and operation of industrial facilities. Dow Kokam MI, LLC would implement due care requirements for industrial hygiene practices, air monitoring, and fugitive dust emissions, and to prevent the track-out of soil during construction, to minimize risks to workers and the public from exposure to dioxin. Accident rates at the facility would be similar to those of other battery manufacturing facilities, and the probability of a fatality during construction and operations is low.

The proposed project site is in an area with a higher proportion of its population below the poverty level than that of the surrounding areas or the state of Michigan. The proportion of the

population living near the project site that is classified as a minority is lower than that of Michigan. Adverse impacts of the proposed project would be negligible or would be mitigated and minimized to low levels. DOE, therefore, does not anticipate adverse impacts that would disproportionately affect communities with a high percentage of low-income or minority populations.

Under the No-Action Alternative, DOE would not provide a grant or loan to Dow Kokam MI, LLC, and DOE assumes for purposes of this environmental analysis that the Midland Battery Park would not be built. No impacts to the existing environment would occur, and beneficial impacts of the proposed project would not be realized.

1. INTRODUCTION

Dow Kokam MI, LLC has proposed to construct and operate the Midland Battery Park in Midland County, Michigan, to manufacture advanced lithium polymer batteries for hybrid and electric vehicles. In order to facilitate this expansion, the U.S. Department of Energy (DOE or the Department) is considering providing Dow Kokam MI, LLC with one or both of the following types of financial assistance: a grant under Funding Opportunity Announcement DE-FOA 0000026, *Recovery Act – Electric Drive Vehicle Battery and Component Manufacturing Initiative*, and a loan pursuant to Section 136 of the *Energy Independence and Security Act of 2007* (Energy Act; Public Law 110-140) as an automotive component supplier promoting improved fuel economy in light-duty vehicles. The grant would come from funds appropriated by the *American Recovery and Reinvestment Act of 2009* (Recovery Act; Public Law 111-5, 123 Stat. 115). Although DOE will make separate decisions as to each type of financial assistance, it is likely that the Department would decide to provide either both or neither of these types of assistance after evaluating the potential environmental impacts and other aspects of Dow Kokam MI, LLC's proposed project.

As part of the Recovery Act, DOE's National Energy Technology Laboratory, on behalf of the Office of Energy Efficiency and Renewable Energy's Vehicle Technologies Program, will provide up to \$2 billion in federal funding to competitively selected recipients for the construction of U.S. manufacturing plants that produce batteries and electric drive components. In addition, DOE's Advanced Technology Vehicle Manufacturing Incentive Program provides loans to eligible automotive manufacturers and component suppliers for projects that promote improved fuel economy in light-duty vehicles pursuant to Section 136 of the Energy Act. DOE's Office of Loan Programs is considering Dow Kokam for a loan under this program for the Midland Battery Park facility. The amount of the potential loan has not been determined and is a function of the federal government's assessment of many factors, including Dow Kokam's ability to repay the loan. The loan would be used for capital and engineering integration expenses associated with the proposed expansion.

This EA informs both DOE programs that might assist Dow Kokam MI, LLC's financing of the Midland Battery Park of the potential impacts to the environment. Assisting in financing the construction and operation of the Midland Battery Park would constitute a major federal action for which DOE must prepare an environmental assessment (EA) in accordance with NEPA, the Council on Environmental Quality NEPA regulations (40 CFR Parts 1500 to 1508), and DOE's NEPA implementing regulations (10 CFR Part 1021). Therefore, DOE prepared this *Environmental Assessment: DOE's Proposed Financial Assistance to Dow Kokam MI, LLC To Manufacture Advanced Lithium Polymer Batteries for Hybrid and Electric Vehicles at Midland, Michigan* to evaluate the potential environmental consequences of providing one or more types of financial assistance to Dow Kokam MI, LLC to facilitate construction of the Midland Battery Park. In compliance with these laws and regulations, this EA examines the potential environmental consequences of DOE's proposed actions (that is, providing a grant and/or a loan) and the No-Action Alternative (under which it is assumed that, as a consequence of DOE's

denial of financial assistance, Dow Kokam MI, LLC would not construct the Midland Battery Park). The purpose of this EA is to inform DOE and the public of the potential environmental consequences of the proposed project and alternatives.

This chapter explains the background, purpose and need, and the scope of DOE's proposed actions. Chapter 2 describes the DOE's proposed actions, Dow Kokam MI, LLC's proposed project, and the No-Action Alternative. Chapter 3 details the affected environment and potential environmental consequences of the proposed project and of the No-Action Alternative. Chapter 4 addresses cumulative impacts. Chapter 5 provides DOE's conclusions. Chapter 6 lists the references for this document. Appendix A contains the distribution list and Appendix B lists consultation information.

1.1 National Environmental Policy Act and Related Procedures

In accordance with its NEPA regulations, DOE must evaluate the potential environmental impacts of its proposed actions that may have a significant impact on the human environment, including decisions on whether to provide different types of financial assistance to states and private entities. In compliance with these regulations and DOE's procedures, this EA:

- Examines the potential environmental impacts of the proposed project and the No-Action Alternative;
- Identifies unavoidable adverse environmental impacts of the proposed project;
- Describes the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity; and
- Characterizes any irreversible and irretrievable commitments of resources that would be involved should DOE decide to implement its proposed actions.

These requirements must be met before DOE decides whether to proceed with any proposed action that could cause adverse impacts to human health or the environment. This EA fulfills DOE's obligations under NEPA and provides DOE with the information needed to make an informed decision about helping to finance Dow Kokam MI, LLC's construction and operation of the Midland Battery Park.

In addition, the proposed project this EA considers constitutes a wetlands action as defined in 10 CFR Part 1022 "Compliance with Floodplain and Wetland Environmental Review Requirements." To fully evaluate the potential impacts of the project on wetlands and methods that could be used to minimize those impacts, Chapter 3, Section 3.5 of this EA includes a wetlands assessment, as required by DOE regulations.

This EA evaluates the potential individual and cumulative impacts of the proposed project. No other action alternatives are analyzed. For purposes of comparison, this EA also evaluates the

impacts that would occur if DOE did not provide funding for the Midland Battery Park Project (the No-Action Alternative), under which DOE assumes that Dow Kokam MI, LLC would not proceed with construction and operation. This assumption may be incorrect—that is, Dow Kokam MI, LLC might proceed without federal assistance. However, this assumption allows DOE to compare the impacts of an alternative in which the project proceeds with one in which it does not.

1.2 Background

DOE's National Energy Technology Laboratory manages the research and development portfolio of the Vehicle Technologies Program for the Office of Energy Efficiency and Renewable Energy. A key objective of the Vehicle Technologies Program is accelerating the development and production of electric-drive vehicle systems in order to reduce the United States' consumption of petroleum. Another of the Program's goals is the development of production-ready batteries, power electronics, and electric machines that can be produced in volume economically so as to increase the use of electric drive vehicles.

Congress appropriated significant funding for the Vehicle Technologies Program in the Recovery Act in order to stimulate the economy and reduce unemployment in addition to furthering the existing objectives of the Vehicle Technologies Program. DOE solicited applications for this funding by issuing a competitive funding opportunity announcement (DE-FOA-0000026), *Recovery Act – Electric Drive Vehicle Battery and Component Manufacturing Initiative*, on March 19, 2009. The announcement invited applications in seven areas of interest:

- Area of Interest 1 – Projects that would build or increase production capacity and validate production capability of advanced automotive battery manufacturing plants in the United States.
- Area of Interest 2 – Projects that would build or increase production capacity and validate production capability of anode and cathode active materials, components (for example, separator, packaging material, electrolytes and salts), and processing equipment in domestic manufacturing plants.
- Area of Interest 3 – Projects that combine aspects of Area of Interest 1 and 2.
- Area of Interest 4 – Projects that would build or increase production capacity and validate capability of domestic recycling or refurbishment plants for lithium ion batteries.
- Area of Interest 5 – Projects that would build or increase production capacity and validate production capability of advanced automotive electric drive component in domestic manufacturing plants.

- Area of Interest 6 – Project that would build or increase production capacity and validate production capability of electric drive subcomponent suppliers in domestic manufacturing plants.
- Area of Interest 7 – Projects that combine aspects of Area of Interest 5 and 6.

The application period closed on May 19, 2009, and DOE received 119 proposals across the seven areas of interest. DOE selected 30 projects based on the evaluation criteria set forth in the funding opportunity announcement. DOE gave special consideration to projects that promoted the objectives of the Recovery Act—job preservation or creation and economic recovery—in an expeditious manner.

Dow Kokam MI, LLC’s Midland Battery Park Project in Midland County, Michigan, was one of the 30 projects DOE selected for funding. DOE’s Proposed Action under this funding opportunity is to provide \$161 million in financial assistance in a cost-sharing arrangement with the project proponent, Dow Kokam MI, LLC. The total cost of the proposed project is estimated at \$656 million.

DOE’s Advanced Technology Vehicle Manufacturing Incentive Program provides loans to eligible automotive manufacturers, and component suppliers for qualifying projects that promote improved fuel economy in light-duty vehicles. DOE’s Office of Loan Programs is considering Dow Kokam MI, LLC for a loan under this program for the construction and start up of the Midland Battery Park Project. DOE’s Proposed Action under its Advanced Technology Vehicle Manufacturing Incentive Program is to provide Dow Kokam MI, LLC with a loan for this new manufacturing facility.

1.3 Purpose and Need

The overall purpose and need for DOE action under the Vehicle Technologies Program is to accelerate the development and production of various electric-drive vehicle systems by building or increasing domestic manufacturing capacity for advanced automotive batteries, their components, recycling facilities, and electric-drive vehicle components, in addition to stimulating the United States’ economy. This work will enable market introduction of various electric vehicle technologies by lowering the cost of battery packs, batteries, and electric propulsion systems for electric-drive vehicles through high-volume manufacturing. DOE intends to further this purpose and satisfy this need by providing financial assistance under cost-sharing arrangements to this and the other 29 projects selected under this funding opportunity announcement.

This and the other selected projects are needed to reduce petroleum consumption in the United States by investing in alternative vehicle technologies. Successful commercialization of electric-drive vehicles would support the DOE’s Energy Strategic Goal of “protect[ing] our national and economic security by promoting a diverse supply and delivery of reliable, affordable, and environmentally sound energy.” This proposed project will also meaningfully assist in the

nation's economic recovery by creating manufacturing jobs in the United States in accordance with the objectives of the Recovery Act.

The purpose and need for DOE's Proposed Action under the Advanced Technology Vehicle Manufacturing Incentive Program is to provide loans to projects that achieve the goals of Section 136 of the Energy Act. These goals are to re-equip, expand, and establish manufacturing facilities in the United States that produce light-duty vehicles and components that meaningfully improve fuel economy.

1.4 Considerations Not Carried Forward for Action

The following resource areas or issues are commonly discussed in EAs for actions proposed by DOE. However, in an effort to streamline the NEPA process and enable timely expenditure of Recovery Act funds and provision of loans for fuel-efficiency projects, DOE did not analyze in detail those resource areas that it did not anticipate would be impacted by the proposed construction and operation of the Midland Battery Park. For the reasons discussed below, the Midland Battery Park Project is not expected to have any measurable effects on certain resources, and the description and analyses of these resources are not carried forward into Chapter 3.

- Soils and geology

The Midland Battery Park Project would involve construction and use of aboveground manufacturing facilities that would not affect geological structure or resources. Best management practices for the control of soil erosion would be used during construction of buildings, the power line, and other facilities to minimize impacts to soils and surface waters. Chapter 3, Section 3.10 examines the potential risks to health and safety from constructing a facility in an area with pre-existing dioxin-contaminated soil.

- Noise

Anticipated noise levels from construction of the Midland Battery Park at the nearest business (located about 420 feet from the project site) would be similar to existing noise levels from nearby traffic. Construction noise at the nearest residences (about 1,100 feet away) would be less than 60 decibels. This construction noise would be temporary and occur during daylight hours. Levels of noise during operations are estimated to be similar to background levels at the nearest business and residence (Golder Associates 2009, Section 3.10).

- Visual resources

The Midland Battery Park would be constructed in an area that is surrounded by commercial and heavy industrial development. The new facilities would appear similar to the surrounding developed areas. There are no parks, recreation areas, or other sensitive viewing areas within 0.5 mile (0.8 kilometer) of the proposed project site. A transmission line to the site would be

constructed in areas that already have transmission lines or other linear features and industrial developments.

- Utilities

The City of Midland reviewed the proposed project and concluded there is sufficient capacity to supply potable water and treat waste water from the project (Bush 2009). A recently expanded landfill has the capacity to accept solid waste from the project (City of Midland 2009a; Golder Associates 2009, Section 3.15.1). Chapter 3 evaluates the impacts of constructing an electric transmission line to the proposed project site.

1.5 Consultations and Public Comment-Response Process

1.5.1 CONSULTATIONS

DOE consulted with the Saginaw Indian Tribe of Michigan and the Michigan State Historic Preservation Office to comply with the review requirements of Section 106 of the *National Historic Preservation Act*, as amended (16 U.S.C. 470 et seq.). DOE also communicated with the U.S. Fish and Wildlife Service to meet the requirements in the *Endangered Species Act of 1973*, as amended (16 U.S.C. 1531 et seq.). Copies of correspondence between DOE and these agencies are in Appendix B.

Saginaw Indian Tribe of Michigan

On November 5, 2009, DOE sent a letter to the Saginaw Indian Tribe of Michigan requesting information on properties of traditional religious and cultural significance within the vicinity of the proposed Midland Battery Park. DOE also requested any comments or concerns the tribe might have on the potential for the proposed project to affect the properties. This information was requested to aid in the preparation of this EA and to meet the Department's obligations under Section 106 of the *National Historic Preservation Act* to take into account the effects of undertakings by federal agencies on historic properties. A representative of the Tribe responded by email on December 4, 2009, stating that the Tribe did not have information concerning the presence of any Indian traditional cultural properties, sacred sites, or other significant properties on the proposed project area.

Michigan State Historic Preservation Office

DOE sent a letter to the Michigan State Historic Preservation Office on November 5, 2009, requesting information on historic properties within and near the proposed site of the Midland Battery Park. The Michigan State Historic Preservation Officer responded on November 23, 2009, with a list of resources and points of contact for information on historic properties in Michigan. This letter also included a request that DOE prepare and submit an application for review of the project under Section 106 of the *National Historic Preservation Act*. DOE submitted an application and request for review of the Midland Battery Park Project on January

27, 2010. A letter dated February 25, 2010, from the State Historic Preservation Office supported DOE's determination that no historic properties would be affected by the proposed project. Copies of these letters are included in Appendix B.

U.S. Fish and Wildlife Service

On November 5, 2009, DOE sent a letter to the U.S. Fish and Wildlife Service (USFWS) stating that DOE has determined that no federally listed species occur in Midland County, Michigan, and that DOE concluded that the Midland Battery Park Project would have no effect on federally listed threatened or endangered species. This determination was based on information obtained from the USFWS's *Midwest Region Section 7(a) (2) Technical Assistance Website* (USFWS 2009). In its letter, DOE requested any comments the USFWS had on the Department's conclusion that the Project would not affect federally listed species. At the time of completion of this EA, DOE had not received a response. Based on the conclusion that construction and operation of the Midland Battery Park would not affect listed species, DOE has fulfilled its obligations under Section 7 of the *Endangered Species Act*.

1.5.2 COMMENT-RESPONSE PROCESS

DOE issued the Draft EA for comment on January 15, 2010, and advertised its release in the *Midland Daily News* on January 15, 16, and 17. In addition, the Department sent a copy of the Draft EA for public review to the Grace A. Dow Memorial Library in Midland, Michigan. The Department established a 30-day public comment period that began January 15 and ended February 15, 2010. The Department announced it would accept comments by mail, email, or fax. DOE received comment letters from the U.S. Environmental Protection Agency (EPA) and the Southeast Michigan Council of Governments. These comments and the Department's responses, as necessary, are summarized below.

U.S. Environmental Protection Agency, Region 5
Kenneth A. Westlake, Chief
NEPA Implementation Section
Office of Enforcement and Compliance Assurance

Comments: Soil and Air Impacts

1. Based on the reported concentrations of dioxin in the soil at the site, the proposed project does not appear to pose an unacceptable onsite risk from exposure to dioxin-contaminated soils.
2. There are land uses near the project site, such as a day care facility and restaurants, which are outside of the typical commercial/industrial exposure levels scenario. Stipulations are recommended for inclusion in State construction permits to protect these facilities.

Response: Section 2.14 of this EA has been updated to describe the location of the day care facility and restaurants, including the mitigation measures that could be included in construction permits to minimize the risk of exposure to dioxin-contaminated soil at those facilities.

Comment: Ground- and Surface Waters Direct, Indirect, and Cumulative Impacts

1. Excavation of storm water detention basins likely would change groundwater flow conditions and may affect existing groundwater contamination. It may be necessary to modify existing groundwater monitoring systems to ensure that changes to the local hydrology do not exacerbate the existing conditions.
2. It is not clear in the text of the EA that levels of dioxin and other pollutants in the floodplain of the Tittabawassee River along a portion of one of the proposed transmission line routes might be significantly higher than those encountered in the City of Midland. Appropriate health and safety procedures and restrictions on soil relocation and tracking out will need to be followed during construction activities in that floodplain.

Response: Section 2.7 of this EA has been updated to describe the possibility of a change in groundwater flow resulting from the excavation of detention basins, including the monitoring activities that might be required. Further, Section 2.14 was updated to describe the elevated concentrations of dioxin in river sediments and floodplain soils that could occur along the transmission line route. Section 2.14.2.1.1 describes the precautions that might be required to minimize exposure to, and the spread of, dioxin during installation of the power line.

**Michigan Single Point of Contact
Southeast Michigan Council of Governments**

Comment: Acknowledged receipt of the EA and stated that any comments on the Midland Battery Park Project would be sent approximately one month after the close of the comment period.

2. DOE PROPOSED ACTIONS AND ALTERNATIVES

This chapter describes DOE's proposed actions, Dow Kokam MI, LLC's proposed project (Section 2.1), the No-Action Alternative (Section 2.2), and the bases for not considering other alternatives (Section 2.3).

DOE's Proposed Actions

DOE's Proposed Action under the Vehicle Technologies Program is to provide a grant to partially fund expanded manufacturing of advanced lead-acid batteries for the Dow Kokam MI, LLC proposed project in Michigan. DOE would award a Recovery Act grant to provide \$161 million in financial assistance in a cost-sharing arrangement with Dow Kokam to facilitate construction and operation of the Midland Battery Park. DOE's Proposed Action under its Advanced Technology Vehicle Manufacturing Incentive Program is to provide Dow Kokam MI, LLC with a loan for the Midland Battery Park Project.

2.1 Dow Kokam MI, LLC's Proposed Midland Battery Park Project

The Midland Battery Park would manufacture advanced lithium polymer batteries for hybrid and electric vehicles. The facility would have the capacity to manufacture 1.2 billion watt-hours of batteries annually, enough to power 60,000 fully electric and hybrid vehicles operating with an average 20-kilowatt-hour battery system.

2.1.1 SITE AND FACILITY DESCRIPTION

Dow Kokam MI, LLC has selected a site for the Midland Battery Park at 2900 Saginaw Road, within the city limits of Midland in Midland County Michigan (Figure 2-1). The proposed project site is owned by The Dow Chemical Company (a partner in Dow Kokam LLC, the parent company to Dow Kokam MI, LLC) and is located in a State-designated renaissance zone, providing special tax and economic incentives for development.

