

DOE/EA-1723S

**DRAFT SUPPLEMENTAL ENVIRONMENTAL
ASSESSMENT**

**For
General Motors LLC
Electric Drive Vehicle Battery and Component
Manufacturing Initiative**

White Marsh, Maryland



May 2011

**U.S. DEPARTMENT OF ENERGY
NATIONAL ENERGY TECHNOLOGY LABORATORY**

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COVER SHEET

Responsible Agency: U.S. Department of Energy (DOE)

Title: *General Motors LLC Electric Drive Vehicle Battery and Component Manufacturing Initiative Application: White Marsh, Maryland (DOE/EA-1723S)*

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Abstract: DOE prepared this Supplemental EA to evaluate the potential environmental consequences of providing a financial assistance in a cooperative agreement with General Motors Limited Liability Company (LLC) (General Motors Company or GM). A supplement to the April 2010 EA was necessary due to the proposed building size increasing three fold as well as the addition of a parking lot and widening of a truck dock area. This building size increase is necessary to accommodate more manufacturing equipment and provide office space. If GM received the funding, they would construct a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components and assemble electric drive units for hybrid and electric vehicles. This funding would be used for constructing a building of approximately 104,000 square feet, paving an area for up to 308 parking spaces lot, and widening a truck dock.

DOE's proposed action would provide approximately \$105 million in financial assistance in a cost-sharing arrangement to GM. The cost of the proposed project would be approximately \$283.9 million.

This EA evaluates the environmental resource areas DOE commonly addresses in its EAs and identifies no significant adverse environmental impacts for the proposed project. The proposed project could result in beneficial impacts to the nation's fuel efficiency and the local economy.

Availability: The draft EA is available on DOE's National Energy Technology Laboratory website at <http://www.netl.doe.gov/publications/others/nepa/ea.html> and at:
White Marsh Branch Library
8133 Sandpiper Circle
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ACRONYMS AND ABBREVIATIONS

AQCR	Air Quality Control Region
BMPs	Best Management Practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)
CESQG	Conditionally Exempt Small Quantity Generator
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
COMAR	Code of Maryland Regulations
CWA	Clean Water Act
dB	Decibel
dBA	A-weighted Decibel
DNL	Day-night Average Sound Level
DOE	U.S. Department of Energy
DOT	Department of Transportation
e.g.	<i>Exempli gratia</i> , for example
EA	Environmental Assessment
EDV	Electric Drive Vehicles
EERE	Energy Efficiency and Renewable Energy
EIS	Environmental Impact Statement
EO	Executive Order
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
<i>et seq.</i>	<i>et sequens</i> , and the following one or ones
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
ft	Feet
ft ²	Square Feet
FTE	Full-Time-Equivalent
gal	Gallons
GHG	Greenhouse Gases
GM	General Motors Company (General Motors)
gpd	Gallons per Day
hr	Hour
HVAC	Heating, Ventilation, and Air Conditioning
Hz	Hertz
I-95	Interstate 95
i.e.	<i>id est</i> , that is
km	Kilometer
lbs	Pounds
L _{eq}	Equivalent Sound Level
LLC	Limited Liability Company

Lmax	Maximum Allowable Noise Level
m	Meter
m ²	Square Meter
MACT	Maximum Available Control Technology
MD	Maryland
MDE	Maryland Department of the Environment
MMBTU	Million British Thermal Units
MMcf	Million Cubic Feet
MTA	Maryland Transit Administration
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NETL	National Energy Technology Laboratory
NHPA	National Historic Preservation Act
NNSR	Nonattainment New Source Review
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service
NSPS	New Source Performance Standards
NSR	New Source Review
NWI	National Wetlands Inventory
O ₃	Ozone
OSHA	Occupational Safety and Health Administration
OTR	O ₃ Transport Region
Pb	Lead
PM ₁₀	Particulate Matter of 10 Micrometers or Less in Aerodynamic Diameter
PM _{2.5}	Particulate Matter Less than 2.5 Micrometers in Aerodynamic Diameter
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
Recovery Act	American Recovery and Reinvestment Act of 2009, Public Law 111-5
RWD	Rear-Wheel Drive
SHPO	State Historic Preservation Office or Officer
SIP	State Implementation Plans
SO ₂	Sulfur Dioxide
SO _x	Sulfur Oxides
SQG	Small Quantity Generators
tpy	Tons per Year
TSP	Total Suspended Particles
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compounds
VT	Vehicle Technologies
yr	Year

USE OF SCIENTIFIC NOTATION

Very small and very large numbers are sometimes written using scientific notation rather than as decimals or fractions. This notation uses exponents to indicate the power of 10 as a multiplier (i.e., 10^n , or the number 10 multiplied by itself n times; 10^{-n} , or the reciprocal of the number 10 multiplied by itself n times).