With the exception of minor roads bisecting the property, the project site is undeveloped and surrounded on the west and south by a 1,900-acre (7.7-square-kilometer) industrial complex, also owned by The Dow Chemical Company. There are vacant lands, a child-care facility, and an office complex to the north of the site. Immediately to the east are restaurants, a storm water detention basin, and a distributor of industrial, medical, and other gases and related equipment.

The proposed new facility would be about 770,000 square feet (71,500 square meters) and include two manufacturing areas, each approximately 302,000 square feet (28,100 square meters), an 89,000-square-foot (8,270-square-meter) assembly area, and a small office space (Figure 2-2). Support facilities would include lighting; parking; a fire protection system; storm water ponds; and utility lines for wastewater disposal, natural gas, power, and communications.

2.1.1.1 Water

The proposed project would require approximately 30,000 gallons (114,000 liters) of water per day for manufacturing processes, fire suppression, use by employees, and other purposes. The City of Midland Water Department would provide the water, with Lake Huron as the original source. Water would be delivered via connection to an existing 20-inch (0.51-meter) water main bordering the south side of the project site. The City’s drinking water treatment plant has a surplus capacity of 8 million gallons (30 million gallons) per day (Bush 2009).

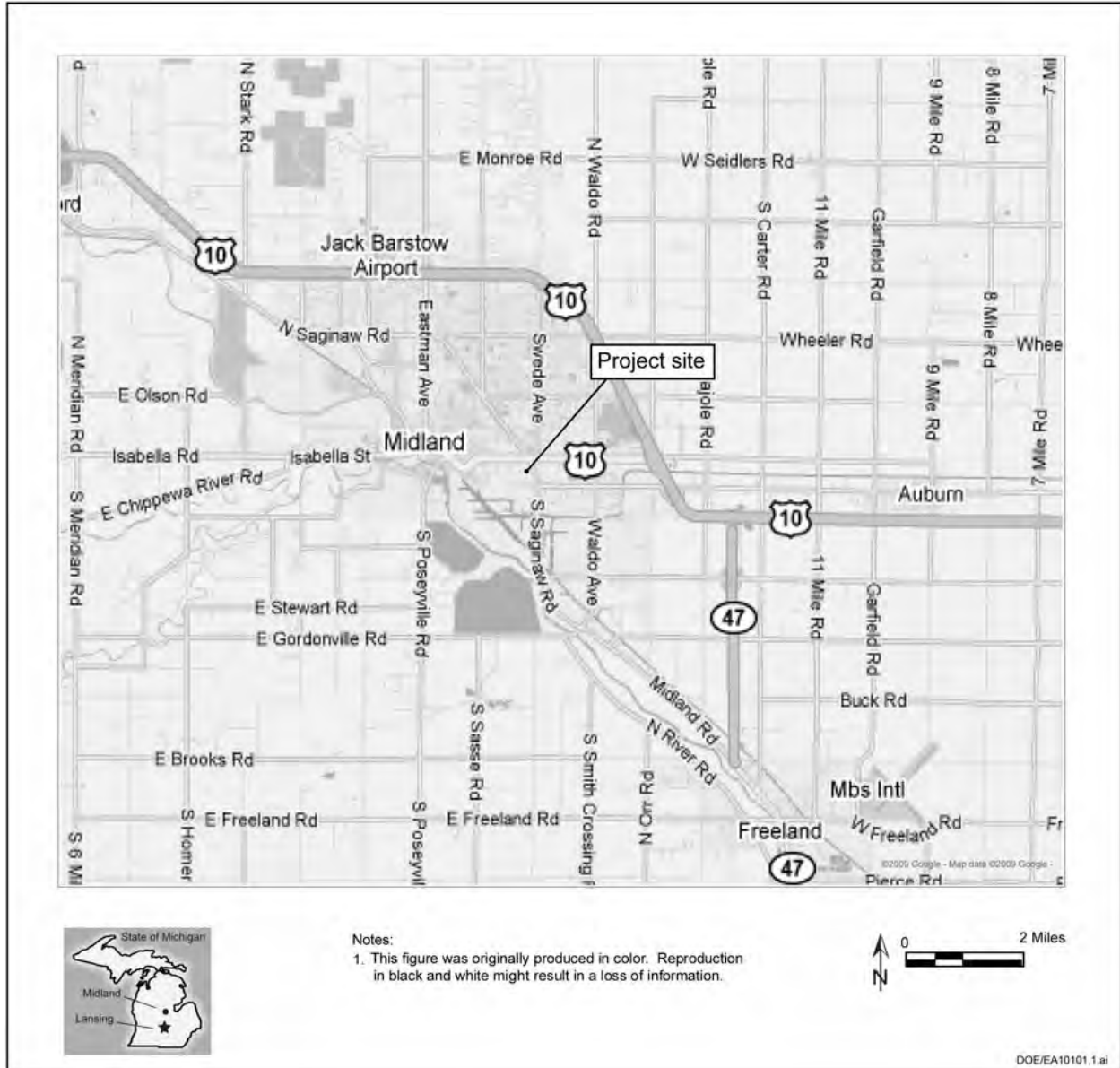


Figure 2-1. Location of the Midland Battery Park.

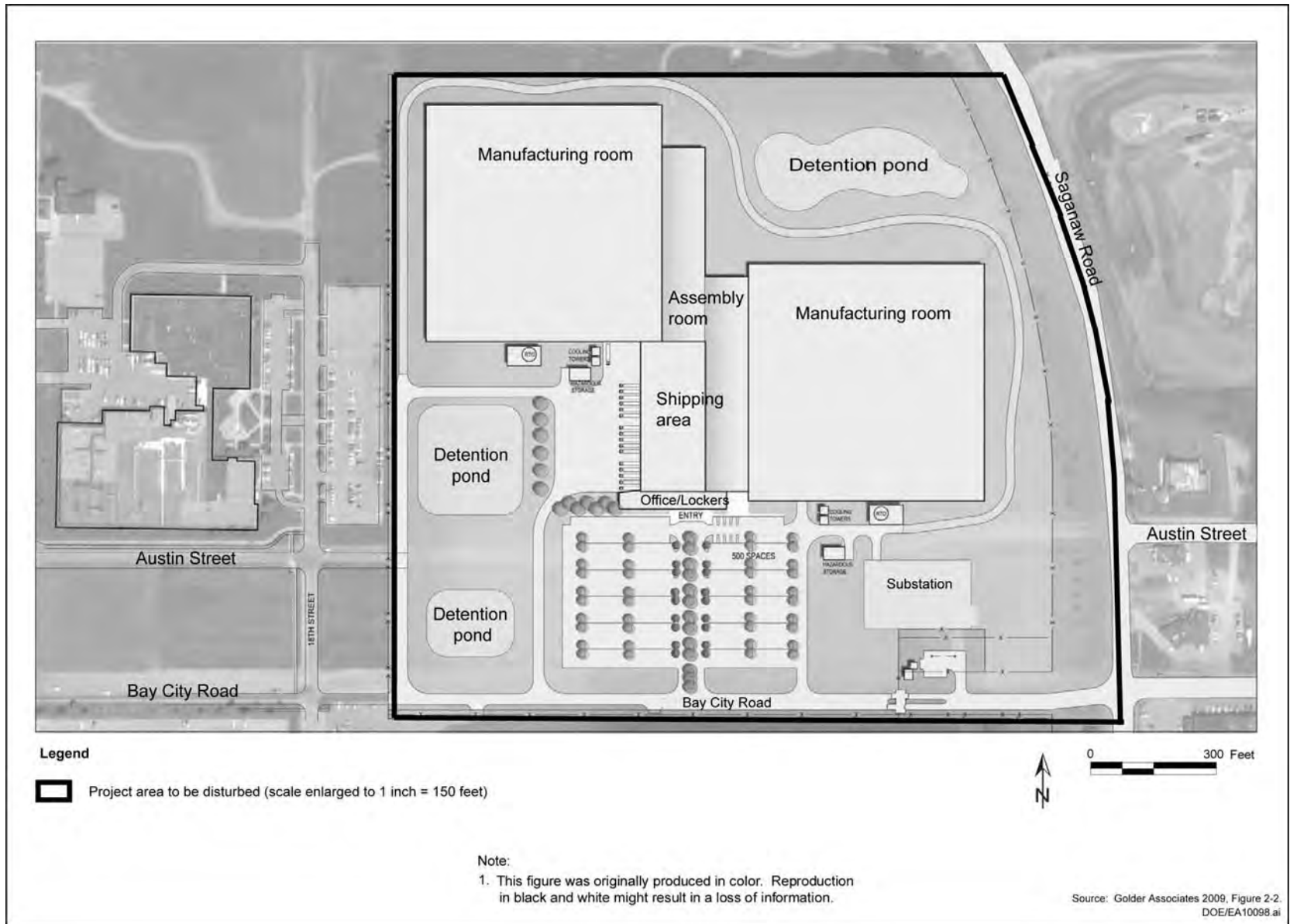


Figure 2-2. Conceptual layout of facilities at the Midland Battery Park.

2.1.1.2 Sewage

Approximately 30,000 gallons (114,000 liters) per day of wastewater would be piped to the City of Midland wastewater treatment plant via a sanitary sewer service connection near the southeastern corner of the project site. The City of Midland has sufficient capacity to handle this volume of wastewater (Bush 2009). The project would not produce industrial process water that would require pretreatment prior to disposal.

2.1.1.3 Electricity

Operation of the facility would require up to 45 megawatt electrical power capacity. Dow Kokam MI, LLC is considering two options for delivering this power via a new transmission line (Figure 2-3).

The first option involves Midland Cogeneration Venture Limited Partnership (MCV), a private company. MCV would generate power for the project with its gas turbines, using natural gas Dow Kokam MI, LLC would purchase. If this option was chosen, Dow Kokam MI, LLC would construct and own 1.3 miles (2.1 kilometers) of transmission line from an existing substation southwest of the project site on property owned by Dow Chemical Company (Figure 2-3). This alignment would require all new construction. The new transmission line would be located entirely within existing industrially developed rights-of-way on property also owned by Dow Chemical Company. The new transmission line route would extend in a northeasterly direction from the existing substation across a series of rail lines; extend to the east across the Dow Chemical Company campus, and finally north following 21st Street, entering the southeast corner of the project site. Dow Kokam MI, LLC would construct a new, 0.5- to 1.0-acre (2,000- to 4,000-square-meter) substation on the southeast corner of the site.

The second option is for Dow Kokam MI, LLC to purchase power from Consumers Energy (CE), a public utility. If this option was chosen, CE would use an existing 2.7-mile (4.4-kilometer) corridor where a de-energized 138-kilovolt transmission line already exists from an existing substation to a point south of the Tittabawassee River. CE would construct, own, and operate approximately 2 miles (3.2 kilometers) of new transmission line to a new 0.5- to 1.0-acre (2,000- to 4,000-square-meter), 45 Mw substation on the northeastern corner of the project site. The 2-mile route would extend to the northeast across the Tittabawassee River, then north following South Saginaw Road to the project site (Figure 2-3).

2.1.1.4 Natural Gas

The proposed project is expected to use 312 million British thermal units per year of natural gas in addition to that used to meet electrical requirements. CE would provide natural gas to the project site. If MCV was chosen to provide electricity, Dow Kokam MI, LLC would purchase the natural gas that MCV used to generate electricity, and all power generated for the facility would be from natural gas.

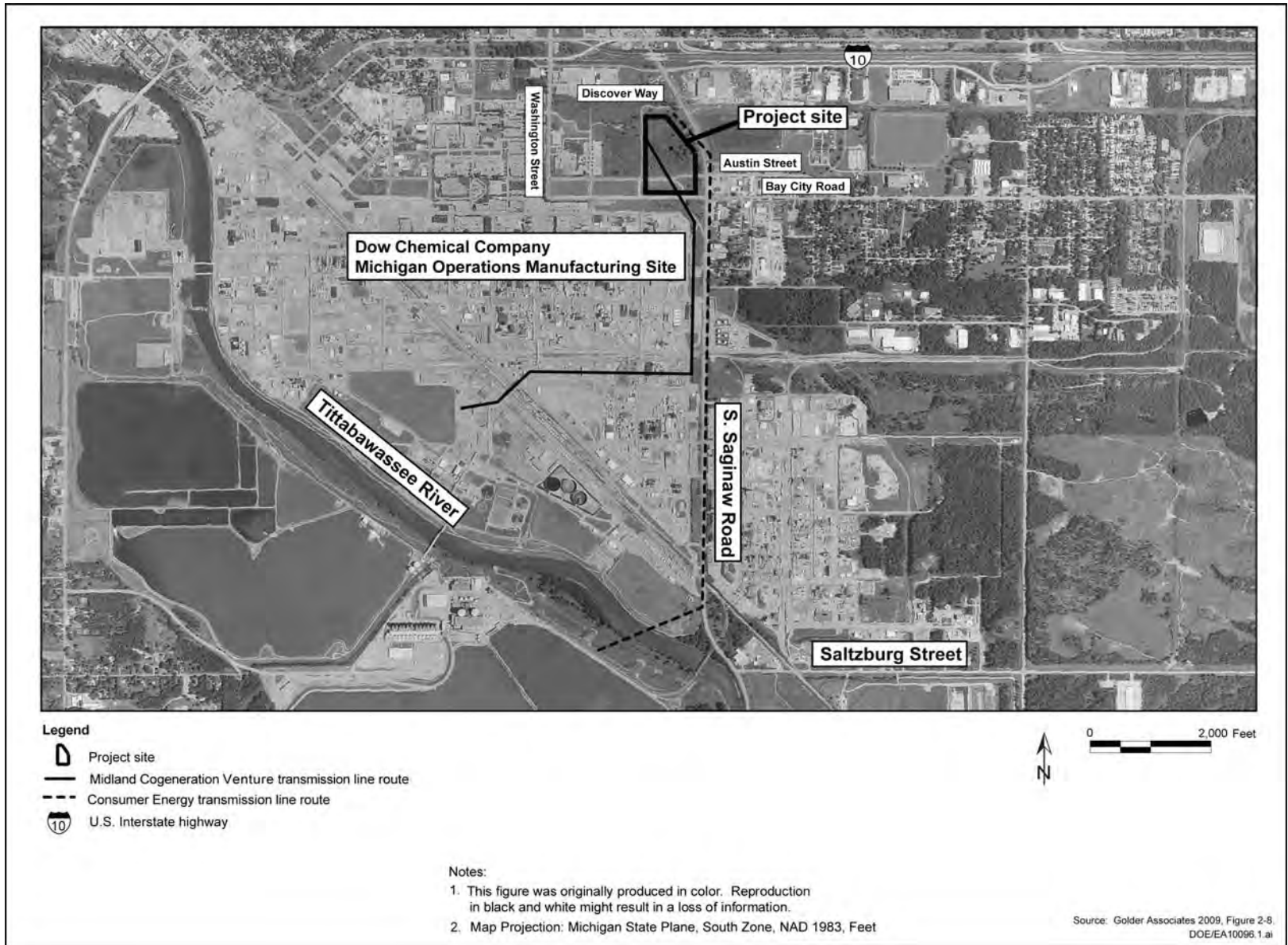


Figure 2-3. Route options for transmission lines to the Midland Battery Park.

2.1.2 CONSTRUCTION

Construction of the Midland Battery Park would require disturbing about 50 acres (0.2 square kilometer). This includes land for construction of the buildings, improvement of an existing access road on the project site, and onsite installation of a substation and all utility lines. Dow Kokam MI, LLC would conduct a geotechnical investigation to provide the data required to design the facility foundation.

To expedite the production process, construction, installation, and commissioning of equipment would be completed for the first manufacturing area in about 21 months. The second manufacturing area would be completed about 10 months later.

A peak workforce of about 100 people would be required for a few months during construction, with fewer workers throughout the remainder of the project. Up to 400 total personnel would be involved in the construction of the facility and installation of equipment.

2.1.3 OPERATIONS

When completed and in maximum operation, the proposed project would require a workforce of 300 people per shift. The maximum day shift is expected to be 329 workers, including management and administration. Night shifts would require fewer than 300 personnel, for an overall workforce of less than 900 people. The manufacturing process at full operations would operate in three shifts, 24 hours a day, 5.5 days a week. It is anticipated that the facility would open with one day shift in one manufacturing area. A second day shift would start in the other manufacturing area in response to market demands. Additional hiring and more shifts would occur to meet market demands as needed, up to the maximum of three shifts.

Based on an anticipated employment of 885 people, annual payroll is expected to be \$34 million dollars at full build-out. This includes approximately 34 administrative, human resource, management, and sales personnel; 592 cell manufacturing personnel, most of which would be assembly line, unskilled labor positions; and 243 battery pack assembly staff, of which 208 are also expected to be unskilled assembly line workers.

The patented lithium polymer battery manufacturing process would occur in four steps: (1) electrode manufacturing, (2) cell assembly and filling, (3) formation and grading, and (4) battery pack assembly. DOE considered the overall inputs and outputs of this patented manufacturing process to evaluate the potential impacts of the proposed project, as described in this EA.

2.2 No-Action Alternative

Under the No-Action Alternative, DOE would not provide a grant or loan to Dow Kokam MI, LLC for the proposed project. As a result, construction of the Midland Battery Park would be delayed, while Dow Kokam MI, LLC looked for other funding sources, or abandoned if other funding sources could not be obtained. Furthermore, acceleration of the development and

production of various electric-drive vehicle systems would not occur or would be delayed. DOE's ability to achieve its objectives under the Vehicle Technologies Program associated with the Recovery Act, as well as under the Advanced Technology Vehicle Manufacturing Incentive Program associated with the Energy Act, would be impaired.

Although this project might proceed if DOE decided not to provide any form of financial assistance, DOE assumes for purposes of this EA the project would not precede without this assistance. If the project did proceed without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's proposed actions (that is, providing assistance that allows the project to proceed). In order to allow a comparison between the potential impacts of a project as implemented and the impacts of not proceeding with a project, DOE assumes that if it decided to withhold assistance from this project, construction and operation of the Midland Battery Park would not proceed.

2.3 Alternative Actions

DOE's alternatives to its Proposed Action for the Vehicle Technologies Program consist of the 45 technically acceptable applications received in response to the funding opportunity announcement, *Recovery Act – Electric Drive Vehicle Battery and Component Manufacturing Initiative*. Prior to selection, DOE made preliminary determinations regarding the level of review required by NEPA based on potentially significant impacts identified in reviews of acceptable applications. DOE conducted these preliminary environmental reviews pursuant to 10 CFR 1021.216 and a variance to certain requirements of that regulation grant by the Department's General Counsel (74 FR 30558, June 26, 2009). These preliminary NEPA determinations and environmental reviews were provided to the selecting official, who considered them during the selection process.

Because DOE's Proposed Action under the Vehicles Technologies Program is limited to providing financial assistance in cost-sharing arrangements to projects submitted by applicants in response to a competitive funding opportunity, DOE's decision is limited to either accepting or rejecting the project as proposed by the proponent, including its proposed technology and selected sites. DOE's consideration of reasonable alternatives is therefore limited to the technically acceptable applications and a No-Action Alternative for each selected project.

DOE's alternatives to its Proposed Action for the Advanced Technology Vehicle Manufacturing Incentive Program consist of denying Dow Kokam MI, LLC a loan under this program and using the money for loans to subsequent applicants. This alternative is equivalent to the No-Action Alternative described above.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the current conditions at and near the project site that might be affected by Dow Kokam MI, LLC's proposed project and the environmental consequences of the proposed project and No-Action Alternative.