For example: $10^3 = 10 \times 10 \times 10 = 1,000$

$$10^{-3} = \frac{1}{10 \times 10 \times 10} = 0.001$$

In scientific notation, large numbers are written as a decimal between 1 and 10 multiplied by the appropriate power of 10:

4,900 is written $4.9 \times 10^3 = 4.9 \times 10 \times 10 \times 10 = 4.9 \times 1,000 = 4,900$.

0.049 is written 4.9×10^{-2} .

1,490,000 or 1.49 million is written 1.49×10^6 .

A positive exponent indicates a number larger than or equal to one; a negative exponent indicates a number less than one.

1.0 INTRODUCTION

1.1 Background

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Vehicle Technologies (VT) Program for the Office of Energy Efficiency and Renewable Energy (EERE). A key objective of the VT program is accelerating the development and production of electric drive vehicle systems in order to substantially reduce the United States' consumption of petroleum. Another of its 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 (EDVs).

Congress appropriated significant funding for the VT program in the American Recovery and Reinvestment Act of 2009, Public Law 111-5 (Recovery Act) in order to stimulate the economy and reduce unemployment in addition to furthering the existing objectives of the VT 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 (e.g. 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 – projects 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; special consideration was given to projects that promoted the objectives of the Recovery Act – job preservation or creation and economic recovery – in an expeditious manner.

This project, U.S. Electric Drive Manufacturing Center, was one of the 30 DOE selected for funding. DOE's proposed action is to provide \$105 million in financial assistance in a cost sharing arrangement with the project proponent, General Motors Limited Liability Company

(LLC) (General Motors Company or GM). The total cost of the project is estimated at \$283.9 million. A supplement to the April 2010 Environmental Assessment (EA) is necessary due to the proposed building size increasing three fold as well as the addition of a parking lot and widening of a truck dock area. This building size increase is necessary to accommodate more manufacturing equipment and provide office space. Because no changes are proposed at the Wixom, Michigan site, this supplemental EA only covers the White Marsh site.

1.2 Purpose and Need for DOE Action

The overall purpose and need for DOE action pursuant to the VT program and the funding opportunity under the Recovery Act 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 EDV 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 EDVs through high-volume manufacturing. DOE issued the call for proposals in order 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 the United States' petroleum consumption by investing in alternative vehicle technologies. Successful commercialization of EDVs would support 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 project would 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.

1.3 Legal Framework

DOE has prepared this EA in accordance with the Council on Environmental Quality (CEQ) "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act," codified in Title 40 of the *Code of Federal Regulations* in Parts 1500 through 1508 (40 CFR 1500-1508). These implement the procedural requirements of the National Environmental Policy Act (NEPA), found in Title 40 of the *United States Code* in Section 4321 and following sections (42 USC § 4321 *et seq.*).

NEPA requires Federal agencies to consider the potential environmental consequences of a proposed action in their decision-making processes. NEPA encourages Federal agencies to protect, restore, or enhance the environment through well-informed Federal decisions. The CEQ NEPA regulations specify that an EA be prepared to:

- Provide sufficient analysis and evidence for determining whether or not to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI);
- Aid in an agency's compliance with NEPA when no EIS is deemed necessary; and
- Facilitate EIS preparation when one is necessary.

Further, the CEQ NEPA regulations encourage agencies to integrate NEPA requirements with other environmental review and consultation requirements. Relevant environmental requirements are contained in other Federal statutes, such as the Clean Air Act and the Clean Water Act, and their state counterparts. The following Federal and state statutes and regulations are relevant to this EA. Federal and state permits that may be required are also listed.

American Recovery and Reinvestment Act

American Recovery and Reinvestment Act of 2009, Public Law 111-5 (Recovery Act) is an act making supplemental appropriations for job preservation and creation, infrastructure investment, energy efficiency and science, assistance to the unemployed, and State and local fiscal stabilization. It is through this act that DOE could fund GM's proposed project.

Clean Air Act

The Clean Air Act (CAA), 42 USC § 7401 *et seq.*, establishes the National Ambient Air Quality Standards (NAAQS) developed by the U.S. Environmental Protection Agency (USEPA) for the pervasive pollutants: sulfur dioxide (SO₂), carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), lead (Pb), and particulate matter (both particulate matter of 10 micrometers or less in aerodynamic diameter (PM₁₀) and particulate matter less than 2.5 micrometers in aerodynamic diameter (PM_{2.5})). The NAAQS are expressed as concentrations of the criteria pollutants in the ambient air, the outdoor air to which the general public is exposed. The CAA also contains emission control permit programs to protect the nation's air quality and establishes New Source Performance Standards that establish design standards, equipment standards, work practices, and operational standards for new or modified sources of air emissions. Where the NAAQS emphasize air quality in general, the New Source Performance Standards focus on particular industrial categories or sub-categories (e.g., fossil fuel fired generators, grain elevators, and steam generating units). Regulations implementing the CAA are found in 40 CFR Parts 50-95.

Clean Water Act

The Clean Water Act (CWA), 33 USC § 1251 *et seq.*, establishes a comprehensive framework of standards, technical tools, and financial assistance to address "point source" pollution from municipal and industrial wastewater discharges and "nonpoint source" pollution from urban and rural areas. Applicants for federal licenses or permits to conduct any activity that may result in a discharge to navigable waters must provide the Federal agency with a state CWA Section 401 certification that the discharge would comply with applicable provisions of the CWA. CWA Section 404 establishes a permit program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. CWA Section 402 establishes the National Pollutant Discharge Elimination System (NPDES), which requires point sources of pollutants to obtain permits to discharge effluents and storm water to surface waters. Regulations for implementing relevant CWA programs are found in 33 CFR Parts 320-331 and 40 CFR Parts 400-503.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA), 42 USC § 6901 *et seq.*, regulates the treatment, storage, and disposal of solid and hazardous wastes. RCRA sets “cradle to grave” standards for both solid waste and hazardous waste management. Certain wastes are specifically excluded because they are regulated under other statutes. Some examples are domestic sewage and septic tank waste; agricultural wastes; industrial discharges; some nuclear wastes; and mining overburden. RCRA regulations are found in 40 CFR Parts 239-282.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC § 9601 *et seq.*, also known as “Superfund,” established a tax on the chemical and petroleum industries and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA also establishes requirements for closed and abandoned hazardous waste sites, provides for the liability of persons responsible for the release of hazardous substances, and established a trust fund to pay for orphan facility cleanup and closure. Regulations for implementing CERCLA are found in 40 CFR Parts 300-312.

Emergency Planning and Community Right-to-Know Act

The Emergency Planning and Community Right-to-Know Act (EPCRA), 42 USC § 1001 *et seq.*, requires Federal agencies to provide information on hazardous and toxic chemicals to state emergency response commissions, local emergency planning committees, and USEPA. EPCRA’s goal is to provide this information to ensure that local emergency plans are sufficient to respond to unplanned releases of hazardous substances. Regulations implementing EPCRA are found in 40 CFR Parts 350-374.

National Historic Preservation Act

The National Historic Preservation Act (NHPA), 16 USC § 470 *et seq.*, requires DOE to consult with the State Historic Preservation Officer (SHPO) prior to any construction to ensure that no historical properties would be adversely affected by a proposed project. DOE must also afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the proposed project. Regulations for implementing NHPA are found in 36 CFR 800-812.

Archaeological Resources Protection Act

The Archaeological Resources Protection Act, 16 USC § 470aa *et seq.*, requires a permit for excavation or removal of archaeological resources from publicly held or Native American lands. The Act requires that excavations further archaeological knowledge in the public interest and that the resources removed remain the property of the United States. Regulations for implementing the Act are found in 43 CFR 7 and 36 CFR 296.

American Indian Religious Freedom Act

The American Indian Religious Freedom Act, 42 USC § 1996, establishes policy to protect and preserve the inherent and Constitutional right of Native Americans to believe, express, and exercise their traditional religions. The law ensures the protection of sacred locations; access of Native Americans to those sacred locations and traditional resources that are integral to the practice of their religions; and establishes requirements that would apply to Native American sacred locations, traditional resources, or traditional religious practices potentially affected by construction and operation of proposed facilities. Regulations for implementing the Act are also found in 43 CFR 7.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act, 25 USC § 3001, directs the Secretary of the Interior to guide the repatriation of federal archaeological collections and collections that are culturally affiliated with Native American tribes and held by museums that receive federal funding. DOE would follow the provisions of this Act if any excavations associated with the proposed construction led to unexpected discoveries of Native American graves or grave artifacts. Regulations for implementing the Act are found in 43 CFR 10.