3.1 Land Use

3.1.1 AFFECTED ENVIRONMENT

The proposed site of the Midland Battery Park is undeveloped, and the current land use is classified as "vacant" in the *City of Midland Master Plan* (City of Midland 2007). Land uses adjacent to the project site include vacant land (to the north, west, and east) and land used for industrial purposes (to the south and west), office services (to the north), retail commercial purposes (to the northeast, east, and southeast), and public/semipublic purposes (to the east). The property is surrounded on the west and south by a 1,900-acre (7.7-square-kilometer) industrial complex owned by Dow Chemical Company (City of Midland 2007; Golder Associates 2009, Section 3.1). The closest residences to the project site are near the intersection of South Saginaw and Bay City roads, approximately 1,120 feet (340 meters) southeast of the site (Golder Associates 2009, Section 3.10.3.2).

The City of Midland State of Michigan Zoning Map shows that the majority of the project site is zoned for heavy-industrial use (City of Midland 2008). This zoning map shows the southern portion of the site, between Austin Street and Bay City Road, as zoned for light-industrial use, and a small area on the eastern border of the site adjacent to South Saginaw Road as zoned for regional commerce. The Midland City Council approved a zoning change for these parcels to "Industrial B" (heavy industrial) on August 24, 2009 (Midland City Council 2009). The entire proposed project site is now zoned for heavy-industrial use. The *City of Midland Master Plan* identifies future land use for the entire site as heavy-industrial (City of Midland 2007, Map 5.1).

There are no areas classified as prime farmland on or near the project site (Midland County Planning Commission 2006, Map 4).

The MCV transmission line option would traverse property Dow Chemical Company owns that is zoned and used for industrial purposes. The CE transmission line option also would cross over land zoned for heavy-industrial use (City of Midland 2008). Existing land use along the CE transmission line route adjacent to South Saginaw Road from the Tittabawassee River to the project site generally is zoned for industrial use to the west and regional commercial to the east. There are a few parcels zoned for single-family residential use east of the proposed route (along Corning Lane), but they are separated from South Saginaw Road by an industrial-use parcel. Approximately 0.4 mile of the proposed alignment, between South Saginaw Road and the point where the line would tie in with an existing transmission system, would span the Tittabawassee

River and undeveloped land zoned for commercial uses, including a cultivated field (Golder Associates 2009, Section 3.1.3).

3.1.2 ENVIRONMENTAL CONSEQUENCES

3.1.2.1 Proposed Project

The proposed project would result in an irreversible commitment and conversion of about 50 acres (0.2 square kilometer) of vacant land to industrial manufacturing.

Construction and operation of the Midland Battery Park would be compatible with existing zoning classifications for the project site. Because the *City of Midland Master Plan* identifies the planned future use of the entire site as heavy-industrial, the proposed project would not conflict with current or future land use plans for the project site.

Most lands surrounding the project site are used for industrial purposes, including the 1,900-acre (7.7-square-kilometer) Dow Chemical Company facility. There are offices and commercial businesses to the north and east of the site, and a small residential area less than 0.25 mile (0.40 kilometer) to the southeast. Construction and operation of the Midland Battery Park would result in a relatively small expansion of the existing industrial operations on the Dow property and would be similar to, and compatible with, the existing uses of the surrounding lands. Thus, the project would have no indirect adverse impacts on the use of surrounding land.

Construction of a power line along both transmission line routes considered as options for the proposed project would be compatible with ongoing uses of land along the routes. The MCV transmission line would be entirely on property Dow Chemical Company owns and used for industrial purposes. The CE line would bisect vacant and agricultural land south of the Tittabawassee River, cross the river, and then follow South Saginaw Road, where there are industrial and commercial properties. Construction for all other utilities would occur on the project site.

In summary, construction and operation of the Midland Battery Park, including installation of a power line and other utilities, would not conflict with current and future land use plans for the project site, and would be similar to and compatible with ongoing uses of surrounding properties. Thus, the proposed project would not adversely affect ongoing and future uses of the project site and would have little or no adverse impact on surrounding land uses.

3.1.2.2 No-Action Alternative

Under the No-Action Alternative, DOE would not provide funding to Dow Kokam MI, LLC and the Midland Battery Park would not be constructed. The project site would remain vacant and would not affect current or future use of the project site or surrounding lands.

3.2 Air Quality

3.2.1 AFFECTED ENVIRONMENT

The proposed project site is in an area currently in attainment with all criteria air pollutants for which National Ambient Air Quality Standards have been established (MDEQ 2009a). During 2006 through 2008, pollutant concentrations at the nearest air quality monitoring station to Midland were well below the air quality standards, with the exception of ozone (Table 3-1). Average 8-hour concentrations of ozone were at or slightly above the 2008 standard of 0.075 part per million during 2006 through 2008. The 1997 ozone standard, 0.080 part per million, remains in place for implementation purposes as the EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.

Table 3-1. Ambient air quality monitoring data for criteria pollutants during 2006 to 2008 for the nearest air quality monitoring station to Midland, Michigan.

Pollutant	Monitor Location	Averaging Period	NAAQS ^a	Annual Value		
				2006	2007	2008
Carbon monoxide (ppm)	Grand Rapids	1-hour	35	2.7	1.8	2.0
		8-hour	9	2.0	1.3	1.4
Lead ($\mu\text{g}/\text{m}^3$)	Flint (2006 – 2007) Dearborn (2008)	Quarterly	0.15	0.07	0.01	0.05
Nitrogen dioxide (ppm)	E.7 Mile	Annual	0.053	0.0139	0.0135	0.0127
PM ₁₀ ($\mu\text{g}/\text{m}^3$)	Flint (2006 – 2007) Grand Rapids (2008)	24-hour	150	15.4	13.7	13.1
PM _{2.5} ($\mu\text{g}/\text{m}^3$)	Bay City	Annual	15	10.2	10.5	8.9
		24-hour	35	27.9	25.2	23.6
Ozone (ppm)	Flint	8 hour	0.075	0.075	0.078	0.074
Sulfur dioxides (ppm)	Flint (2006 – 2007)	Annual	0.03	0.002	0.002	0.001
	Grand Rapids (2008)	24-hour	0.14	NA	NA	NA

Sources: MDEQ 2007, 2009a, 2009b.

a. NAAQS in effect in 2008.

NA = data not available.

NAAQS = National Ambient Air Quality Standards.

ppm = parts per million.

$\mu\text{g}/\text{m}^3$ = micrograms per cubic meter.

3.2.2 ENVIRONMENTAL CONSEQUENCES

3.2.2.1 Proposed Project

3.2.2.1.1 Regulated Air Pollutants

Particulate matter would be emitted during ground clearing, grading, and other construction activities, and diesel exhaust and other air pollutants would be emitted from bulldozers, land graders, and other construction vehicles. These emissions would be temporary and occur primarily during the approximately 3-month period when most earthwork and building pad

construction would occur. Best management practices, such as maintenance of equipment, spraying water on dry soil, and washing vehicles to remove excess soil before they leave the project site, would be employed to reduce emissions of particulate matter to minor levels.

Operation of the project would result in emissions of regulated air pollutants from the following sources (Golder Associates 2009, Section 3.3.2.2):

- Use of solvents and other chemicals for electrode processing and cell assembly;
- Natural gas for the startup of the regenerative thermal oxidizer. When the oxidizer reaches a specified temperature, the gasses vented to it would sustain proper operation;
- An extraction system vent for the rolling/slitting/punching room. This vent would exhaust internally at 35,000 cubic feet (990 cubic meters) per minute; however, it is included in the estimate of emissions of particulate matter for the project;
- A collector to control fugitive emissions associated with the pneumatic transfer of anode and cathode powders;
- Seven bulk-liquid storage tanks for raw materials, which result in negligible emissions of volatile organic compounds;
- Three cooling towers with a peak circulation of 4,500 gallons (17,000 liters) of water per minute; and
- Onsite truck traffic.

The project would employ a sophisticated regenerative thermal oxidizer system, which would control 98 percent of potential emissions of volatile organic compounds. The sources described above would result in the following estimated potential emissions of criteria pollutants from the project (Golder Associates 2009, p. 3.3-5):

- Volatile organic compounds – 75.4 tons (68.4 metric tons) per year
- Particulate matter – 27.2 tons (24.7 metric tons) per year
- Nitrogen oxides – 0.02 ton (0.02 metric ton) per year
- Carbon monoxide – 0.01 ton (0.01 metric ton) per year

Emissions of sulfur dioxide and lead would be negligible. Total emissions of hazardous air pollutants regulated under the *Clean Air Act* (40 CFR Part 70) would be less than 0.5 ton (0.45 metric ton) per year, which is below the major source threshold of 10 tons per year (9 metric ton) for a single hazardous air pollutant and 25 tons per year (23 metric tons) of total hazardous air pollutants, as established by the EPA.

Based on these estimated emissions rates and the associated commitment to operate the regenerative thermal oxidizer system and other emissions controls, the project would be classified as a synthetic minor source. A synthetic minor source is one that maintains minor source status because emissions of criteria pollutants are maintained at less than 100 tons (91 metric tons) per year explicitly due to emissions controls or operational limitations. The only emissions category that would exceed 100 tons per year, if left uncontrolled, is volatile organic compounds. The regenerative thermal oxidizer systems would maintain those emissions below the annual threshold of 100 tons for classification as a major source.

In accordance with Rule 201 of the Michigan Administrative Rule for Air Pollution Control, the project would require an air quality permit from the Michigan Department of Environmental Quality (MDEQ). The permit would be required because emissions of volatile organic compounds and particulate matter would be above the permit threshold levels of 40 and 15 tons (36 and 14 metric tons) per year, respectively, as specified in Michigan regulations. As a non-major source of both criteria and hazardous air pollutants, dispersion modeling would not be required, as emissions from the facility would not cause or contribute to a violation of ambient air quality standards.

3.2.2.1.2 Greenhouse Gas Emissions

The environmental report included calculations the following estimates of emissions of greenhouse gases from the project and decreases in greenhouse gas emissions resulting from the use of batteries from the Midland Battery Park Project in electric and hybrid vehicles (Golder Associates 2009, Section 3.3.2.2). Emissions of greenhouse gases during construction would be from exhaust of trucks, backhoes, graders, and other construction equipment, and would be temporary and minor.

A total of about 236,000 tons (214,000 metric tons) of carbon dioxide per year would be emitted for operation of the Midland Battery Park. Most of these emissions would occur during generation of the approximately 300-million kilowatt-hours of electricity required for full operation of the plant. Greenhouse gases would also be emitted during operation of the regenerative thermal oxidizer systems, which would require about 310 million British thermal units per year of heat energy to be provided by natural gas.

The above estimate was based on a weighted carbon dioxide emission factor of 1,563 pounds (709 kilograms) of carbon dioxide per megawatt-hour of electricity generated in Michigan, and selected emissions factors for carbon dioxide emissions from natural gas firing (Golder Associates 2009, p. 3.3-6). This analysis did not include emissions from vehicles driven by project employees while commuting to and from work, as most of those workers likely would be driving to other jobs if not employed on this project. The analysis also did not consider potential reductions in greenhouse gases in the future as generators of electricity in the region switch to renewable and other sources of energy that emit fewer greenhouse gases.

The Midland Battery Park would produce enough batteries for 60,000 electric and hybrid-electric vehicles per year. Driving these 60,000 vehicles in place of non-electric, non-hybrid vehicles has the potential to reduce gasoline consumption by about 18.3 million gallons (69 million liters) per year. Using the EPA Greenhouse Gas Equivalencies calculator (EPA 2009), DOE estimated this would reduce greenhouse gas emissions by about 178,000 tons (161 metric tons) per year. Thus, after the second year of full operations, driving 120,000 electric and hybrid-electric vehicles using batteries produced at the Midland Battery Park could reduce greenhouse gas emissions by 356,000 tons (323,000 metric tons) per year, which is more than the annual emissions of 236,000 tons (214,000 metric tons) of greenhouse gases from operation of the facility. This calculation was based on the following information and assumptions (Golder Associates 2009, p. 3.3-6).

- About 47 percent of the new-vehicle sales in 2007 were passenger vehicles and 53 percent were light-duty trucks;
- Current corporate average fuel economy requirements are 27.5 and 22.2 miles per gallon (11.7 and 9.4 kilometers per liter) for passenger cars and light-duty trucks, respectively;
- Current average fuel mileage for electric-hybrid vehicles is 34 and 23 miles per gallon (14.5 and 9.8 kilometers per liter) for cars and light-duty trucks, respectively;
- The project would produce batteries for 60,000 vehicles per year, with an assumed distribution of 50-percent electric vehicles and 50-percent hybrid-electric vehicles;
- The assumed average distance all vehicles are driven is 15,000 miles (24,000 kilometers) a year;
- The batteries produced for the electric vehicles would displace approximately 16.3 million gallons (61.7 million liters) of gasoline per year;
- The batteries used for hybrid cars would displace 1.9 million gallons (71.9 million liters) of gasoline per year.

Impacts on air quality from construction of an electric transmission line along either route option would be similar to or less than those described for the construction of buildings and other facilities. Operation of the transmission lines would not affect air quality or cause the emissions of additional greenhouse gases.

In summary, emissions of air pollutants during construction of the Midland Battery Park would be minor and temporary. Operation of the facility would not cause significant impacts to air quality because facility emissions would be a minor contribution to existing emissions in the area and would not cause or contribute to a violation of ambient air quality standards or otherwise affect the attainment status for Midland County. Emissions of greenhouse gases from the production of electricity and other energy required to operate the Midland Battery Park would be

offset by the reduction of gasoline consumption by electric and hybrid-electric vehicles using batteries produced at the facility.

3.2.2.2 No-Action Alternative

Under the No-Action Alternative, DOE would not provide funding to Dow Kokam MI, LLC and the Midland Battery Park would not be constructed. Air quality conditions in the Midland area would not be affected. In addition, the potential beneficial impact of long-term reduction of carbon dioxide gases nationwide would not be realized.

3.3 Groundwater

3.3.1 AFFECTED ENVIRONMENT

Midland County is underlain by glacial deposits from the Wisconsin-age glacial ice retreats. Within those deposits, groundwater may occur under the project site in surface sands, lakebed clay and glacial till deposits, and in a regional aquifer of glacial outwash sediment (Golder Associates 2009, Section 3.2.1.2). None of these aquifers is used as water sources in the area and will not be used as a source of water for the Midland Battery Park. For this reason and because of their depth, the lakebed clay and glacial till deposits and the regional aquifer would not be affected by the project and this EA does not address them further.

Surface sand deposits are 7 to 9 feet deep across the project site, with water levels 3 to 6 feet below the ground surface. Groundwater in this area generally flows to the south toward the Tittabawassee River, but the flow is affected locally by the presence of excavations or natural depressions on the project site, and by storm water sewers along the southern and southwestern sides of the site. Water collects seasonally in the depressions, the bottoms of which are below the groundwater level, and then flows radially into the surface sands. Based on groundwater levels measured in wells on and south of the site, the shallow groundwater in that area appears to flow toward the storm sewers rather than directly south toward the river (Golder Associates 2009, Section 3.4.1.2).

Shallow groundwater south of the project site has been contaminated with vinyl chloride and Freon 11 from past industrial activities in the area. Surface soils in the area also have been contaminated by atmospheric deposition of dioxin. Dioxin has a high affinity to attach to soil particles and is not very soluble in water. It is therefore very unlikely the shallow groundwater at the project site contains harmful levels of dioxin; therefore, this section does not discuss dioxin further. Section 3.10 discusses the health and safety risks to workers and the public from exposure to dioxin-contaminated soil during construction.

The plume of vinyl chloride is south of the southwestern corner of the project site boundary, across Bay City Road. Concentrations of vinyl chloride in water samples collected in this area in 2008 were as high as 140 micrograms per liter, and total concentrations of volatile organic compounds were as high as 340 micrograms per cubic liter. These concentrations exceed the

federal drinking water standard of 2 micrograms per liter for vinyl chloride. Water samples taken in 2006 from wells just north of Bay City Road, along the south boundary of the project site, did not contain detectable concentrations of these volatile organic compounds. It is likely this plume had not migrated onto the project site by 2006 and instead may be discharging into the storm sewers along Bay City Road (Golder Associates 2009, p. 3.5-2 and Figure 3.5-1).

The plume of Freon 11 is located in the shallow groundwater south of the southeastern corner of the project site. No information is available about the exact location or concentration of this plume. It is likely that any flow of this plume to the north is intercepted by the storm sewers on the southern boundary of the project site (Golder Associates 2009, p. 3.5-2).

3.3.2 ENVIRONMENTAL CONSEQUENCES

3.3.2.1 Proposed Project

The proposed project would not result in the discharge of process water or other effluents into surface waters or groundwater. Hazardous materials and wastes would be stored either indoors or outdoors in areas with secondary containment. Thus, accidental discharges of these materials and wastes into the groundwater are unlikely.

Dow Kokam MI, LLC would fill and grade wetlands on the project site to prepare a stable, level surface before construction began, and would excavate storm water detention basins near the northeastern and southwestern corners of the site (Figure 2-2) to temporarily store storm water. Filling of the wetlands would cause a change in the southward flow of shallow groundwater through the site. Groundwater that currently collects in the depressions would instead continue to flow south and may collect temporarily in, and flow radially out of, the new detention basins if those basins are unlined. This change in the southward flow of groundwater would be localized and minor, as the detention basins would be at the same location as, or within a few hundred feet of, the existing wetlands.

Surface water that now collects in wetlands and infiltrates into the shallow groundwater aquifer on the project site would instead be directed into the detention basins, where it would discharge into storm sewers or infiltrate into the ground. This could cause a decrease in the amount of water infiltrating into the shallow aquifer under the site. This change in the rate of groundwater infiltration would be minor because water from some of the wetlands currently discharges into a storm drain (see Section 3.5) and because some water that would be directed into the detention basins would infiltrate into the shallow groundwater aquifer.

Dewatering may be needed during construction of storm water detention ponds and installation of underground utilities, as the water table typically is no deeper than 5 to 6 feet below the ground surface. Groundwater pumping during dewatering would temporarily alter the hydraulic gradient and could cause the plumes of volatile organic compounds and Freon 11 located south of Bay City Road to migrate north onto the project site. Pumping and the subsequent discharge of contaminated water would be likely during dewatering for excavation of the detention pond at

the southwestern corner of the project site, and for installation of underground utilities along the southern boundary of the site. Dow Kokam MI, LLC would be required to obtain a National Pollution Discharge Elimination System permit from MDEQ prior to dewatering. The permit would include requirements for the safe handling and discharge of the water (Taylor and Miller 2009).

A change in the hydraulic gradient during dewatering could also increase the discharge of vinyl chloride and Freon 11 into the storm sewers along the southern boundary of the project site. Dewatering would only occur during excavation of the detention ponds and installation of underground facilities, after which the hydraulic gradient should return to current conditions. Thus, DOE does not expect a long-term, significant increase in the volume of vinyl chloride and Freon 11 discharging into the storm sewers from dewatering activities.

The presence of unlined storm water detention basins at the southwestern corner of the facility could cause a permanent change in the hydraulic gradient in the area, causing an increase in the northward flow and discharge of water from the south of the site, which is contaminated with vinyl chloride and Freon 11. If MDEQ determines that this change in hydrological conditions is likely, Dow Chemical Company could be required to modify its existing groundwater monitoring systems to ensure the proposed change to the local hydrology would not exacerbate the existing conditions.

Construction and operation of an electric transmission line along either route option would not affect groundwater.