Endangered Species Act

The Endangered Species Act (ESA), 16 USC 1531 *et seq.*, establishes a national program for the conservation of threatened and endangered species of fish, wildlife, and plants, as well as the preservation of the ecosystems on which they depend. ESA Section 7 requires any federal agency authorizing, funding, or carrying out any action to ensure that the action is not likely to jeopardize the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of critical habitat of such species. Regulations implementing the ESA interagency consultation process are found in 50 CFR Part 402.

Fish and Wildlife Conservation Act/Fish and Wildlife Coordination Act

The Fish and Wildlife Conservation Act, 16 USC § 2901 *et seq.*, encourages Federal agencies to conserve and promote conservation of non-game fish and wildlife species and their habitats. In addition, the Fish and Wildlife Coordination Act, 16 USC § 661 *et seq.*, requires Federal agencies undertaking projects affecting water resources to consult with the United States Fish and Wildlife Service (USFWS) and the state agency responsible for fish and wildlife resources. Compliance with these statutes is internalized in DOE NEPA process.

Noise Control Act

The Noise Control Act of 1972, 42 USC § 4901 *et seq.*, directs federal agencies to carry out programs in their jurisdictions to the fullest extent within their authority and in a manner that furthers a national policy of promoting an environment free from noise that jeopardizes health and welfare. This would involve complying with applicable municipal noise ordinances to the maximum extent practicable.

Occupational Safety and Health Act

The Occupational Safety and Health Act, 29 USC § 651 *et seq.*, requires employers to furnish employees a place of employment that is free from recognized hazards that are causing or are likely to cause death or serious physical harm to the employees, and to comply with occupational safety and health standards promulgated by the Occupational Safety and Health Administration (OSHA). OSHA standards are implemented under regulations found in 29 CFR Parts 1900-2400.

Pollution Prevention Act

The Pollution Prevention Act, 42 USC § 13101 *et seq.*, establishes a national policy for waste management and pollution control that focuses first on source reduction, and then on environmentally safe waste recycling, treatment, and disposal. Three executive orders provide guidance to agencies to implement the Pollution Prevention Act: Executive Order 12873, “Federal Acquisition, Recycling, and Waste Prevention,” Executive Order 13101, “Greening the Government through Waste Prevention, Recycling, and Federal Acquisition,” and Executive Order 13148, “Greening the Government through Leadership in Environmental Management.”

Executive Orders

A number of presidential executive orders in addition to those noted above provide additional guidance to Federal agencies in developing EAs, including this EA. The most relevant of them include:

- Executive Order 11514, “Protection and Enhancement of Environmental Quality”
- Executive Order 11988, “Floodplain Management”
- Executive Order 12856, “Right to Know Laws and Pollution Prevention Requirements”
- Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”
- Executive Order 13423, “Strengthening Federal Environmental, Energy, and Transportation Management”
- Executive Order 13514, “Federal Leadership in Environmental, Energy, and Economic Performance”

Federal executive orders can be accessed at: <http://www.archives.gov/federal-register/codification/>.

Federal and State Permitting

The following are potentially applicable federal permitting requirements to construct and operate the proposed facilities.

- Clean Water Act, Section 401 Certification, Section 402 NPDES Permit, Section 404 Wetlands Permit, and Pretreatment Authorization for Discharge of Wastewater to Municipal Collection System, 40 CFR Parts 104-140, 403
- Clean Air Act, 40 CFR Parts 50-96

- Federal Construction General Permit, Stormwater Discharge
- Hazardous Waste Permit, Title 40 Part 270
- Major Source Construction Permits, Title V Part 70

The following are potentially applicable state permitting requirements to construct and operate the proposed facilities.

- Air Quality Permit to Construct, Maryland Department of the Environment (MDE)
- National Pollutant Discharge Elimination System Permit, Title 9 Part 3
- Waterway and 100-Year Floodplain (Non-tidal Wetlands and Waterways) Permit, Title 5 Parts 5.501-5.514
- Hazardous Waste Permit, Code of Maryland Regulations (COMAR) 26.13

2.0 PROPOSED DOE ACTION AND ALTERNATIVES

DOE's proposed action is to provide GM with \$105 million in financial assistance in a cost-sharing arrangement to facilitate construction and operation of a manufacturing facility to produce electric motor components and assemble electric drive units. This proposed action through the Vehicle Technologies Program would accelerate the development and production of electric-drive vehicle systems and reduce the United States' consumption of petroleum. This proposed action would 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.