In summary, the proposed project would cause minor, localized changes in shallow groundwater flow and infiltration at the project site. Dewatering during construction could temporarily alter the hydraulic gradient and could cause groundwater contaminated with vinyl chloride and Freon 11 to be pumped and discharged. Dow Kokam MI, LLC would implement permit requirements for the safe handling and discharge of the contaminated water. Dewatering could also increase the flow of vinyl chloride and Freon 11 into storm sewers. DOE does not expect any long-term, significant increase in discharge of those contaminants.

3.3.2.2 No-Action Alternative

Under the No-Action Alternative, DOE would not provide funding to Dow Kokam MI, LLC and the Midland Battery Park would not be constructed. Groundwater flows would not be altered, and the contaminant plumes south of the project site would remain in their current locations.

3.4 Surface Water

This section describes surface waters on and near the proposed project site and evaluates potential impacts on surface water flow and quality. Section 3.5 describes in more detail the wetlands on the site and includes a detailed analysis of the impacts of filling those wetlands.

3.4.1 AFFECTED ENVIRONMENT

The City of Midland is within the Tittabawassee River watershed. The Tittabawassee River (Hydrologic Unit Code #04080201) is a principle tributary of the Saginaw River, which flows into Lake Huron. The project site is about 1.4 miles (2.3 kilometers) north of the Tittabawassee River (Chapter 2, Figure 2-3), outside of its floodplain and other surface waters in the area (City of Midland 2007, Map 3.1). There is no surface water connection between the project site and the Tittabawassee River.

Onsite surface water features include four wetlands and shallow storm water drainage swales. Snowmelt and storm water entering the site flows into these depressional wetlands. Wetlands B and D (see Section 3.5) on the western half of the project site drain via a shallow swale toward a storm water drain on the southeastern portion of the site. The drain is connected to the City of Midland's storm sewer system, which traverses the southern portion of the site and discharges into the Tittabawassee River. The wetlands on the eastern half of the site have no connection to a drain or other wetlands (Golder Associates 2009, Sections 3.5.1.1 and 3.6.1).

In addition, a series of north-to-south drainage tiles were installed on the northeastern and northwestern portions of the project site to manage surface water. These tiles presumably extend from approximately the northern site boundary to Austin Street. The tiles are apparently 4-inch (10-centimeter) drainage pipes installed approximately 2 to 4 feet (0.6 to 1.2 meters) below the ground surface. It is unknown if this drainage system discharges to a storm sewer main or whether it is operational (Golder Associates 2009, Section 3.5.1.1).

3.4.2 ENVIRONMENTAL CONSEQUENCES

3.4.2.1 Proposed Project

Soil erosion and the associated transport of sediment into the storm water drainage system and downstream surface waters could increase during construction of the Midland Battery Park. Dow Kokam MI, LLC would be required to obtain and comply with a Soil Erosion and Sedimentation Control permit issued by the City of Midland. Dow Kokam MI, LLC would implement best management practices to minimize runoff from construction sites. These practices would be established in accordance with the *Guidebook of Best Management Practices for Michigan Watersheds* (Peterson et al. 1998) and could include silt fencing, rock dams, temporary diversion channels, temporary berms, vegetative cover, and slope stabilization. Control measures would also be required to minimize erosion and sediment transport during dewatering. Thus, impacts of erosion and sedimentation would be temporary and effectively controlled by required best management practices.

Three storm water detention ponds and associated drainage systems would be constructed to manage storm water and other surface water flow during operations. Dow Kokam MI, LLC would design the ponds to manage a 100-year storm event with a discharge rate limited to 0.2 cubic feet (0.006 cubic meter) per second per acre of drainage area. In addition, the detention

storage would account for runoff from a 5-inch (13-centimeter) rainfall during a 24-hour storage period and a discharge velocity of no greater than 3 feet (1 meter) per second. The estimated combined storage volume is 7.5 acre-feet. Each basin would be constructed with at least two storm water inlets. Storm water would drain from the northeastern and southern portions of the project site, as well as from roof drains, through a series of subsurface storm water conveyances into the basins (Golder Associates 2009, Section 3.4).

The detention basins would be equipped with discharge structures, which would discharge to the City of Midland's municipal storm sewer system. The City's system traverses the southern portion of the site from east to west and discharges into the Tittabawassee River. Based on correspondence from the City of Midland, the City's storm sewer system has the additional capacity to accommodate the estimated storm water runoff from the proposed project (Bush 2009). This system would meet the requirements of the National Pollution Discharge Elimination System and the City of Midland for storm water management and discharge; therefore, DOE does not anticipate impacts from the discharge of storm water associated with the proposed project.

Sewage from the Midland Battery Park would be transported to the City of Midland wastewater treatment plant via a sanitary sewer service connection near the southeastern corner of the Project site. The project would not produce industrial process water that would require pretreatment.

Hazardous materials and wastes would be stored either indoors or outside in areas with secondary containment. Thus, accidental discharges of these materials and wastes into the storm water drainage system are unlikely.

Dow Kokam MI, LLC would construct the MCV electric transmission line in a developed industrial area without crossing major surface water features. The CE transmission line would tie into an existing transmission line located in the floodplain of the Tittabawassee River, cross the river, and extend through a developed area along South Saginaw Road. The footprint of power poles installed in the floodplain and elsewhere near the river would be small, and those structures would not impede water flow or affect flooding. Dow Kokam MI, LLC or CE would employ best management practices during construction of the transmission line to minimize soil erosion and sedimentation.

In summary, there would be no impacts, or only minor impacts, resulting from the proposed project on surface water quality or flows. The Midland Battery Park would not be located in a floodplain. Erosion and sedimentation during construction would be minor and effectively controlled by best management practices. Onsite detention basins would temporarily detain storm water and discharge the water into the municipal storm water management system. Accidental discharges of hazardous materials and wastes into surface water systems are unlikely.

3.4.2.2 No-Action Alternative

Under the No-Action Alternative, DOE would not provide funding to Dow Kokam MI, LLC, and the Midland Battery Park would not be constructed. Surface water flow would continue to drain from some wetlands on the project site into a storm water drain and discharge into the Tittabawassee River. There would be no change in flows or sediment discharge rates.

3.5 Wetlands

This section describes wetlands found on and near the proposed project site and evaluates the potential impacts of the proposed project and No-Action Alternative on these wetlands. Section 3.4 describes other surface waters on and near the project site and evaluates potential impacts on surface water flow and quality.

3.5.1 AFFECTED ENVIRONMENT

The project site lies within the Huron/Erie Lake Plain Ecoregion. This area is characterized by a broad, flat, poorly drained plain marked by relic sand dunes, beach ridges, and end moraines. Elm-ash swamp, beech forests, and hemlock-white pine forest communities historically blanketed this region. Extensive networks of wetlands historically stretched across the Lake Plain Ecoregion (EPA 1999). However, industrial and commercial development eliminated most wetlands immediately surrounding the project site, especially to the south and west. There are still numerous wetlands surrounding the developed portions of Midland, especially along the Tittabawassee River and its tributaries, and to the north and southeast of the city (City of Midland 2007, Map 3.1)

The National Wetlands Inventory (NWI) identified 62 wetlands, totaling 173 acres (0.7 square kilometer), within 1 mile (1.6 kilometers) of the project site (including onsite wetlands) (Golder Associates 2009, Section 3.6.1). These wetlands are all classified as palustrine systems; that is, non-tidal wetlands such as bogs, swamps, and marshes that are substantially covered by trees, shrubs, or persistent emergent vegetation (Cowardin et al. 1979). Ten classes of wetlands are found within 1 mile of the project site. Seasonally flooded palustrine scrub-shrub wetlands are the most frequently encountered wetland class [19 wetlands covering 28.9 acres (0.12 square kilometer)]; however, excavated, artificially flooded water treatment ponds, and detention basins cover more total acres [12 wetlands covering 53.9 acres (0.22 square kilometer)]. With the exception of one small wetland immediately north of the project site, the nearest wetlands are more than 0.25 mile (0.4 kilometer) away, and most are farther away than 0.5 mile (0.8 kilometer) (City of Midland 2007, Map 3.1).

The proposed project site is located within the Tittabawassee River watershed and occurs approximately 1.4 miles (2.3 kilometers) from the Tittabawassee River (Figure 2-3), a navigable waterway. Four separate wetlands, totaling 9.45 acres (0.038 square kilometer), were identified on the project site during a field survey conducted to support development of an environmental report for the Midland Battery Park Project (Golder Associates, 2009, Section 3.6.1). Figure 3-1

is a map of the wetlands. These wetlands share no surface connection with the Tittabawassee River, and they are not located within the floodplain of that river (City of Midland 2007, Map 3.1).



Figure 3-1. Wetlands delineated on the proposed site of the Midland Battery Park.

A 4.2-acre (0.0017-square-kilometer) wetland on the eastern half of the project site (Wetland A in Figure 3-1) is a combination of two NWI-identified wetlands. Both wetlands are classified as palustrine emergent on NWI maps; one is classified as semi-permanently flooded, and the other is classified as seasonally flooded. Aerial imagery indicates that notable inundation or flooding does not extend into the latter part of the growing season in many years. Wetland A is a

depressional wetland, contained below the 628-foot (191-meter) contour, and without a surface connection to nearby wetlands.

A significant shrub component has developed on Wetland A, such that it now would be more correctly classified as a palustrine scrub-shrub wetland. Dominant canopy species include silky dogwood (*Cornus amomum*), cottonwood (*Populus deltoids*), common buckthorn (*Rhamnus cathartica*), pussy willow (*Salix discolor*), and sandbar willow (*Salix exigua*). Willow thickets cluster along the edges of the wetland. Common herbaceous species include reed canarygrass (*Phalaris arundinacea*), lake sedge (*Carex lacustris*), broad-leaved cattail (*Typha latifolia*), and field horsetail (*Equisetum arvense*).

The NWI database mapped a 4.9-acre (0.0020-square kilometer) wetland on the western half of the project site (Wetland B in Figure 3-1) as two wetland types; the northern half as palustrine scrub-shrub, and the southern half as palustrine emergent. Both are classified as seasonally flooded. Currently, the entire area is a palustrine scrub-shrub wetland. Pussy willow and sandbar willow form thickets along the wetland edge and extend into flooded areas. Silky dogwood and red-osier dogwood (*Cornus sericea*) are common. Reed canary grass chokes the understory in most areas, but is occasionally replaced by horsetail (*Equisetum sp.*) or lake sedge. This is a depressional wetland contained below the 628-foot (191-meter) contour. A storm water drain near the wetland's southeastern corner provides a subsurface outlet to the City of Midland storm water system; no surface water connections are present.

A small, 0.1-acre (405-square-meter) wetland (Wetland D in Figure 3-1) occurs near the northwestern corner of the proposed project site. This wetland is not included on NWI maps and appears to be an excavated, scrub-shrub wetland. Wetland D is a depressional wetland positioned below the 630-foot (192-meter) contour. Cottonwood and silky dogwood are common there.

A 0.25-acre (1,010-square-meter) shrub-dominated wetland occurs near the northeastern corner of the proposed project site (Wetland E in Figure 3-1). The NWI database has not mapped this wetland separately and it appears to represent a seasonally flooded, palustrine emergent wetland. Wetland E is a depressional wetland contained below the 631.5-foot (192-meter) contour and does not have a surface connection to other local wetlands.

WETLANDS FUNCTIONS

Wetlands functions are the normal or characteristic physical, chemical, and biological processes that take place in wetlands. Wetlands perform a wide variety of functions, from simple to complex. This EA focuses on the wetlands functions that directly or indirectly benefit the public interest.

DOE has identified and described the following functions expected of these depressional wetlands. No formal assessment has been conducted of the functions performed by these wetlands or the associated relative importance or value of those functions.

- Surface water detention

Depressional wetlands retain surface water and allow for infiltration, evaporation, and uptake by wetland plants. Surface water detention attenuates flows and can reduce the intensity of downstream flooding events and erosion. Surface water detention may also contribute to groundwater recharge. Wetlands A, D, and E are expected to function well with respect to surface water detention because they lack an outflow. Wetland B contains a storm water drain within its boundaries and does not effectively detain water above the elevation of the drain.

- Stream flow maintenance

Depressional wetlands help to maintain stable stream flows by retaining water from storm events and releasing it gradually to local streams and groundwater. Wetlands on the project site do not have a surface connection to local waterways; thus, their role in stream flow maintenance is limited to their ability to provide groundwater recharge.

- Nutrient transformation

The vegetation and microbial life in the wetlands uptake nitrogen and phosphorus. Depressional wetlands with no outflow, such as those on the project site, are particularly effective at preventing nutrients in runoff from entering local streams and lakes.

- Sediment and particulate retention

Sediment carried in sheet and rill flow is retained by the vegetation and topography in depressional wetlands. Wetlands that lack a surface water connection, such as those on the project site, effectively retain sediment inputs introduced to them.

- Provision of wildlife habitat

Wetlands provide essential habitat for many wildlife species. Wetlands on the project site may provide foraging and resting habitat for migratory waterfowl, breeding habitat for early-breeding amphibians, and year-round habitat for small mammals and snakes. Wildlife habitat functions are limited by the proximity of industrial and commercial development to the project site (see Section 3.6).

- Conservation of biodiversity

Wetlands support a variety of plant, insect, and wildlife species that are absent from surrounding uplands. Common plant species tolerant of disturbed environments, such as reed canary grass,

dominate wetlands on the project site. Because of the urban nature of the site, these wetlands do not function highly in the conservation of biodiversity.

- Carbon sequestration

Wetlands accumulate carbon because the decay process is slowed by anaerobic conditions in the saturated soils. Thus, atmospheric carbon is converted to plant matter and sequestered in layers of peat, muck, and other organics that accumulate as thick wetland soils. The extent of organic soils in wetlands on the project site is undocumented; however, because the wetlands are inundated at least seasonally, they are expected to perform this function moderately well.

3.5.2 ENVIRONMENTAL CONSEQUENCES

3.5.2.1 Proposed Project

Dow Kokam MI, LLC would fill all 9.45 acres (0.038 square kilometer) of wetlands on the proposed project site to construct the Midland Battery Park. The following subsections describe the related regulations and policies and the potential consequences of filling these wetlands.

3.5.2.1.1 Wetlands Regulations and Policies

Section 404 of the *Clean Water Act* regulates the discharge of dredged or fill materials into navigable waters. The regulatory authority of the Act also extends to some tributaries of navigable waters and wetlands adjacent to those navigable waters and tributaries. In most states, the U.S. Army Corps of Engineers and EPA are responsible for implementing and enforcing Section 404. However, MDEQ has authority from the federal government to administer these regulations in most areas of Michigan, including the project site.

MDEQ also administers implementation of Part 303, “Wetlands Protection,” of the *Michigan Natural Resources and Environmental Protection Act*. In accordance with Part 303, wetlands are regulated if they meet any of the following conditions:

- Connected to one of the Great Lakes or Lake St. Clair;
- Located within 1,000 feet (305 meters) of one of the Great Lakes or Lake St. Clair;
- Connected to an inland lake, pond, river, or stream;
- Located within 500 feet (150 meters) of an inland lake, pond, river, or stream;
- Not connected to one of the Great Lakes or Lake St. Clair or an inland lake, pond, stream, or river, but are more than 5 acres (0.02 square kilometer) in size; or

- Not connected to one of the Great Lakes or Lake St. Clair or an inland lake, pond, stream, or river, and less than 5 acres (0.02 square kilometer) in size, but that MDEQ has determined are wetlands essential to the preservation of the state's natural resources and has notified the property owner.

Each wetland on the project site is less than 5 acres and does not have a surface connection to other wetlands. None of the wetlands is within 500 feet of, or has a surface connection to, an inland lake, pond, stream, or river. MDEQ conducted an assessment of the project site and concluded that the wetlands do not meet the above federal or state regulatory requirements and that a permit from that agency or the U.S. Army Corps of Engineers is not required for the proposed project (Rudolph 2009).

DOE regulations at 10 CFR Part 1022, "Compliance with Floodplain and Wetland Environmental Review Requirements," implement the requirements of Executive Order 11990, "Protection of Wetlands." These regulations require, among other things, that the Department notify appropriate government agencies and interested parties of a proposed wetland action; conduct a wetlands assessment to evaluate the impacts of that action to wetlands in an EA or environmental impact statement; consider alternatives that would avoid or minimize impacts to wetlands; design or modify the action to minimize potential harm to wetlands; and allow for public review and comment of the analysis. This EA meets the requirements of 10 CFR Part 1022 and Executive Order 11990.

3.5.2.1.2 Wetlands Assessment

Filling all wetlands on the project site would have the following effects on the functions performed by the wetlands.

- Surface water detention

Surface waters now detained in the wetlands would be temporarily detained in storm water detention basins to be constructed on the site. Thus, there will be little or no impacts from the surface flow of storm water or snowmelt from the proposed project site.

- Stream flow maintenance

Wetlands on the proposed project site do not have a surface connection to local waterways, although some of the wetlands drain into a storm sewer. After construction of detention basins, all water discharged from the site (except for water infiltrating from the basins into the shallow aquifer) would flow into the storm sewer and eventually into the Tittabawassee River. This increase in discharge of storm water would cause a negligible change in the flow of water into the river, as the project site is very small relative to the size of the watershed upstream of the outflow.

- Nutrient transformation

Uptake of nitrogen, phosphorus, and other nutrient transformation functions that currently occur within the wetlands would no longer occur or would occur at a diminished rate in the detention basins.

- Sediment and particulate retention

Onsite erosion and generation of sediments would be reduced because most of the project site would be covered by buildings, parking lots, and impervious ground cover. Dow Kokam MI, LLC would design its storm water detention system and associated best management practices to minimize sediment flow off the site. Thus, adverse impacts from the loss of sediment retention by the wetlands would be negligible.

- Provision of wildlife habitat and conservation of biodiversity

Any food resources, nesting structure, cover, open water, and other habitat components used by wildlife at the wetlands would be destroyed or substantially modified. However, the project site is surrounded by industrial and commercial facilities (see Figure 2-3 in Section 2), isolated from large undisturbed areas and the wetlands there have diminished value for long-term conservation of biodiversity. Therefore, filling the wetlands would not result in a significant adverse impact to biological resources (see Section 3.6 for additional information on impacts to biological resources).

- Carbon sequestration

Carbon sequestration that currently occurs within these wetlands would no longer occur.

Because the wetlands are located throughout much of the project site, there is no practical way to construct the Midland Battery Park on this site without filling all wetlands (Golder Associates 2009, Section 2.9.2).

Dow Kokam MI, LLC considered four other sites in Midland, Michigan, to determine if impacts to wetlands and other natural resources could be reduced while maintaining the advantages related to the nearby industrial facilities and services. Sites on land owned by Dow Chemical Company were considered and rejected because Dow Kokam MI, LLC determined the sites to be impracticable for the following reasons (Golder Associates 2009, Section 2.9.1).

- Two of the sites evaluated would require filling a larger acreage of wetlands (10 to 18 acres) and a third would require filling a similar acreage of wetlands (9.2 acres);
- One site has no wetlands but is in the floodplain and therefore would not be suitable for development;

- The sites are not within the State-designated renaissance zone, which provides a tax abatement of about 98 percent;
- The sites are not within Dow's security perimeter, which provides significant security and cost benefits;
- Utilities and other infrastructure support (for example, emergency response) would have to be extended much greater distances, potentially resulting in additional impacts; and
- Additional access roads would be required or traffic impacts would be greater at the other sites.

Thus, wetlands cannot be avoided on the project site and alternative sites would have greater impacts to wetlands or were judged to be unsuitable for other reasons.

The potential impacts of the proposed project on surface water flow and sediment transport would be minimized by constructing detention basins to temporarily store storm water and other surface water runoff, one of the main wetlands functions at the project site. As determined by MDEQ, wetlands on the site are not regulated under federal or state laws (Rudolph 2009). In addition, the wetlands are surrounded by urban development, are more than 1.4 miles (2.3 kilometers) from the Tittabawassee River (Figure 2-3), have no connection to any other stream or surface water, and have minimal value for wildlife habitat and biodiversity conservation. For these reasons, DOE determined that grading and filling these wetlands, in conjunction with construction of the storm water detention basins, would not cause significant adverse impacts. Additional mitigation is not required or practicable.

Installation and operation of the MCV electric transmission line would not affect wetlands. The above discussion of impacts considers installation of the onsite substation required for either transmission line.

Installation of the CE transmission line would require new power poles near the Tittabawassee River in an area with at least two small [less than 0.5 acre (2,000 square meters)] wetlands (Golder Associates 2009, Section 3.6.3). It is not known at this time whether power poles, access roads, or other disturbances must occur in wetlands for this transmission line, but given that the wetlands are small, it is likely they can be avoided. If Dow Kokam MI, LLC chooses this option for providing electricity for the proposed project, CE would be responsible for compliance with state and federal regulations for protection of the wetlands. Although impacts of this option cannot be quantified at this time, they would be small because the amount of affected wetlands from installation of power poles would be small, and because CE would design the transmission line to avoid impacting wetlands to the extent practicable and to mitigate impacts that could not be avoided.

In summary, the proposed project would result in filling four wetlands totaling 9.45 acres (0.038 square kilometer) at the proposed project site. These wetlands have no surface water connection

to streams or other nearby wetlands, is distant from large wetlands in the area, and was determined to be non-jurisdictional (Rudolph 2009). There is no practical way to design the Midland Battery Park to avoid the wetlands, and other available sites Dow Kokam MI, LLC considered for the proposed project would have similar or greater impacts to wetlands, are located in a floodplain, or are otherwise unsuitable. Filling of these wetlands would not be regulated under federal or state laws. Dow Kokam MI, LLC would construct detention basins to temporarily store storm water, but other ecological functions performed by these wetlands would be lost or substantially diminished. DOE has determined that the filling and grading of these wetlands would not cause significant adverse impacts, and additional mitigation is not required. Construction of an electric transmission line would result in no impacts (MCV option) or minor, mitigated impacts (CE option).

3.5.2.2 No-Action Alternative

Under the No-Action Alternative, DOE would not provide funding to Dow Kokam MI, LLC and the Midland Battery Park would not be constructed. The wetlands on the project site would not be disturbed and the current performance of functions at those wetlands would continue.

3.6 Biological Resources

3.6.1 AFFECTED ENVIRONMENT

The following description of plants (Section 3.6.1.1) and wildlife (Section 3.6.1.2) on the project site is from the environmental report prepared for the Midland Battery Park Project (Golder Associates 2009, Section 3.7.1).

Midland County is located near the center of Michigan's Lower Peninsula and lies within the Huron/Erie Lake Plain Ecoregion (EPA 1999). This region is characterized by a broad fertile plain marked by relict dunes, beach ridges, and end moraines. Soil drainage is naturally poor within this ecoregion; however, artificial drainage has allowed successful corn, soybean, livestock, and vegetable production. Urban and industrial development is extensive within this ecoregion.

The city of Midland lies approximately 16 miles west of Saginaw Bay of Lake Huron. Agricultural lands extend to the east and south of the city; a mixture of woodlands, farms and wetlands lie to the north and west of the city. The Tittabawassee River flows through Midland and bisects heavy-industrial development through the southern half of the city of Midland. The project site is located approximately 1.4 miles north of the river, near the northern edge of the city's industrial area.

3.6.1.1 Vegetation

The project site historically supported hemlock-white pine forest and mixed hardwood swamp vegetation communities (Comer and Albert 1997). White pine (*Pinus strobus*), hemlock (*Tsuga*

canadensis), yellow birch (*Betula alleghaniensis*), red maple (*Acer rubrum*), and mixed oak (*Quercus spp.*) species dominated the forest canopy in these communities. Wild sarsaparilla (*Aralia nudicaulis*), small enchanter's nightshade (*Circaea alpina*), bluebead lily (*Clintonia borealis*), goldthread (*Coptis trifolia*), bunchberry (*Cornus canadensis*), and other mesic forest herbs comprised the understory (Kost et al. 2007).

Historical community types are no longer present on the project site. Successive waves of timber extraction, agricultural conversion, and industrial development have eliminated forested habitat types from the vicinity of the project site. Land cover on the project site and adjacent lands is currently mapped at the regional scale as Commercial/Industrial/Transportation (Michigan State University n.d.). On the local scale, the project site is identified as "vacant" (City of Midland 2007).

Three vegetation communities currently provide limited wildlife habitat within the project site. These communities include palustrine scrub-shrub wetlands, upland deciduous trees and shrubs, and herbaceous dominated uplands.

The habitats present within the project site retain little connectivity to natural areas. The site lies near the northern edge of a large industrial complex. To the south of the site, processing, manufacturing, and transport facilities extend to the Tittabawassee River. Commercial office space, industrial development, and transportation corridors occupy the space between the project site and the river to the south and west. Light-industrial and commercial developments extend approximately 0.5 mile to the north and east of the site before giving way to residential suburbs. Agricultural lands, including fence row, old field, and wooded lot habitats, are not connected to the project site; most are over 1 mile away.

3.6.1.2 Wildlife

Based on the project site's lack of connectivity to intact natural habitats and its proximity to industrial and commercial disturbance, expected use of the project site by wildlife is low. Primary factors limiting wildlife use of the site include:

- Isolation from the Tittabawassee River,
- Adjacency to industrial disturbance, and
- Frequent human disturbance.

Each habitat on the project site has the potential to be used by a limited number of species based on the habitat's physical and vegetative features. Palustrine scrub-shrub wetlands could provide year-round use for voles (*Microtus spp.*), deer mice (*Peromyscus spp.*), and shrews (*Sorex spp.*). Striped skunks (*Mephitis mephitis*), foxes (*Vulpes vulpes*), and raccoons (*Procyon lotor*) could also use this habitat year round; however, a lack of suitable denning sites might limit the extent of this use. Trails and signs indicate that white-tailed deer (*Odocoileus virginianus*) forage and seek cover within wetlands and the project site. Raptors may hunt within emergent wetland habitats, but nesting is unlikely because of proximity to disturbance. Songbirds nest throughout

wetland habitats. Common species include house wren (*Troglodytes aedon*), black-capped chickadee (*Poecile atricapillus*), robin (*Turdus migratorius*), starling (*Sturnus vulgaris*), and red-winged blackbird (*Agelaius phoeniceus*). Songbirds may also forage in these habitats.

Semi-permanently flooded wetlands could provide resting and feeding use for waterfowl during the spring migration; however, aerial photographs do not show standing water suitable for fall migration. Nesting by common waterfowl, such as mallard (*Anas platyrhynchos*) and Canada goose (*Branta canadensis*) is possible; however, more wary species are likely to avoid the project site based on proximity to regular human use and disturbance. Wetlands on the site may provide breeding habitat for the western chorus frog (*Pseudacris triseriata*) and/or spring peeper (*Pseudacris crucifer*); an apparently seasonal water regime indicates that successful reproduction for amphibian species that require a longer larval period is unlikely. Common reptiles, such as the eastern garter snake (*Thamnophis sirtalis*), may frequent palustrine emergent wetland habitats.

Upland deciduous trees and shrubs provide nesting opportunities for bird species that tolerate an urban environment. Raptors may hunt from perches on or near the project site, but are unlikely to successfully nest due to frequent disturbance. Voles, mice, and shrews are expected to use these habitats year-round. Transitory use by foxes, skunks, raccoons, and white-tailed deer is likely.

Mice, shrews, voles, and the foraging raptors that pursue these species might be found in upland herbaceous habitat on the proposed project site. Edge-tolerant grassland songbirds, such as dickcissel (*Spiza americana*), American goldfinch (*Carduelis tristis*), and field sparrow (*Spizella pusilla*), also are expected to use this habitat. Foxes, skunks, and raccoons may occasionally forage within or move through herbaceous-dominated uplands. Common snakes, such as the eastern milk snake (*Lampropeltis triangulum*), also are expected to forage within upland habitats.

3.6.1.3 Protected Species

No plant or animal species classified as threatened, endangered, proposed, or candidate under the *Endangered Species Act* occur in Midland County (USFWS 2009). Appendix B contains a copy of the correspondence between the DOE and the U.S. Fish and Wildlife Service to fulfill the Department's responsibilities under the *Endangered Species Act*.

Bald eagles (*Haliaeetus leucocephalus*), which are protected under the federal *Bald and Golden Eagle Protection Act*, occur in Midland County (Michigan State University 2009a). Because bald eagles nest and forage primarily near and over open water, it is very unlikely they would be found at the project site. They may occasionally occur at or near the location where the CE transmission line would cross the Tittabawassee River, but it is unlikely that they would nest near that area, as they are sensitive to human activity during nesting.

Four plant species classified as threatened under Michigan state law (Part 365 of the *Natural Resources and Environmental Protection Act*) are known to occur in Midland County (Table

3-2). Three of these species are found in forested areas, and it is very unlikely they would occur in the palustrine emergent wetlands and herbaceous upland communities found on the project site. The fourth protected plant species, three-awned grass, has only been documented at one location in Midland County. This species most often occurs in remnant wet lakeplain prairies on sandy substrates (Michigan State University 2009c; Penskar 2004). The project site is within the lakeplain landform on sandy substrates and contains wetlands, so it is possible that this species occurs on the site. However, if this species were to occur in the area, shrub thickets and dense stands of reed canary grass in the wetlands on the project site probably would preclude this late-germinating grass species from growing there (Golder Associates 2009, Section 3.8.1.1). Suitable habitat for this grass may be present where the CE transmission line would cross the Tittabawassee River.

Table 3-2. State-protected plant and animal species known to occur in Midland County, Michigan.

Common Name	Scientific Name	State Status	Habitat
Plant species			
Three-awned grass	<i>Aristida longespia</i>	Threatened	Moist fields, lakeplain prairie
Forked aster	<i>Aster furcatus</i>	Threatened	Floodplain forest
Sedge	<i>Carex seorsa</i>	Threatened	Hardwood and hardwood/conifer swamp
Beak grass	<i>Diarrhena obovata</i>	Threatened	Floodplain forests
Animal species			
Slippershell mussel	<i>Alasmidonta viridis</i>	Threatened	Clear water and sand/gravel substrate in 1 st to 4 th order streams
Red-shouldered hawk	<i>Buteo lineatus</i>	Threatened	Nests primarily mature forests adjacent to wet meadows and swamps
Snuffbox	<i>Epioblasma triquetra</i>	Endangered	Clean, swift current with gravel substrate in 3 rd to 6 th order streams
Common tern	<i>Sterna hirundo</i>	Threatened	Nests on sand and gravel beaches, primarily on islands

Sources: Michigan State University 2009a, 2009b, 2009c.

Four animal species classified as threatened or endangered under Michigan statute are known to occur in Midland County (Table 3-2). The red-shouldered hawk nests in a variety of habitats, but is most often found in association with mature forests in and adjacent to wet meadows and swamps (Michigan State University 2009a). Because of the lack of forested habitat on and near the project site, this species is not likely to nest there; however, it may forage on and near the site. It may also forage near where the CE transmission line would cross the Tittabawassee River.

Common terns nest on sparsely vegetated sand and gravel beaches, primarily on islands and peninsulas, and would not be found on the project site. It is also unlikely that they would occur where the CE transmission line would cross the Tittabawassee River.

Two mussel species (slippershell and snuffbox) protected under Michigan law also occur in Midland County. These species both prefer clear water with sand or gravel. The Tittabawassee River has a mud/silt substrate at the crossing of the CE transmission line (Golder Associates 2009, Section 3.8.32); therefore, it is unlikely these species are found there.

3.6.2 ENVIRONMENTAL CONSEQUENCES

3.6.2.1 Proposed Project

Construction of the Midland Battery Park would require the clearing and development of 50 acres of low-quality habitat for plants and animals. The loss of habitat would not be a significant impact to any plant or animal species, as the project site is relatively small, adjacent to large industrial and commercial developments, and isolated from large tracts of undisturbed habitat. The plant and animal species found on the site are common and widespread, and no rare species are expected there.

Some species of migratory birds probably nest on the project site. The *Migratory Bird Treaty Act* prohibits harming migratory birds and their nests; therefore, Dow Kokam MI, LLC would take actions to ensure that land clearing and other activities would not harm migratory birds and their nests.

No plant or animal species classified as threatened, endangered, proposed, or candidate under the *Endangered Species Act* occur in or near the project site; therefore, DOE has concluded that there would be no impacts to federally listed species.

Construction of the Midland Battery Park would destroy potential foraging habitat for raptors and other birds, including red-shouldered hawks, a species classified as threatened by Michigan, and other raptors. This would be a small impact to this species, as red-shouldered hawks probably do not nest near or frequently forage in the small project site because it is surrounded by industrial and commercial facilities. No other state-protected species (Table 3-2) are likely to occur in the project site.

The MCV transmission line would be located in an industrial area. Construction and operation of that transmission line would cause few or no impacts to plants and animals. It would not cross large areas of open water or vegetation lands that would be used by waterfowl, raptors, and other birds; therefore, the risk of avian collisions with this transmission line is low.

A portion of the CE transmission line would cross an agricultural field and undeveloped land south of the Tittabawassee River and would cross the river. The power line would extend less than 1,500 feet south of the river before tying into an existing transmission line. Installation and maintenance of the power poles would disturb only a small amount of land relative to the undisturbed floodplain habitat along the river; therefore, impacts to plant and animal species in this area would be small. The rest of the transmission line would be installed in developed areas north of the river.

The three-awn grass, which is classified as threatened by Michigan, might occur in the floodplain of the Tittabawassee River, where a portion of the CE transmission line would be constructed. This species has been documented from only one location in Midland County (Michigan State University 2009c). CE would comply with Michigan regulations for the protection of this species when constructing the transmission line. If determined necessary by the Michigan Department of Natural Resources, a survey for this plant would be conducted and the transmission line would be designed to avoid harming this species.

Construction and operation of the CE transmission line would not affect the two freshwater mussels classified as threatened by Michigan and known to occur in Midland County. The transmission line would span the Tittabawassee River and no in-water work is expected.

Waterfowl, raptors (including the protected bald eagle and red-shouldered hawk), and other birds may collide with the CE transmission line over and near the Tittabawassee River. This power line should be sited and constructed in accordance with applicable guidelines for minimizing the possibility of avian collisions and electrocutions, such as those of the Avian Powerline Interaction Committee (APIC 2006).

In summary, clearing and developing 50 acres for construction of the Midland Battery Park would not significantly impact any plant or animal species because the project site is small and isolated from larger tracks of undisturbed land, and because plant and animal species found there are common and widespread in the region. The proposed project would have no effect on species protected under the federal *Endangered Species Act*. Red-shouldered hawks, which are classified as threatened by Michigan, may occasionally forage on the project site. No other State-protected species are expected to be found on the site. Construction and operation of the CE transmission line option would require disturbing a small amount of floodplain habitat where one State-protected plant species, the three-awn grass, could occur. That transmission line would have to be designed to avoid harming that plant and to minimize the risk of collisions and electrocutions by migratory birds.

3.6.2.2 No-Action Alternative

Under the No-Action Alternative, DOE would not provide funding to Dow Kokam MI, LLC and the Midland Battery Park would not be constructed. The project site would remain undisturbed and would continue to be used by plants and animals. A transmission line would not be constructed and the associated risk to migratory birds from collisions and electrocutions would not exist.

3.7 Cultural Resources

3.7.1 AFFECTED ENVIRONMENT

The environmental report (Golder Associates 2009, Section 3.9.1.1) included a review of the prehistoric and historic periods for Midland County and the surrounding region.

During development of the environmental report, the Michigan Office of the State Archaeologist reviewed the State Historic Preservation Office database to determine if there were any records of historic properties on or near the project site and transmission line routes. The State Archaeologist reported there is a surface lithic scatter about 0.5 mile north of the project site, and a second lithic scatter less than 1 mile to the west of the site (Halsey 2009). Both lithic scatter sites are in areas with industrial and commercial development. The State Archaeologist also reported that “there are numerous other small sites in the greater Midland area away from the Tittabawassee River, but they are all heavily disturbed surface sites (the surface soil in Midland is almost entirely glacial beach sand) with no stratigraphy and seldom diagnostic artifacts, essentially lithic scatters that are not eligible for the National Register for Historic Places. Along the Tittabawassee River there are significant sites, stratified in the river flood plain.”

DOE sent a letter to the Michigan State Historic Preservation Office requesting any additional information the Preservation Office developed or obtained on historic properties in the vicinity of the project site. DOE also sent a request to the Saginaw Chippewa Indian Tribe of Michigan for information that tribe has and is interested in sharing on properties of traditional religious and cultural significance within the vicinity of the project site, as well as any comments or concerns the tribe has on the potential for this project to affect those properties. Those letters are included in Appendix B of this EA.

There are ten sites listed on the National Register of Historic Places in the central portion of the city of Midland, northwest of the project site. There are also two National Historic Landmarks and two sites listed as “National Register/w Marker” in the same general area as the other historic sites in Midland. All recorded sites are west of Ashman Street and more than 1 mile from the project site (Michigan Historical Center 2009).

Review of aerial photography dating back to 1938 indicated that no historic structures existed on the project site. The photos showed that the project site was historically used for farming (1952) and that substantial surface disturbances occurred at other times, as documented in photos from 1958 and 1992 that show exposed soils, likely resulting from grading activities. Relatively little disturbance has occurred since 1992. A 2009 photograph shows an abrupt change in ground elevation at one of the wetland boundaries, indicating probable surface soil removal (Golder Associates 2009, Section 3.9.1).

3.7.2 ENVIRONMENTAL CONSEQUENCES

3.7.2.1 Proposed Project

DOE does not expect Dow Kokam MI, LLC’s proposed project to affect historic properties or other cultural resources. No historic properties are known to occur on or near the project site or near the transmission line options. There are no historic structures on the site, and soils there have been disturbed in the past for agriculture and other activities. The lithic scatters to the north and west of the site, and all other known cultural and historic resources known to occur in Midland, are distant from the project site and would not be affected by the proposed project.

In the event that cultural deposits (such as, human remains, lithics, pottery, and remnants of older construction) were discovered during construction of the Midland Battery Park or transmission line, work would cease in the area of the discovery, and the Office of the State Archaeologist would be notified. A qualified archaeologist or a designated representative of the State Archaeologist, Michigan Historical Center, would evaluate any such discovery, and, in consultation with the State Historic Preservation Office, implement appropriate mitigation measures before construction activities resumed.

3.7.2.2 No-Action Alternative

Under the No-action Alternative, DOE would not provide funding to Dow Kokam MI, LLC and the Midland Battery Park would not be constructed. No historic properties or other cultural resources would be affected.

3.8 Traffic and Transportation

3.8.1 AFFECTED ENVIRONMENT

Dow Chemical Company prepared a traffic study in 2006 to evaluate changes required prior to the closure of Austin Street and Bay City Road to through traffic. These streets are along the southern side of the proposed project site. At the time the study was written, projected annual daily traffic on South Saginaw Road was 32,448 vehicles. The level of service rating at the intersection of Bay City and South Saginaw roads was “C” and was based on a peak hourly use of over 400 vehicles at that intersection. Of those 400 vehicles during the peak hour, about 250 were using eastbound Bay City Road to exit the Dow Chemical Company campus and turn onto South Saginaw Road or continue east on Bay City Road, and the remainder were traveling through the area on Bay City Road.