2.1 GM's Proposed Project

The objective of the proposed three-year project addressed in this EA is to construct and validate a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components and assemble electric drive units for hybrid and electric vehicles. The electric motor design requires significant advances in manufacturing process technology because of the complexities of the electric motor components. Therefore, a supporting objective is to develop and validate novel electric motor manufacturing technology. As mentioned in Section 1.1, the April 2010 EA covered activities at two sites: White Marsh, Maryland and Wixom, Michigan. However, since GM proposed no changes at the Wixom site, this supplemental EA only covers the activities at the White Marsh site.

2.1.1 White Marsh, Maryland (U.S. Electric Drive Manufacturing Center)

General Motors Company proposes to design and construct a new building to house electric motor component production facility at its White Marsh, Maryland (MD) site. The new electric motor manufacturing area would occupy approximately 104,000 square feet (ft²) (approximately 9,700 square meters (m²)) within the footprint of that existing facility property (Figure 2.1.1). This would be expected to require 50 full-time-equivalent (FTE) construction jobs over the 11 months of construction (Seibert, 2011a; Seibert, 2011b). The related activities would also occur in approximately a quarter of the existing facility. Overall project activities do not change from the April 2010 EA. The operation of the electric motor manufacturing, hybrid and electric drive unit assembly in the proposed project would require approximately 200 FTE jobs, at the maximum sustainable capacity of 50,000 units per year (annual production) (Giesecking, 2011a; GM, 2011a).

In addition to the new building, the project includes the widening of the truck dock area to allow the truck traffic the ability to effectively turn in and out of the docks (Ramos, 2011). Another project component is a new parking lot of approximately 500 by 300 feet with two entrances/exits. This would provide about 300 parking spaces (GM, 2011b; Ramos, 2011). GM may reduce this size by half based on project needs. If this were to occur, the parking lot would move toward the plant dimensionally (Ramos, 2011) (See Figure 2.1.1). This EA analyzes the proposed parking lot size because the smaller parking lot would have similar impacts to the larger parking lot. Finally, a small pedestrian walkway with no curb would connect the proposed parking lot to the proposed new building.



Figure 2.1.1. General Motors Company White Marsh Proposed Expansion Area Map
Source: (ESRI, 2010).

This project would involve an addition to the existing facility dedicated to technology and equipment needed for the manufacturing of electric motors and a changeover of the existing drive unit facility to manufacture electric drive units for hybrid and electric vehicles as mentioned above. Further, the new building would provide necessary office space. The processes and equipment related to each of these major project elements is set forth below.

1. Electric Motor Production Facility

The project would involve the construction of an addition to the existing facility and the installation of equipment dedicated to the production of electric motors. The manufacturing process to produce the electric motors begins with the receipt of copper wire and core materials, and continues with wire forming, stator and rotor assembly, varnish and epoxy, final assembly, and test. The types of machinery and equipment to be installed at the facility include a roller straightener, wire cutter, press, wire former, slot liner, wire stripping, cutting, welder, balancer, electrical and spin test machines, wire installation, twister, lacing, oven, varnish and epoxy application, staking, and rotor & stator assembly machine (DOE, 2010).

2. Electric Drive Unit Manufacturing

The manufacturing process begins with the receipt of productive materials delivered to the machining and assembly departments. Copper wire and core materials are wire formed, assembled into rotors and stators, final assembled and tested into electric motors. Raw castings or blanks are machined into prismatic and gear components through metal removal utilizing standard oil, synthetic lubricant, or water-soluble metal cutting fluids. Metal removal equipment planned for installation at the facility include provisions for component features such as reaming, drilling, tapping, milling, spot facing, turning, deburring, chamfering, broaching, honing, and boring. Gears are heat treated in nitrogen gas furnaces to increase material strengths. Finished machining components would be checked for hardness, leak tested, inspected, washed utilizing a water-soluble, rust preventative solution, and then delivered to final assembly. Final assembly of drive units would consist of assembly of the prismatics, gears, electric motors and externally purchased parts into a functional electric drive unit. This drive unit would then be filled with automatic transmission fluid, tested, and washed (DOE, 2010).