LEVEL OF SERVICE RATING

A level of service rating is a measure of volume versus capacity and is an indication of how much congestion can be expected at a given location. The levels of service range from “A” to “F”: “A” is defined as free-flowing traffic, “B” is defined as reasonably free flow of traffic, “C” is stable flow, “D” is approaching unstable flow, “E” is unstable flow, and “F” is defined as forced or breakdown flow. In an urban setting along an arterial street, a level of service rating of “C” is acceptable.

Since completion of the 2006 traffic study, the intersection of Bay City and South Saginaw roads has been redesigned to prevent westbound access onto Bay City Road and Austin Street. That intersection now has a level of service rating of “A” (Golder Associates 2009, Section 3.1.2.1).

3.8.2 ENVIRONMENTAL CONSEQUENCES

3.8.2.1 Proposed Project

All access to the Midland Battery Park would be from the intersection of South Saginaw and Bay City roads. This intersection would be redesigned to restore westbound access onto Bay City Road. Bay City Road would be used only as a driveway to access the Midland Battery Park; no through traffic to and from the west of the proposed project site would be allowed. As stated above, this intersection had a level of service rating of “C” when an hourly maximum of about 250 employees were using Bay City Road to exit the Dow Chemical Company campus and an additional 161 vehicles were traveling through on that road. A new traffic study and associated intersection design have not been completed for the Midland Battery Park Project; however, it is reasonable to assume that the intersection can and will be redesigned to handle, at a minimum, the level of traffic experienced prior to the closure of Bay City Road. Based on this assumption, a maximum hourly traffic level of less than 400 vehicles would not adversely affect the level of service rating of “C” for that intersection.

The expected peak workforce during construction is 100 employees. If all construction employees traveled in separate vehicles and entered and exited the facility during the same morning and evening hours, the maximum hourly traffic load exiting Bay City Road would be substantially less than 400 vehicles, even if numerous construction shipments arrived and departed during those hours. Thus, construction of the Midland Battery Park would not adversely affect traffic flow.

Initially, the project would operate with a single shift of 150 employees in one production building, followed by another 150 employees in the second building as demanded. Dow Kokam MI, LLC anticipates the project would eventually operate three shifts with a total of 885 employees. Approximately 20 daily delivery shipments are expected to and from the project site, with most of those trips occurring between 9:00 am and 4:00 pm, outside of the period of peak employee traffic (Golder Associates 2009, Section 3.12.2). Assuming all employees traveled in separate vehicles, the maximum number of employee trips would increase to approximately 1,800 trips per day (900 each way) with the plant operating at peak levels.

Shift changes in the two production buildings would be staggered by an hour, so the maximum hourly traffic volume would be about 300 vehicles (150 workers leaving and 150 arriving for the next shift in a building), regardless of how many shifts were operating. With the eventual three shifts of operation, this peak volume of approximately 300 vehicles would occur 6 times per day. This maximum volume would not adversely affect traffic flow, assuming redesign of the Bay City and South Saginaw intersection allowed for the volume of traffic prior to the closure of Bay City Road to through traffic.

The MCV transmission line would be constructed entirely along or near private roads on property owned by the Dow Chemical Company, and would not affect traffic on public roads.

Construction of the CE transmission line along South Saginaw Road could temporarily disrupt traffic along this busy road.

The CE transmission line would span the Tittabawassee River, which is classified under the *Rivers and Harbors Act* as a navigable water of the United States. If the proposed project included this option for delivery of electricity, CE would be required to obtain a Section 10 permit (in reference to Section 10 of the *Rivers and Harbors Act*) from the U.S. Army Corps of Engineers prior to installation of the transmission line across the river. The implementing regulations for Section 10 of the *Rivers and Harbors Act* [33 CFR 322.4(i)] specify the minimum height for aerial electric power transmission lines crossing navigable waters of the United States. By complying with these regulations, construction and operation of the CE transmission line would not affect boat traffic on the Tittabawassee River.

In summary, traffic volume at the entrance to the Midland Battery Park would increase by a minimum hourly rate of about 100 and 300 vehicles during project construction and operations, respectively. Assuming the redesign of the intersection at the entrance of the project site accounted for at least as much traffic as it did prior to closing in 2006, the proposed project would not adversely affect the flow of traffic. Construction of the CE transmission line across the Tittabawassee River would require a permit from the U.S. Army Corps of Engineers to ensure that the line would not interfere with river transportation.

3.8.2.2 No-Action Alternative

Under the No-Action Alternative, DOE would not provide funding to Dow Kokam MI, LLC and the Midland Battery Park would not be constructed. Bay City Road would remain closed to westbound traffic at South Saginaw Road, and traffic volume in that area would not increase from the construction and operation of a new manufacturing facility.

3.9 Socioeconomics

This section evaluates the potential impacts of the proposed project and No-Action Alternative on economic conditions, housing availability and prices, and emergency services.

3.9.1 AFFECTED ENVIRONMENT

To evaluate the probability that people would move into the Midland area for employment at the Midland Battery Park, the environmental report (Golder Associates 2009, Section 3.13.1) estimated the available workforce in the vicinity of Midland using unemployment data obtained from the Bureau of Labor Statistics (BLS 2009a). In August 2009, there were about 4,300 unemployed workers in Midland County, about 1,630 of which lived in the city of Midland, and over 18,000 unemployed workers in surrounding Bay and Saginaw counties. Thus, there were well over 10,000 unemployed people living close enough to the project site to work there without changing their place of residence.

In 2007, there were over 2,300 vacant housing units in Midland County, of a total of 35,000 housing units. The homeowner and rental vacancy rates were 1.1 and 8.2 percent, respectively. Vacancy rates were higher in the surrounding counties (Golder Associates 2009, Table 3.13-2).

The median value of owner-occupied homes in the city of Midland was \$141,500 in 2007, compared with the county and state median of \$134,800 and \$152,200, respectively. These values are lower than the median home value of \$181,800 for the United States, and may be lower today due to depressed housing prices across the country. The average median household income in the city of Midland during 2007 was \$51,100, higher than the average for Midland County (\$48,900), Michigan (\$48,600), and the United States (\$50,000) (USCB 2007).

The City of Midland Police Department has 67 employees, of which 46 are sworn officers. The Midland Law Enforcement Center is located 2 miles northwest of the project site.

Midland has three fire stations and 46 personnel. The nearest fire station is 1 mile north of the project site. The closest medical facility is the MidMichigan Medical Center, located about 3 miles from the project site. This is a 250-bed hospital with 24-hour emergency care. The nearest Level II trauma center is about 27 miles away in Saginaw (Golder Associates 2009, Section 3.15.1).

3.9.2 ENVIRONMENTAL CONSEQUENCES

3.9.2.1 Proposed Project

The total workforce required to construct the Midland Battery Park would be about 400 workers, with about 100 employed at the peak of construction. During peak operations, the project would employ about 900 people working in three shifts; about 30 of which would work in management or supervision, 34 in administration, 141 in skilled or technical positions, and 670 in unskilled labor positions. Dow Kokam MI, LLC estimates the annual payroll for this facility would be about \$34 million. This employment would have a strong beneficial impact on the economy of Midland and the surrounding region, and would increase the respective tax base of the City of Midland, Midland County, and Michigan.

The number of people to be employed for construction and operation of the Midland Battery Park is small relative to the estimated 10,000 unemployed people living near the project site. Because there is a large local pool of potential employees, it is likely that most people hired to work at the facility would already live near the site, and there would be very little in-migration of new employees. Any in-migration would not have an adverse impact on housing availability or prices, as the number of relocating employees would be small and there are a substantial number of vacant residential units in the area.

The police department, fire department, and other emergency service providers in the city of Midland currently serve local manufacturing facilities that are similar to the proposed Midland Battery Park Project. Therefore, there would be no need to expand the training or capabilities of

these organizations. Because it is likely that most people to be employed at the planned facility would already live in the area, the proposed project would have little or no indirect impact on the local emergency service providers.

MCV or CE would construct the transmission line. It is likely that no new employees would be hired for this temporary construction project.

3.9.2.2 No-Action Alternative

Under the No-Action Alternative, DOE would not provide funding to Dow Kokam MI, LLC and the Midland Battery Park would not be constructed. The beneficial economic impacts of increased employment and an increase in the tax base of local and state governments would not occur.

3.10 Health and Safety

3.10.1 AFFECTED ENVIRONMENT

Soils in the region surrounding the project site have been contaminated with dioxin from past production of chlorine-based products on the adjacent Dow Chemical Company main complex (MDEQ 2004). Figure 3-2 shows concentrations of dioxin in soil samples collected in the Midland area. The project site is in the northeastern corner of the Dow Chemical Company facility. Concentrations of dioxin from samples on and in the immediate vicinity of the site ranged from 30 parts per trillion total toxic equivalents from one sample taken in the middle of the project site, to 930 parts per trillion total toxic equivalents near the southern boundary of the site. Some samples taken to the south and southeast of the site had concentrations of over 1,000 parts per trillion total toxic equivalents (Figure 3-2). Concentrations of dioxin in river sediments and floodplain soils along portions of the Tittabawassee River, such as along a portion of the CE transmission line route, might be much higher than concentrations in soils outside of the floodplain (MDEQ 2004). Background levels of dioxin in Michigan generally range from about 1 to 10 parts per trillion total toxic equivalents (MDEQ n.d.).

Cleanup criteria for environmental contamination in Michigan are determined under Part 201, "Environmental Remediation," of the *Natural Resources and Environmental Protection Act*. MDEQ has established a soil generic residential direct contact criterion for dioxin of 90 parts per trillion total toxic equivalents (MDEQ 2004) and an industrial direct contact criterion of 990 parts per trillion total toxic equivalents. Requirements of Part 201, such as soil treatment, must be implemented prior to development on sites with dioxin concentrations greater than the applicable contact criterion.

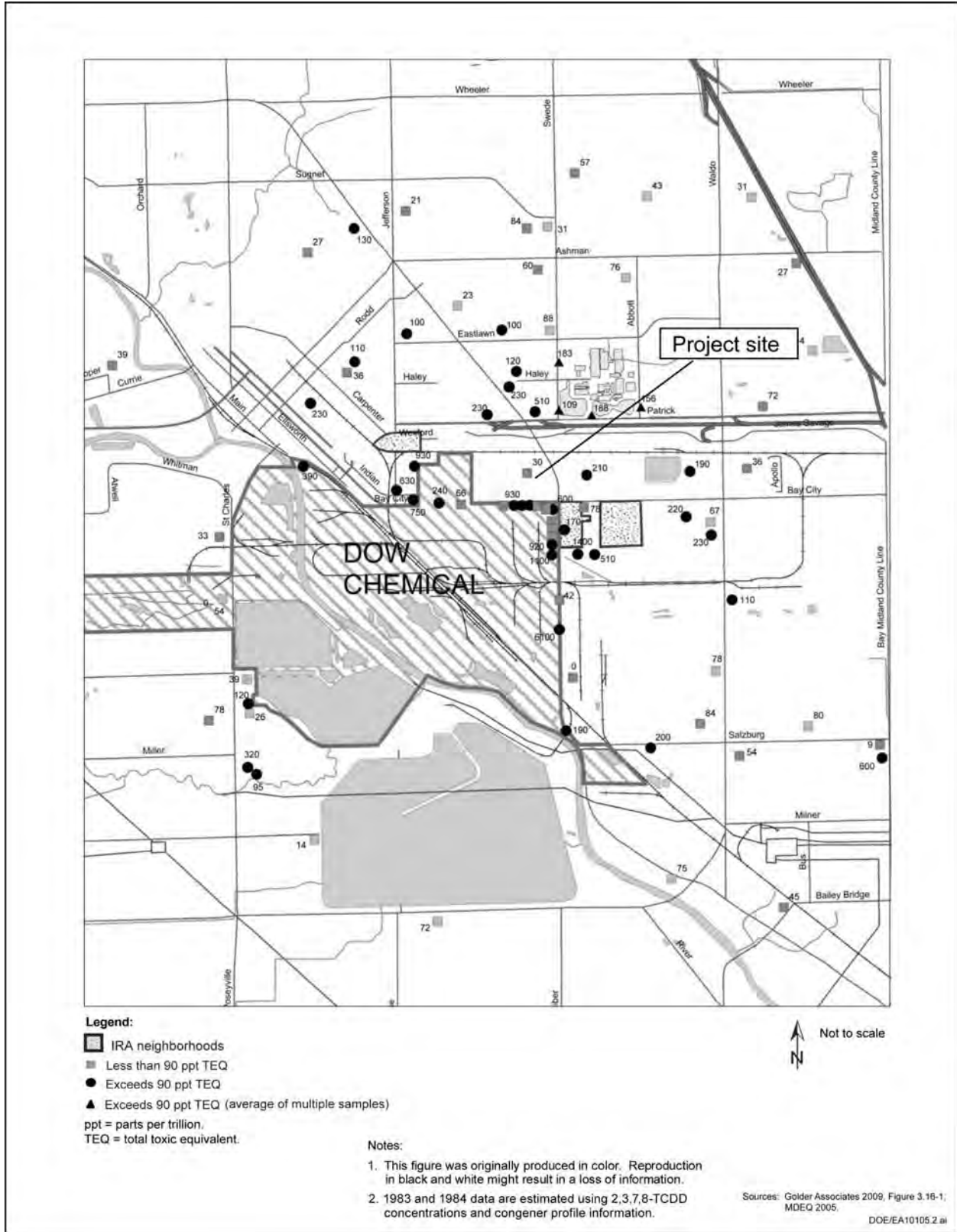


Figure 3-2. Measurements of dioxin concentrations in soils in the Midland Area.

The following summary of potential health effects of dioxin exposure is quoted from the MDEQ document (MDEQ 2004).

Higher exposures to dioxins in human populations have been linked with many adverse effects including chloracne, increased incidence of cancer, cardiovascular disease, diabetes, birth defects, and blood disease (porphyria). Fetuses, infants, and children may be especially sensitive to dioxin exposure because of their rapid growth and development. Low-level exposures to dioxins in human populations have been linked to more subtle effects on developing fetuses including alterations in thyroid function, immune function, learning abilities, behavior, and effects on tooth enamel. The same adverse effects noted above and other biological responses to dioxins have also been observed in animal studies with controlled exposures to dioxin. It's important to note that some effects of dioxins, such as chloracne in humans and wasting disease/death in some rodents, have only been observed in a few species that appear more sensitive to that particular effect.

Other effects of dioxins, including changes in liver enzymes, hormonal effects, and effects on the developing nervous system, appear to occur in many or most species, including humans. Based on the available information, dioxins are believed to have the potential to cause a wide range of adverse effects in humans. The EPA has characterized the mixture or group of dioxins to which people are usually exposed as "likely human carcinogens." The EPA has also characterized 2, 3, 7, 8-[Tetrachlorodibenzo-p-Dioxin]—the most toxic chemical in the dioxin group—as a "human carcinogen." In addition, the U.S. Department of Health and Human Services,

National Toxicology Program 9th Report on Carcinogens (January 2001) lists 2, 3, 7, 8-[Tetrachlorodibenzo-p-Dioxin] as a substance "known to be a human carcinogen." The MDEQ has evaluated the data on dioxin exposures in humans, animals, and what is known about how dioxins affect cell and tissue functions. These data indicate that humans are susceptible to various adverse effects of dioxins. This MDEQ conclusion is consistent with the [World Health Organization], the International Agency for Research on Cancer, U.S. Centers for Disease Control and Prevention, and the EPA. It is not yet known if people exposed to the elevated levels of dioxins found in soils in the Midland area and in downriver floodplains have or will experience any of these adverse effects.

3.10.2 ENVIRONMENTAL CONSEQUENCES

3.10.2.1 Proposed Project

3.10.2.1.1 *Exposure to Dioxin*

Concentrations of dioxin measured in the soil at the project site are below the maximum allowed direct contact criterion of 990 parts per trillion total toxic equivalent for industrial facilities established under Part 201 of the *Natural Resources and Environmental Protection Act*.

Therefore, facilities may be constructed at the site without soil treatment. In accordance with the Act, no soil may be removed from the site and relocated to uncontaminated areas or areas with other land uses that have a lower direct contact criterion (such as residential areas).

“Due care” actions, as required under Section 20107a of the *Natural Resources and Environmental Protection Act*, would be implemented to minimize exposure to dioxin. The due care actions may include requirements for industrial hygiene practices, air monitoring, and reducing the track-out of soil when excavating or conducting other subgrade earth disturbances (Taylor and Miller 2009). Dow Kokam MI, LLC also would be required to comply with the requirements of its construction air quality operating permit for preventing emissions of fugitive dust. In addition, Dow Kokam MI, LLC would implement the applicable requirements of the amended Hazardous Waste Management Facility Operating License issued to Dow Chemical Company by the MDEQ in 2006 (Bruchmann 2006; MDEQ 2006) to control the release of dioxin from soil.

There is a day care center to the north of the project site on James Savage Road and restaurants to the east on East Saginaw Road. Special precautions could be required as part of the MDEQ permits to minimize the risk of exposure to dioxin-contaminated soils during construction of the Midland Battery Park. These measures could include notifying the affected facilities of the construction activities and potential exposures, more rigorous management and monitoring of fugitive dust than routine best management practices at times when winds or construction activity might direct fugitive dust emissions at these facilities, providing for temporary relocation of day care activities during days of potential exposure, scheduling work-around days of day care operation, or providing temporary enhanced air filtration within these facilities during construction periods.

DOE concludes that associated health and safety risks would not be significant because dioxin concentrations in the soil are below the allowed limit for the planned land use, and compliance with permit and regulatory requirements would minimize the risk of exposure by workers and the public to dioxin-contaminated soil during construction of the Midland Battery Park.

During operations, access roads, loading and unloading areas, and other areas where vehicles would operate would be paved, and fugitive dust emissions would be minimal. The parking lots, buildings, and other facilities at the Midland Battery Park would cover most of the soil at the project site that had been contaminated with dioxin, and the proposed project therefore would reduce the long-term risk to the public from exposure to dioxin at and near the site.

The CE transmission line route crosses the floodplain of the Tittabawassee River, where soil concentrations of dioxin might be much higher than in surrounding areas, and both proposed transmission line routes cross other areas where the concentration of dioxin in soils could exceed the direct contact criterion of 990 parts per trillion total toxic equivalent for industrial facilities (Figures 2-3 and 3-2). Applicable requirements of Part 201 of the *Natural Resources and Environmental Protection Act*, such as requirements for soil disposal and due care actions, would

be implemented during installation of power poles in areas where soil concentrations exceeded the applicable contact criterion.

3.10.2.1.2 Industrial Health and Safety Impacts

Construction

DOE estimated health and safety impacts to workers from industrial hazards by using 2007/2008 incidence rates for both nonfatal occupational injuries and occupational fatalities from the U.S. Department of Labor, Bureau of Labor Statistics data. The Bureau reports information for two categories of nonfatal occupational injury information: (1) total recordable cases and (2) days away from work, or days of restricted work activity or job transfer. These health and safety incident statistics are defined as follows:

- Total recordable cases.

The total numbers of work-related deaths, illnesses, or injuries that result in the loss of consciousness or days away from work, restrict work activity or job transfer, or require medical treatment beyond first aid.

- Days away from work, or days of restricted work activity or job transfer.

Cases that involve days away from work, or days of restricted activity or job transfer, or both.