New and existing emission control and particulate collection devices, such as dust collectors, thermal oxidizer and process flare would be used at the facility. Nonhazardous and hazardous waste would be accumulated on site and would be recycled and reclaimed using off site facilities including those permitted Treatment, Storage, and Disposal facility, in accordance with applicable laws and regulations to support Landfill Free and Environmental stewardship. Proper maintenance schedules on equipment would be established and adhered to as part of the company's best management practices (BMPs) (DOE, 2010).

Fundamentally, validation occurs also at the White Marsh site based on the development process (program timing gate). Components could be shipped from Wixom, Michigan site to the White Marsh site (one possibility is the GAMMA Development Process), but component shipping from

White Marsh to the Wixom site would be very unlikely. Any components shipped would be finished manufactured electric motors (DOE, 2010).

A full decommissioning of the facility is not anticipated after cessation of the proposed project/funding. The site is part of an existing manufacturing facility. General Motors Company may continue to use the facility and equipment after the Electric Drive Vehicle Battery and Component Manufacturing Initiative funding stops. If decommissioning of the building or equipment should occur, the activities would comply with all applicable regulations (DOE, 2010).

2.2 Alternatives

DOE's alternatives to this project 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 the 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 in that regulation grant by the Department's General Counsel (74 Federal Register 30558, June 26, 2009). These preliminary NEPA determinations and reviews were provided to the selecting official, who considered them during the selection process.

Because DOE's proposed action 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.

2.3 No-Action Alternative

Under the no-action alternative, DOE would not provide funds to the proposed project. As a result, this project would be delayed while GM looks for other funding sources to meet their needs, or abandoned if other funding sources are not 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 VT program and the Recovery Act would be impaired.

Although this and other selected projects might proceed if DOE decided not to provide financial assistance, DOE assumes for purposes of this environmental analysis that the project would not proceed without DOE assistance. If projects did proceed without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative (i.e., 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 were to decide to withhold assistance from a project, it would not proceed.

2.4 Comparison of Impacts

Table 2.4 below compares impacts of GM’s proposed project and the no-action alternative.

Table 2.4. Comparison of Impacts		
Resource	No-Action Alternative	GM’s Proposed Project
Air Quality	No impact	Short- and long-term minor adverse effects on air quality would be expected. The effects would be from air emissions during construction and from operational sources of air emissions at the proposed facility. Increases in emissions would not exceed applicability thresholds or contribute to a violation of any Federal, state, or local air regulation.
Geology and Soils	No impact	Changes in geological or soil stability, permeability, or productivity would be limited in extent. Full recovery would occur in a reasonable time*, as provided for in permit conditions for the project; therefore, the projected impact to geology and soils would be less than significant
Water Resources	No impact	Slight changes to surface water quality or hydrology are confined to the immediate project area. Full recovery would occur in a reasonable time, as provided for in NPDES permit conditions for the project; therefore, the projected impact from the proposed activity would be less than significant.
Wetlands/ Floodplains	No impact	Earthmoving activities associated with the proposed facility extension would occur in the 500-year floodplains. With appropriate regulatory compliance and implementation of BMPs, impacts to wetlands and floodplains should be less than the significance threshold.
Terrestrial Vegetation	No impact	Overall, any changes to native vegetation would be limited to a small area and would not affect the viability of the resources. Full recovery would occur in a reasonable time, considering the size of the project and the affected resource’s natural state.
Wildlife	No impact	Overall, any impacts on wildlife from GM’s proposed project would be limited to a small portion of the population and would not affect the viability of the resource. Full recovery would occur in a reasonable time, considering the size of the project and the affected species’ natural state.
Threatened and Endangered Species	No impact	Unless a discovery of previously unknown threatened or endangered species occurs, impacts from implementing this alternative would be expected to be less than the significance threshold.
Socioeconomic Resources	Lost opportunity for beneficial economic impact	Impacts would be beneficial but less than the significance threshold.
Infrastructure/ Utilities	No impact	Short- and long-term minor adverse effects on transportation, infrastructure, and utilities would be expected from implementing GM’s proposed project. The changes would be due to construction vehicles and small changes in localized traffic patterns from the additional personnel. The project would not noticeably affect or disrupt the normal or routine functions of public institutions, roads, electricity, and other public utilities and services in the project area; therefore, the impact would be less than the significance threshold.

Table 2.4. Comparison of Impacts

Resource	No-Action Alternative	GM's Proposed Project
Noise	No impact	Short-term, minor, and adverse effects on the noise environment would be expected. Noise levels would not exceed Federal, state, or local noise standards. Minor increases in noise would be primarily from using heavy equipment during construction at the proposed site. Noise from facility operations would be negligible.
Human Health and Safety	Lost opportunity for the advancement of EDV research and economic stimulation	Appropriate monitoring equipment and systems that are consistent with all BMPs and regulations would be in place for the activities, materials, and wastes produced. This would reduce the risk to human health and safety on the site as well as in the local community; therefore, overall less than the significance threshold.
Waste Management	No impact	The solid waste generated at the White Marsh facility is anticipated to be similar to the amount generated by past manufacturing at full production rates and no new permits would be required for wastes indicating that any impact from disposal would be negligible, which is less than the significance threshold.

* Recovery in a reasonable time: Constant, sustainable improvement is apparent and measurable when the site is routinely observed, and full recovery is achieved over a period of no more than several years.

2.5 Issues Considered But Dismissed from Further Analysis

The Purpose and Need section above highlighted the importance of the overall program of evaluating EDV as one tool among many to address VT and Recovery Act objectives while providing this nation with a secure energy future and job stability. Potential impact issues typically associated with the preparation of EAs were reviewed. Because of the lack of potential impact to certain issues due to the specific characteristics of GM's proposed project, the following issues were considered but dismissed from detailed analysis:

Groundwater

Since the water supply would be from a public source and construction is limited to near-surface activity, groundwater sources would not be affected. Therefore, impacts to groundwater were dismissed from further analysis.

Land Use

Under the no-action alternative, the White Marsh site would continue current uses and ownership. This would result in no impacts to land use. Implementation of GM's proposed project would entail the construction of a new approximately 104,000 ft² building, a 500 by 300 foot parking lot, widening of a truck dock area, and construction of a pedestrian walkway with no curb. These activities would be on GM property, so they would be compatible with current land use at the site. Further, the proposed project would be implemented to ensure avoidance or mitigation of any land use issues at that site with the benefit of the project proponent being the current and future landowner. Moreover, the nearest park to White Marsh is Bengies-Walter Park, which is about 3 miles (4.8 kilometers (km)) southeast. Thus, the proposed project is unlikely to impact parks and recreation. The closest Class I Area for White Marsh is Shenandoah National Park, which is 100 miles (160 km) to the west. Because the proposed new

building at White Marsh is in an existing industrial area and considering the distance to the nearest Class I areas, this proposed project is unlikely to impact visual resources. The proposed projects would not interfere with surrounding land uses because they are extensions of current facility activities at an established industrial site. Additionally, the project does not require any zoning changes, and there are no prime farmlands at the site (DOE, 2010). Therefore, because projected impacts, if any, to land use would be negligible, this topic was dismissed from further analysis.

Environmental Justice

Federal agencies must identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations (Executive Order (EO) 12898). An environmental justice population is defined as a population comprised of at least half minority status or at least half low-income status, or whose representation of these categories is greater than the general population in a meaningful way. The U.S. Department of Health and Human Services defines the average poverty threshold as a maximum annual income of \$22,350 or less for a family of four for the year 2011 (HHS, 2011).

The population of White Marsh is 82.4% White non-Hispanic with the largest minority being African American at 9.2% (Census, No date[a]). Only 2.8% of White Marsh residents had incomes below the poverty level, compared to 13.5% in the U.S. overall (Census, No date[b]). The similar percentage of “minority” residents (defined as Black or African-American, Hispanic or Latino, Asian, American Indian, Native Hawaiian, or other Pacific Islander) and the lower percentage of incomes below the poverty level compared to Maryland as a whole suggest there would be no disproportionate impacts on minority or low income communities from implementing GM’s proposed project, especially as the impacts would be felt by the population as a whole and be largely beneficial or negligible (Census, No date[c]). Therefore, impacts to environmental justice were dismissed from further analysis.

Cultural Resources

There would be ground disturbance of approximately 300,000 ft². However, all construction activities would occur at an existing industrial site and in a disturbed location, which reduces the probability of discovering or disturbing previously unknown cultural resources. Further, no known eligible or listed National Register of Historic Places sites exist within one mile (approximately 1.6 km) of the proposed White Marsh site (EDR, 2009a). The closest reservation is the Onondaga Indian Reservation, and it is 250 miles (402 km) north. The closest cemetery is Holly Hill Memorial Gardens, which is 1.14 miles (1.9 km) to the southeast.

Considering the above factors, it is unlikely that cultural resources would be disturbed; therefore, potential impacts to cultural resources have been eliminated from further analysis.