The Bureau of Labor Statistics provides total recordable cases incidence rates and days away from work incidence rates as the number of injuries per 100 full-time workers. The Bureau provides fatality incidence rates as the number of fatalities per 100,000 full-time workers. A full-time worker is assumed to work 2,000 hours per year.

For construction activities, DOE used the Bureau of Labor Statistics incidence rates from the category non-residential building construction. The incidence rate in 2008 for total recordable cases was 4.4 injuries per 100 full-time employees, and the incidence rate for days away from work, or days of restricted work activity or job transfer was 2.2 injuries per 100 full-time employees (BLS 2009b). A peak of 100 construction workers would be required for a few months, with fewer workers during the remainder of construction. For this analysis, DOE conservatively assumed that an average of 75 workers would be required for 2.5 years to construct the Midland Battery Park. Using this information, DOE estimates that about 8 total recordable cases and about 4 days away from work would occur during construction. Standard best management practices for the construction industry would be implemented to reduce risks to workers. This includes, but is not limited to, complying with Occupational Safety and Health Agency “Safety and Health Regulations for Construction” (29 CFR Part 1926).

The fatality incidence rate for construction activities in 2007 (2008 data were not available) was 10.5 fatalities per 100,000 full-time employees (BLS 2007). To estimate the number of worker fatalities from industrial hazards during construction, DOE multiplied the above rate by the

number of full-time workers during construction (75) and the number of years that construction will take (2.5), and divided the results by 100,000. The result is an estimate of about 0.02 fatality occurring construction. Based on these results, DOE concludes that a fatality during construction would be unlikely.

Operations

Operation of the Midland Battery Park would require the storage and use of numerous hazardous chemicals such as alcohol, acids, electrolytes, and polymers. Large quantities of some chemicals would be used annually: for example, about 32,400 gallons (123,000 liters) of isopropyl alcohol, 48,600 gallons (184,000 liters) of acetone, 6.34 million pounds (2.88 million kilograms) of binder, and 1.65 million pounds (0.75 million kilograms) of solvent. Isopropyl alcohol and acetone would be stored onsite in 220-gallon (830-liter) drums. The other chemicals would each be stored in tanks up to 176,000 pounds (80,000 kilograms).

Some of the chemicals that would be stored and used onsite are flammable. Others are caustic or have other characteristics that cause irritation or more serious damage if inhaled or spilled on unprotected skin (Golder Associates 2009, Section 3.16). The bulk of the hazardous materials would be stored in a separate hazardous materials storage building. Liquids would be transferred by subsurface piping to mixing areas and electrolyte filling areas. As required, chemicals would be stored in areas with secondary containment.

General Health- and Safety-related hazards expected during operations include exposure to hazardous materials, exposure to flammable/combustible and toxic liquids, and risks associated with moving equipment. The project would minimize these potential hazards through correct operation of equipment, an equipment maintenance program, safety devices, employee training, and management and control measures. Safety devices would include fire protection systems, material handling safety systems, and fugitive emissions control systems. The project would maintain a spill prevention, response, and control plan and operate in accordance with Occupational Safety and Health Administration standards (29 CFR Part 1910). Exposure from releases of bulk chemical storage containers and intermediate process tanks would be minimized by safe handling practices and secondary containment structures (Golder Associates 2009, Section 3.16).

Solvents such as or similar to n-methylpyrrolidone (NMP) would be used in the battery manufacturing process. These chemical and similar solvents have toxicity concerns, as do essentially all industrial chemicals, and should only be used with appropriate precautions. The primary risks from the use of NMP are associated with chronic exposures like those experienced in the work place. NMP has low acute toxicity, so risks to workers and the public from short-term exposure during spills or other accidents are low. There would be no unusual or potentially unacceptable hazards or risks to workers, who would be trained to operate under a safety program and procedures.

N-METHYLPYRROLIDONE

N-Methylpyrrolidone (NMP) is a water-miscible organic solvent widely used in the petrochemical industry, in fabricating microelectronics, and in manufacturing compounds such as pigments, cosmetics, pesticides, floor cleaners, and paint removers. NMP increasingly is used as a substitute for chlorinated hydrocarbons, which are more toxic to the environment and human health.

NMP has low acute toxicity, is potentially irritating to the skin and eyes, and at high aerosol concentrations can cause respiratory tract irritation. It is readily absorbed through the skin which, along with inhalation, represents the primary exposure routes for humans. As with other organic solvents, breathing excessive amounts of NMP can affect the brain and result in temporary headaches, nausea, dizziness, clumsiness, drowsiness and other effects similar to intoxication. Testing on animals has not shown a link to cancer that can be related to human exposures. However, NMP has been shown to cause effects, such as delayed growth, to offspring of animals exposed during pregnancy. As a result of these types of test results, the State of California has identified NMP as a reproductive toxin and has established maximum allowable dose levels of 17,000 and 3,200 micrograms per day for dermal contact and inhalation exposures, respectively. Products that could result in daily exposures exceeding these levels must carry an appropriate label under California law.

To estimate accident rates during operations, DOE used the Bureau of Labor Statistics incidence rates from “battery manufacturing.” The total recordable cases incidence rate is 4.6 injuries per 100 full-time employees and the days away from work, or days of restricted work activity or job transfer incidence rate is 2.5 injuries per 100 full-time employees (BLS 2009b). To estimate nonfatal impacts to workers from industrial hazards during operations, DOE multiplied the incidence rates from the Bureau of Labor Statistics by the number of full-time workers during peak operations (885) and divided the results by 100. Using this method, DOE estimates that about 41 total recordable cases and about 22 day away from work would occur annually during operations.

To estimate the number of worker fatalities from industrial hazards during operation of the Midland Battery Park, DOE used the fatality incidence rate of 2 fatalities per 100,000 full-time employees, based on the Bureau of Labor Statistics from 2007 for “chemical manufacturing” (BLS 2007). Based on this incident rate, DOE estimates that about 0.018 fatalities would occur annually when this facility is operating at its peak capacity. Similar estimates of annual fatality rates of 0.017 and 0.022 would be obtained using the fatality rates reported by the Bureau of Labor Statistics (BLS 2007) for “machinery manufacturing” and “all manufacturing,” respectively.

DOE anticipates minimal industrial health and safety risks during construction and operation of either transmission line, as those lines would be short (less than 2 miles) and would be constructed and operated by utility company crews experienced at such work.

3.10.2.2 No-Action Alternative

Under the No-Action Alternative, DOE would not provide funding to Dow Kokam MI, LLC and the Midland Battery Park would not be constructed. There would be no associated risks to employees of accidents or fatalities. The project site would not be disturbed and dioxin in the soil would not be resuspended. Furthermore, the contaminated soil would not be treated or capped, so risks to the public from dioxin on the project site would remain as they are now.

3.11 Waste Management

3.11.1 AFFECTED ENVIRONMENT

In the city of Midland and the Midland County area, nonhazardous solid wastes are disposed of at the City of Midland Sanitary Landfill, located about 2 miles northeast of the proposed project site. The landfill was recently expanded and now has an estimated remaining capacity of over 40 years. The landfill received between 430,000 and 590,000 cubic yards of waste per year from 2003 through 2008 (City of Midland 2009a).

The nearest hazardous waste disposal facility is the Dow–Salzburg landfill, located about 2 miles southeast of the proposed project site. This landfill is licensed by MDEQ to process and dispose of numerous types of hazardous wastes, including many of the wastes to be generated by the proposed project (MDEQ 2008).

3.11.2 ENVIRONMENTAL CONSEQUENCES

3.11.2.1 Proposed Project

Limited amounts of construction debris and other wastes would be generated during construction of the Midland Battery Park, including waste oils, lubricants, solvents, cleaners, paints, and domestic solid waste. Generation of wood waste and waste related to earthworks and excavation materials could occur. Prevention measures would be implemented to reduce the potential for the accidental release of hazardous materials and waste. Spill containment measures, such as sealed storage areas or tank spill areas, would have sufficient capacity to contain a spill from the largest storage tank within a containment area (Golder Associates 2009, Section 3.17.2).

Nonhazardous solid waste would be transported to the City of Midland Sanitary Landfill, which has the capacity to handle these wastes. Hazardous wastes generated during construction would be limited in quantity and within the limits of a conditionally exempt small-quantity generator (that is, no more than 220 pounds per month). These hazardous wastes would be transported to a licensed treatment and disposal facility.

The following description of waste generation and disposal during operations is from the environmental report (Golder Associates 2009, Section 3.17.2).

The project would generate domestic solid waste, industrial nonhazardous waste, and hazardous waste from project operations and manufacturing processes. Table 3-3 summarizes the major industrial waste streams expected to be generated from project operations and manufacturing processes and their anticipated disposal processes.

All hazardous waste would be stored and handled in accordance with federal *Resource Conservation and Recovery Act* regulations and state hazardous waste regulations, including using proper containers, labeling, performing inspections, and maintaining records. The project would be classified “Very Large Quantity Generator” of hazardous waste based on the anticipated volume of generated hazardous waste exceeding 2 million pounds (0.9 million kilograms) per year. A registered hazardous waste transporter would transfer the hazardous waste under a Uniform Hazardous Waste Manifest Form to a Subtitle C landfill or other registered treatment, storage, and disposal facility.

All wastes identified by “smelting” in the recycle column of Table 3-3 would be recycled at local smelter (metals recovery facilities), who would remove and recover metals such as nickel, manganese, and copper. The remainder of the waste would be hauled by truck to a licensed landfill.

Table 3-3. Major industrial waste streams for the Midland Battery Park Project.

Material	Status	Recycle	Annual quantity of waste (million pounds) ^a
Mixed and dried cathode material	Anticipated nonhazardous	Yes – smelting	0.128
Mixed and dried anode material	Anticipated nonhazardous	No recycling, industrial waste	0.128
Dried cathodes	Anticipated nonhazardous	Yes – smelting	3.85
Dried anodes	Anticipated nonhazardous	Yes – smelting	3.85
Stacked element	Anticipated nonhazardous	Electrodes: Yes –smelting Other elements not recycled (industrial waste)	3.85
Assembled but not filled cells		Electrodes: Yes –smelting Other elements not recycled (industrial waste)	3.21
Filled but not formed cells	Hazardous	No	0.659
Formed cells	Hazardous	No	1.28
Scrap electrolyte	Hazardous	No	1.28

Source: Golder Associates 2009, Table 3.17-1.

a. To convert from pounds to kilograms, multiply by 0.454.

Used oil and other nonhazardous liquid waste might also be generated from equipment maintenance and other support operations. Battery assembly solid waste would be formed cells (hazardous waste) or recyclable plastics and metals. These wastes would be properly disposed of or recycled using local waste handling service providers.

Universal waste, such as unused pesticide, mercury containing devices, spent batteries, and lamps, would be managed as universal waste in accordance with the implementing regulations of the *Resource Conservation and Recovery Act* (40 CFR Part 273). Quantities of universal waste would fall under the threshold for a small-quantity handler of universal waste; that is, accumulation of no more than 10,000 pounds (5,000 kilograms) of universal waste.

The project would implement a waste management and recycling plan as an integral part of its operations that includes the following elements:

- Evaluation of waste production processes and identification of recyclable materials;
- Identification and recycling of products that could be reintroduced into the manufacturing process;
- Investigation of external markets for recycling by other industrial processing operations, and
- Establishing recycling objectives and formal tracking of waste generation and recycling rates.

Several trash-hauling companies in the city of Midland and Midland County area provide trash hauling and roll-off services. These trash-hauling companies are equipped to manage the collection, transport, and disposal of domestic solid waste and nonhazardous materials. These nonhazardous waste streams would be transported for disposal to the City of Midland Sanitary Landfill or to other authorized landfill facilities.

Several registered hazardous waste service companies in the city of Midland and Midland County area provide collection and transport to registered treatment, storage, and disposal facilities. The method of treatment or disposal of hazardous waste by the hazardous waste service providers is dependent on the waste stream and its characteristics.

Although the proposed project would generate very large quantities of hazardous and other wastes, DOE concludes that the associated impacts would not be significant. The same and similar materials to those that would be generated at the Midland Battery Park are safely handled, stored, and disposed of at numerous other facilities, and the regulatory requirements and associated procedures and practices that apply to those facilities would be applicable to the proposed project. Most wastes generated at the facility would be recycled. Materials that could not be recycled would be disposed of at licensed facilities in accordance with regulatory requirements.

3.11.2.2 No-Action Alternative

Under the No-Action Alternative, DOE would not provide funding to Dow Kokam MI, LLC and the Midland Battery Park would not be constructed. No hazardous waste would be generated, recycled, or disposed of.

3.12 Environmental Justice

3.12.1 AFFECTED ENVIRONMENT

DOE used data from the 2000 Census (USCB 2001) to evaluate whether disproportionately high or adverse impacts would occur to minority or low-income populations as a result of the proposed project or No-Action Alternative. The Midland Battery Park would be located in Michigan census tract 2906. In 1999, that area had a minority population of 4.7 percent, which was similar to the percentage for the city of Midland (6.7 percent) and Midland County (4.5 percent), but lower than the percentage for the state of Michigan (19.9 percent).

Census tract 2906 had 14.3 percent of its population below the poverty level in 1999. This proportion was higher than that in the city of Midland (8.8 percent), Midland County (8.4 percent), and the state of Michigan (10.5 percent).

3.12.2 ENVIRONMENTAL CONSEQUENCES

The project site is located in an area where the proportion of the population classified as minority is similar to that of the surrounding area, but lower than that of the state of Michigan; therefore, any impacts of this project would not be expected to disproportionately affect minority populations. In contrast, the project site is in an area that has a higher proportion of its population below the poverty level than that of the surrounding areas or the state of Michigan, and impacts of the project could disproportionately affect low-income residents.

DOE has not identified any high and adverse potential impacts to populations. Care would be taken during soil-disturbing activities to ensure that soils contaminated with dioxin would not be resuspended and result in health effects to local residents (Section 3.10). Other impacts that could affect surrounding neighborhoods, such as those from traffic, construction noise, and changes in the view of the area, would be temporary or minimal. Therefore, DOE does not anticipate any adverse impacts that would disproportionately affect communities with a high percentage of minority or low-income populations. In addition, DOE is not aware of any unique exposure pathways, sensitivities, or cultural practices that would result in different impacts on minority or low-income populations.

3.13 The Relationship between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

Council on Environmental Quality regulations that implement the procedural requirements of NEPA requires consideration of “the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity” (40 CFR 1502.16).

Construction and operation of the facility would require short-term uses of land and other resources. Short-term use of the environment, as used here, is that used during the life of the project, whereas long-term productivity refers to the period of time after the project has been decommissioned, the equipment removed, and the land reclaimed and stabilized. The short-term use of the proposed project site for the Midland Battery Park Project would not affect the long-term productivity of the area. If it is decided at some time in the future that the project has reached its useful life, the facility and foundations could be decommissioned and removed, and the sites reclaimed and revegetated to resemble pre-disturbance conditions.

3.14 Irreversible and Irrecoverable Commitments of Resources

The proposed project would result in an irretrievable commitment of the 50 acres required for construction and operation of the Midland Battery Park because other uses would be precluded during the time the land was being used for the proposed project. The proposed project would also result in an irreversible commitment of energy and materials used to construct and operate the factory. The materials used for the project would include construction materials and materials used to manufacture batteries, such as cathode materials, anode materials, separators, packaging, and chemicals such as electrolytes. DOE would also have expended the finances associated with the funding for the project.

3.15 Unavoidable Adverse Impacts

Construction and operation of the Midland Battery Park would cause unavoidable emissions of some criteria air pollutants. The project would be classified as a minor source of emissions, and air pollutant concentrations would not exceed the National Ambient Air Quality Standards. Construction of the facility would also require filling 9.45 acres of wetlands and some unavoidable adverse impacts resulting from the loss of wetlands functions would occur.

The use of construction materials, such as steel and concrete, would be unavoidable but would represent a small fraction of available materials. The generation of some solid wastes, construction debris, and hazardous wastes would be unavoidable. Dow Kokam MI, LLC would handle all wastes in accordance with applicable regulations, and would implement best management practices and pollution prevention and waste minimization programs.

4. CUMULATIVE IMPACTS

Council on Environmental Quality regulations stipulate that the cumulative impacts analysis within an EA consider the potential environmental impacts resulting from the “incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such actions” (40 CFR 1508.7). Because the impacts of the proposed project generally would be minor and localized, DOE focused its evaluation of cumulative impacts of the proposed project and reasonably foreseeable future actions within and near the City of Midland.

4.1 Reasonably Foreseeable Actions

The *City of Midland Master Plan* (City of Midland 2007) outlines strategies and goals and provides a long-range guide to managing growth in Midland. The plan identifies the following goals and actions that are applicable to this evaluation of cumulative impacts:

- An emphasis on the development of the downtown area and multi-use centers;
- A reduced emphasis on heavy industry for new development;
- Road improvements needed to reduce congestion and support new development.

Large-scale projects that were in the planning or development stage in 2009 include the expansion of the MidMichigan Medical Center, the new Midland Country Club, renovation of the “H” Hotel, and the development of Evergreen Solar, Inc. (City of Midland 2009b). Heavy development would be restricted to two areas: the southeast quadrant of the city, where heavy-industrial complexes currently operate, and the City of Midland Sanitary Landfill property. The Midland Battery Park would be located in the southeast quadrant of the city. No new improvements are identified for the roads surrounding the project site.

The environmental report summarized The Dow Chemical Company’s “significant projects in the permit process” in the City of Midland or close to the project site (Golder Associates 2009, Section 3.19). The projects identified in the environmental report are listed below. About 100 people would be employed by these projects.

- Littlefoot - Chemical Distribution Upgrade – 2008
- Brake Fluids - Modify 304 Bldg Assets – 2008
- DVB Cap Increase - 2008
- Apex - Plant Expansion - 2009
- Photovoltaics - New Market Dev Plant - 2009
- Diesel Particulate Filter - New Plant - 2009
- Sapphire IV - Plant Upgrade - 2009
- Upgrade of the Manufacturing Facility for Dow Agrosiences - 2009

4.2 Summary of Cumulative Impacts

The environmental impacts of past and ongoing actions on the existing environment at the project site and surrounding region have already passed through the environment or are captured as part of existing baseline conditions. The proposed project would have no or negligible impacts on soils and geology, noise, visual resources, land use, and cultural resources. Therefore, it is unlikely that the proposed project would combine with other present or reasonably foreseeable actions, singularly or collectively, to substantially impact these aspects of the environment.

The City of Midland has strong zoning ordinances and clear planning goals. The Midland Battery Park would be compatible with current land uses surrounding the project site and with the planning goals of the City of Midland. Reasonably foreseeable future actions in the area are developed in accordance with City zoning requirements, and the combined impacts of the proposed project and these other projects on land uses would be negligible.

The proposed project would contribute a small incremental increase in emissions of regulated air pollutants. Other planned actions, such as those by The Dow Chemical Company, could also contribute to air pollution in the area. Because the Midland Battery Park has been designed to capture and remove most emissions, and thus would not be a major source of air pollutants, DOE does not anticipate a substantial cumulative impact on air quality from the proposed project and other planned activities.

Contaminants in groundwater (specifically, vinyl chloride and Freon 11) and soils (dioxin) could be released or redistributed in the environment during construction of the Midland Battery Park, and similar releases could occur during other construction activities planned by The Dow Chemical Company or others in the area. Permitting and other regulatory actions would be required for all projects to limit the release of these contaminants and reduce risks to human health and safety and the environment. The cumulative impacts of these actions would be minimized.

Construction of the Midland Battery Park would require filling 9.45 acres of non-jurisdictional, depression wetlands and clearing about 50 acres of marginal habitat for plants and animals. This would contribute to the long-term trend in loss of wetlands and wildlife habitat in the region. Because wetlands are widespread in the Midland area, it is possible that other planned actions would also impact wetlands. Any loss of wetlands regulated by federal or state laws would be mitigated by replacement or improvement of wetlands or similar actions.

Construction and operation of the Midland Battery Park and other planned activities on and near The Dow Chemical Company property would incrementally increase traffic on roads used to access the facilities. The proposed project would have minimal impacts on traffic congestion at the entrance to the project site (Section 3.8), and planned expansions and new projects identified by The Dow Chemical Company would employ about 100 people. The City of Midland does not

identify any roads surrounding that site as having congestion or other traffic problems (City of Midland 2007). Thus, the cumulative impacts of the proposed project and other planned actions in the area on traffic congestion would be small.

Construction and operation of the Midland Battery Park and other planned projects would beneficially increase employment in the region. Because a large number of people in the area are unemployed, most people hired for these projects probably already reside in the area, and there would be no impacts related to in-migration.

The Midland Battery Park would produce large quantities of hazardous waste and other waste materials. Much of this waste would be recycled, and other wastes would be treated and disposed of at local or regional facilities. Other activities planned by The Dow Chemical Company also would produce hazardous wastes. The Dow Chemical Company and other companies operate waste recycling, treatment, and disposal facilities in the region that are licensed to process the types of wastes anticipated to be produced by these projects. DOE does not anticipate significant negative impacts on the capacity of these facilities to process the wastes produced by the proposed project and other planned projects.

In summary, the proposed project and other reasonably foreseeable activities that might occur within and near the City of Midland would not have significant cumulative impacts on the environment. Those actions would result in incremental increases in emissions of air pollutants, loss of wetlands and wildlife habitat, and traffic. They also could cause temporary releases of contaminants into the environment. The actions associated with most of these impacts are regulated by state and federal regulations. Monitoring, treatment, and mitigation would be required for all applicable projects.

5. CONCLUSIONS

This EA addresses DOE's proposed actions of providing a grant and/or a loan to Dow Kokam MI, LLC to construct and operate the Midland Battery Park in Midland County, Michigan. The facility would have the capacity to manufacture 1.2 billion watt-hours of batteries annually, enough to power 60,000 fully electric and hybrid vehicles operating with an average 20-kilowatt-hour battery system.

Construction and operation of the Midland Battery Park would be compatible with existing and future land uses in the area, and would have no or negligible impacts to soils and geology, noise, visual resources, and cultural resources. Impacts on traffic flow on roads used to access the project site would be minor after construction of a new intersection at the project site entrance.

Emissions of air pollutants during construction and operation of the Midland Battery Park would be a minor contribution to emissions in the area and would not cause or contribute to a violation of ambient air quality standards or otherwise affect the attainment status for Midland County. Emissions of greenhouse gases from the production of electricity and other power required to operate the Midland Battery Park would be offset by the reduction of gasoline consumption by electric and hybrid-electric vehicles using batteries produced at the facility.

About 50 acres of marginal habitat for plants and animals would be cleared and graded. This would not significantly impact any plant or animal species because the project site is small and isolated from larger tracts of undisturbed land, and because plant and animal species at the site are common and widespread in the region. Construction of an electric transmission line on the Tittabawassee River may adversely impact migratory birds, wetlands, and a State-protected plant species. The transmission line should be designed to avoid wetlands and State-protected species, as well as minimize the risk of collisions and electrocutions by migratory birds.

Construction of the Midland Battery Park would require grading and filling 9.45 acres of isolated, depressional wetlands. The potential impacts on surface water flow and sediment transport would be minimized by constructing detention basins to temporarily store storm water and other surface water runoff. The wetlands on the proposed project site are not regulated under federal or State laws. In addition, the wetlands are surrounded by urban development, are more than 1.4 miles from the nearest river, have no connection to any other stream or surface water, and have minimal value for wildlife habitat and biodiversity conservation. For these reasons, DOE determined that grading and filling of these wetlands would not cause significant adverse impacts.

The Midland Battery Park would be constructed in an area where soils are contaminated with dioxin from past manufacturing activities and groundwater to the south of the project site is contaminated with vinyl chloride and Freon 11. Concentrations of dioxin in soils at the project site are within the allowable limits set by MDEQ for construction and operation of industrial facilities. Dow Kokam MI, LLC would be required to implement health and safety practices to

minimize the risk of exposure to dioxin during construction. Dow Kokam MI, LLC would also be required to obtain a permit from MDEQ and implement associated permit requirements for the safe handling and treatment of contaminated groundwater prior to pumping and discharging the water.

The City of Midland and the surrounding area would experience long-term beneficial economic impacts from increased employment opportunities and spending in the local economy.

The proposed project site is in an area that has a higher proportion of its population below the poverty level than that of the surrounding areas or the state of Michigan. The proportion of the population living near the project site that is classified as a minority is lower than that of Michigan. Adverse impacts of the proposed project would be negligible or would be mitigated and minimized to low levels; therefore, DOE does not anticipate any adverse impacts that would disproportionately affect communities with a high percentage of low-income or minority populations.

Under the No-Action Alternative, DOE would not provide a grant or loan to Dow Kokam MI, LLC and, for the purposes of analysis in this EA, it is assumed that the Midland Battery Park would not be built. Under the No-Action Alternative, no impacts to the existing environment would occur. In addition, the beneficial economic impacts of the proposed project would not be realized.

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APPENDIX A. DISTRIBUTION LIST

Federal Offices

Craig Czarnecki, Field Supervisor
U.S. Fish and Wildlife Service
East Lansing Ecological Services Office
2651 Coolidge Road
East Lansing, MI 48823

Mr. Ken Westlake
NEPA Implementation Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
77 West Jackson Boulevard, E-19J
Chicago, IL 60604-3590

Mr. Kevin Haggerty
U.S. Department of Energy
Freedom of Information Act Reading Room
1000 Independence Avenue, SW, 1G-033
Washington, DC 20585

State Offices

The Honorable Jennifer Granholm
Governor of Michigan
PO Box 30013
Lansing, MI 48909

Mr. William Parkus
Coordinator, Regional Review Office
Southeast Michigan Council of Governments
535 Griswold, Suite 300
Detroit, MI 48226

Michigan Department of Natural Resources
P.O. Box 30028
Lansing, MI 48909

Brian Grennell
Michigan State Historic Preservation Office
Michigan Historical Center
P.O. Box 30740
702 W. Kalamazoo St.
Lansing, MI 48909-8240

Mike Jury
Michigan Department of Environmental Quality
Saginaw Bay District Office
401 Ketchum St. Suite B
Bay City, MI 48708

Tribal Organizations

Fred Cantu, Chief
Saginaw Chippewa Indian Tribe of Michigan
7070 E. Broadway Road
Mt. Pleasant, MI 48858

City/County Offices

City of Midland
Attention: Noel Bush, Utilities Director
Midland City Hall
333 W. Ellsworth St.
Midland, MI 48640

Grace A. Dow Memorial Library
1701 W. St. Andreww
Midland, MI 48640

APPENDIX B. CONSULTATIONS

This appendix contains copies of consultation letters sent by the DOE to fulfill its responsibilities under the *Endangered Species Act* and *National Historic Preservation Act*.



NATIONAL ENERGY TECHNOLOGY LABORATORY
Albany, OR • Morgantown, WV • Pittsburgh, PA



November 5, 2009

Brian Grennell
Michigan State Historic Preservation Office
Michigan Historical Center
P.O. Box 30740
702 W. Kalamazoo St.
Lansing, MI 48909-8240

Dear Mr. Grennell:

SUBJECT: Midland Battery Park Project in Midland County Michigan

The U.S. Department of Energy (DOE) is proposing to provide financial assistance to KD ABG MI, LLC through the Electric Drive Vehicle Battery and Component Manufacturing Initiative of the American Reinvestment and Recovery Act (ARRA). Funding to that company would be used to construct the Midland Battery Park, a facility for the manufacturing of advanced superior lithium polymer batteries for hybrid and electric vehicles. The facility would be located in the City of Midland, Midland County Michigan.

Construction of the Midland Battery Park would require disturbing about 50 acres and the installation of a new power line that will be 1 to 2 miles long. The facility would be constructed in the northeast quarter of Section 22, Range 14 north, Township 2 east, on land owned by Dow Chemical Company at 2900 South Saginaw Road in the central part of the City of Midland (see attached map). That land is vacant, but surrounded by existing industrial and commercial facilities. Much of the property appears to have been disturbed in the past for agriculture and mining of sand. The power line will be constructed primarily through existing industrial developments or adjacent to a major street.

An Environmental Assessment currently is being prepared for this project by the DOE's National Energy Technology Laboratory to meet the requirements of the National Environmental Policy Act. A copy of that Environmental Assessment will be sent to your office later this year.

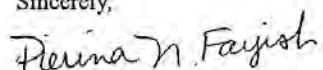
In April 2009, Golder Associates (a contractor to KD ABG MI, LLC) requested information from your office on the presence of known historic properties, archaeological sites, and historic cemetery sites within one mile of the site of the proposed Midland Battery Park. John Halsey of your office responded to that request by email on April 28, 2009 (attached).

To aid in the preparation of that Environmental Assessment, and to meet our obligations under Section 106 of the National Historic Preservation Act to take into account the effects of undertakings by federal agencies on historic properties, DOE is requesting any additional information your office has developed or obtained since April 2009 on historic properties that may occur within one mile of the proposed project site.

626 Cochran Mill Road, P.O. Box 10940, Pittsburgh, PA 15236

Please respond to Pierina Fayish of the National Energy Technology Laboratory at 412-386-5428 or pierina.fayish@netl.doe.gov.

Sincerely,



Pierina N. Fayish

Attachments: map
copy of April 29, 2009 email from John Halsey



NATIONAL ENERGY TECHNOLOGY LABORATORY
Albany, OR • Morgantown, WV • Pittsburgh, PA



November 5, 2009

Craig Czamecki, Field Supervisor
U.S. Fish and Wildlife Service
East Lansing Ecological Services Office
2651 Coolidge Road
East Lansing, MI 48823

Dear Mr. Czamecki:

SUBJECT: U.S. Department of Energy Conclusion of No Effects for the Midland Battery Park Project in Midland County Michigan

The U.S. Department of Energy (DOE) is proposing to provide financial assistance to KD ABG MI, LLC through the Electric Drive Vehicle Battery and Component Manufacturing Initiative of the American Reinvestment and Recovery Act (ARRA). Funding to that company would be used to construct the Midland Battery Park, a facility for the manufacturing of advanced superior lithium polymer batteries for hybrid and electric vehicles. The facility would be located in the City of Midland, Midland County Michigan.

Construction of the Midland Battery Park would require disturbing about 50 acres and the installation of a new power line that will be 1 to 2 miles long. The facility would be constructed on land owned by Dow Chemical Company in the central part of the City of Midland (see attached map). That land is vacant and vegetated, and adjacent to existing industrial and commercial facilities. Other than construction of the power line, there would be few or no impacts outside of the property where the facility would be located.

To comply with Section 7(a)(2) of the Endangered Species Act, the DOE has obtained from the Service's *Midwest Region Section 7(a)(2) Technical Assistance Website* a list of Federally-listed threatened, endangered, proposed and candidate species that occur within each Michigan county. Based on that list, and information provided by Tamika Dandridge of your staff on October 22, 2009, the DOE has determined that no Federally-listed species occur in Midland County, Michigan. Therefore, the DOE has concluded that the Midland Battery Park Project will have no effect on Federally-listed species.

An Environmental Assessment currently is being prepared for this project by the DOE's National Energy Technology Laboratory to meet the requirements of the National Environmental Policy Act. A copy of that Environmental Assessment will be sent to your office later this year.

If you have any comments or questions about the Midland Battery Park Project or our conclusion that the Project will have no effect on Federally-listed species, please contact Pierina Fayish of the National Energy Technology Laboratory at 412-386-5428 or pierina.fayish@netl.doe.gov.

Sincerely,

A handwritten signature in black ink that reads "Pierina N. Fayish".

Pierina N. Fayish

626 Cochran Mill Road, P.O. Box 10940, Pittsburgh, PA 15236



NATIONAL ENERGY TECHNOLOGY LABORATORY
Albany, OR • Morgantown, WV • Pittsburgh, PA



November 5, 2009

Fred Cantu, Chief
Saginaw Chippewa Indian Tribe of Michigan
7070 E. Broadway Road
Mt. Pleasant, MI 48858

Dear Chief Cantu:

SUBJECT: Midland Battery Park Project in Midland County Michigan

The U.S. Department of Energy (DOE) is proposing to provide financial assistance to KD ABG MI, LLC through the Electric Drive Vehicle Battery and Component Manufacturing Initiative of the American Reinvestment and Recovery Act (ARRA). Funding to that company would be used to construct the Midland Battery Park, a facility for the manufacturing of advanced superior lithium polymer batteries for hybrid and electric vehicles. The facility would be located in the City of Midland, Midland County Michigan.

Construction of the Midland Battery Park would require disturbing about 50 acres and the installation of a new power line that will be 1 to 2 miles long. The facility would be constructed on land owned by Dow Chemical Company at 2900 South Saginaw Road in the central part of the City of Midland (see attached map). That land is vacant, but surrounded by industrial and commercial facilities. Much of the property appears to have been disturbed in the past for agriculture and mining of sand. The power line will be constructed primarily through existing industrial developments or adjacent to a major street.

An Environmental Assessment currently is being prepared for this project by the DOE's National Energy Technology Laboratory to meet the requirements of the National Environmental Policy Act. A copy of that Environmental Assessment will be sent to you later this year.

DOE is requesting information your tribe has on properties of traditional religious and cultural significance within the vicinity of the proposed Midland Battery Park, and any comments or concerns you have on the potential for this Project to affect those properties. This information is being requested to aid in the preparation of that Environmental Assessment and to meet our obligations under Section 106 of the National Historic Preservation Act to take into account the effects of undertakings by federal agencies on historic properties. If you have any such information, require additional information, or have any questions or comments about that project, please contact Pierina Fayish of the National Energy Technology Laboratory at 412-386-5428 or pierina.fayish@netl.doe.gov.

Sincerely,

A handwritten signature in black ink that reads "Pierina N. Fayish".

Pierina N. Fayish

626 Cochran Mill Road, P.O. Box 10940, Pittsburgh, PA 15236

>>> "Esther Helms" <EHelms@sagchipp.org> 12/4/2009 4:38 PM >>>
December 4, 2009

Pierina Fayish
NETL

RE: Midland Battery Park Project , 2900 South Saginaw Rd, City of Midland, Midland County,
MI

Dear Ms. Fayish:

This letter is in response to the above referenced project.

At this time we do not have any information concerning the presence of any Indian Traditional Cultural Properties, Sacred Sites or other Significant Properties to the projected project area(s). This is not to say that such a site may not exist, just that this office does not have any available information of the area(s) at this time.

This office would be willing to assist if in the future or during the construction there is an inadvertent discovery of Native American human remains or burial objects. Feel free to call my office if you have any questions or requests at 989-775-4730.

We thank you for including this Tribe in your plans.

Sincerely,

William Johnson /elh

Curator

Ziibiwing Center of Anishinabe Culture & Lifeways

Saginaw Chippewa Indian Tribe of Michigan



NATIONAL ENERGY TECHNOLOGY LABORATORY
—liberty, OR— Morgantown, WV —Pittsburgh—



January 27, 2010

Environmental Review Coordinator
State Historic Preservation Office
Michigan Historical Center
P.O. Box 30740
702 W. Kalamazoo St.
Lansing, MI 48909-8240

SUBJECT: Midland Battery Park Project in Midland County Michigan

The U.S. Department of Energy (DOE) is submitting the attached *Application for Section 106 Review* for your review of the Midland Battery Park Project as required by the National Historic Preservation Act.

The Department is proposing to provide financial assistance to Dow Kokam MI, LLC through the Electric Drive Vehicle Battery and Component Manufacturing Initiative of the American Reinvestment and Recovery Act. Funding to that company would be used to construct the Midland Battery Park, a facility for the manufacturing of advanced superior lithium polymer batteries for hybrid and electric vehicles. As further described in the application, the facility would be located in the City of Midland, Midland County Michigan.

Please forward the results of your review and any requests for additional information to Mark Lusk of the Department's National Energy Technology Laboratory using the contact information included in the application.

Sincerely,

A handwritten signature in cursive script that reads "Mark W. Lusk".

Mark W. Lusk
NEPA Document Manager

Attachments: Application for Section 106 Review (10 pages)

3610 Collins Ferry Road, P.O. Box 880, Morgantown, WV 26507



JENNIFER GRANHOLM
GOVERNOR

STATE OF MICHIGAN
MICHIGAN STATE HOUSING DEVELOPMENT AUTHORITY
LANSING

KEITH MOLIN
EXECUTIVE DIRECTOR

February 25, 2010

MARK LUSK
U S DEPARTMENT OF ENERGY
NATIONAL ENERGY TECHNOLOGY LABORATORY
3610 COLLINS FERRY ROAD
P O BOX 880 MS B07
MORGANTOWN WV 26507-0880

RE: ER10-303 Midland Battery Park Project, 9600 S. Saginaw Road, Section 22, T14N, R2W, Midland,
Midland County (DOE)

Dear Mr. Lusk:

Under the authority of Section 106 of the National Historic Preservation Act of 1966, as amended, we have reviewed the above-cited undertaking at the location noted above. Based on the information provided for our review, it is the opinion of the State Historic Preservation Officer (SHPO) that **no historic properties are affected** within the area of potential effects of this undertaking.

The views of the public are essential to informed decision making in the Section 106 process. Federal Agency Officials or their delegated authorities must plan to involve the public in a manner that reflects the nature and complexity of the undertaking, its effects on historic properties and other provisions per 36 CFR § 800.2(d). We remind you that Federal Agency Officials or their delegated authorities are required to consult with the appropriate Indian tribe and/or Tribal Historic Preservation Officer (THPO) when the undertaking may occur on or affect any historic properties on tribal lands. **In all cases**, whether the project occurs on tribal lands or not, Federal Agency Officials or their delegated authorities are also required to make a reasonable and good faith effort to identify any Indian tribes or Native Hawaiian organizations that might attach religious and cultural significance to historic properties in the area of potential effects and invite them to be consulting parties per 36 CFR § 800.2(c-f).

This letter evidences the DOE's compliance with 36 CFR § 800.4 "Identification of historic properties", and the fulfillment of the DOE's responsibility to notify the SHPO, as a consulting party in the Section 106 process, under 36 CFR § 800.4(d)(1) "No historic properties affected".

The State Historic Preservation Office is not the office of record for this undertaking. You are therefore asked to maintain a copy of this letter with your environmental review record for this undertaking. If the scope of work changes in any way, or if artifacts or bones are discovered, please notify this office immediately.

If you have any questions, please contact Brian Grennell, Cultural Resource Protection Specialist, at (517) 335-2721 or by email at ER@michigan.gov. **Please reference our project number in all communication with this office regarding this undertaking.** Thank you for this opportunity to review and comment, and for your cooperation.

Sincerely,

Martha MacFarlane Faes
Cultural Resources Protection Manager

for Brian D. Conway
State Historic Preservation Officer

MMF:JRH:BGG



STATE HISTORIC PRESERVATION OFFICE
702 WEST KALAMAZOO STREET • P. O. BOX 30740 • LANSING, MICHIGAN 48909-8240
www.michigan.gov/shpo (517) 373-1630 FAX (517) 335 0348