The SHPO in Maryland was contacted for any possible concerns regarding this project, and SHPO concluded no historic properties in the area of potential effect (Appendix A). Since no nationally recognized tribe has land claims in the county, Bureau of Indian Affairs was contacted for any possible concerns regarding this project (HUD, 2008). They responded with no concerns

(Appendix B). Should any cultural resources be discovered during construction, work in the area would cease, and the discovery would be reported immediately to the SHPO and any relevant Native American Tribes.

Below are additional issues considered but dismissed due to absence in the project areas.

Right-of-Way Acquisition	There was no need for additional right-of-way.
Wild and Scenic Rivers	There are no designated Wild and Scenic Rivers within proximity of the project site.
Impact Property Values	This is a minor expansion within an existing industrial facility.
Alter Local Hydrology Patterns	None of the proposed construction would significantly impact drainage in the local watershed.

3.0 THE ENVIRONMENTAL ANALYSIS APPROACH

This chapter describes how the environmental review team analyzed the potential impacts of this GM's proposed project (i.e., the building and operation of the United States Electric Drive Manufacturing Center in Maryland). Chapter 4 provides a description of the affected environment and the potential environmental effects of GM's proposed project and the no-action alternative.

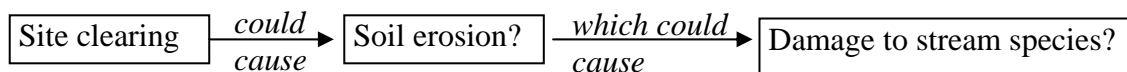
3.1 Approach to the Analysis

An EA is intended to be a clear, focused analysis of impacts. It is not intended to be merely a compilation of encyclopedic information about the project or about the environment. Accordingly, the environmental review team used a systematic approach to identifying, and then answering the relevant impact questions.

The initial step was to develop a detailed description of the components of the United States Electric Drive Manufacturing Center in Maryland process to be used at the proposed site to study the potential of furthering VT and Recovery Act objectives. This description was presented in Chapter 2.

For each project component (e.g., construction of the facility), the team sought to identify all the types of direct effects which that activity could cause on relevant environmental resources. For example, clearing a site of vegetation could cause soil erosion. In doing this preliminary identification of the types of impacts that potentially could occur, the team drew upon their experience with previous projects.

For each potential direct effect, the team then sought to identify the potential indirect effects on other environmental resources. For example, soil erosion could cause sedimentation in nearby streams, which could in turn harm the fish and other species in the stream.



This served as the framework of the analysis of impacts. That is, the team focused their efforts on answering these questions as to whether these effects would in fact occur, and if so, how extensive, how severe, and how long lasting they would be. This was then compared to the significance levels found in Table 3.2 below.

3.2 Analysis of Significance

The team used a systematic process to evaluate the importance, or significance, of the predicted impacts. This process involved comparing the predictions to the significance criteria established by the team and set out below in Table 3.2. These significance criteria were based on legal and regulatory constraints and on team members' professional technical judgment.

Table 3.2. Impact Significance Thresholds	
Resource Area	Impact Significance Thresholds
	An impact would be significant if it EXCEEDS the following conditions.
Air Quality	The project would not produce emissions that would exceed applicability thresholds, be regionally significant, or contribute to a violation of any federal, state, or local air regulation.
Geology and Soils	Any changes in soil stability, permeability, or productivity would be limited in extent. Full recovery would occur in a reasonable time*, considering the size of the project. Mitigation, if needed, would be simple to implement.
Surface Water	Any changes to surface water quality or hydrology would be confined to the immediate project area. Full recovery would occur in a reasonable time, considering the size of the project and the affected area's natural state.
Wetlands and Floodplains	Any impacts to wetlands and floodplains would be confined to the immediate project area and would not cause any regional impacts.
Terrestrial Vegetation	Any changes to native vegetation would be limited to a small area and would not affect the viability of the resources. Full recovery would occur in a reasonable time, considering the size of the project and the affected resource's natural state. Mitigation, if needed, would be simple to implement.
Wildlife	Any changes to wildlife would be limited to a small portion of the population and would not affect the viability of the resource. Full recovery would occur in a reasonable time, considering the size of the project and the affected species' natural state.
Threatened or Endangered Species	Any effect to a federally listed species or its critical habitat would be so small that it would not be of any measurable or perceptible consequence to the protected individual or its population. This negligible effect would equate to a "no effect" determination in U.S. Fish and Wildlife Service terms.
Socioeconomic Resources	Changes to the normal or routine functions of the affected community are short-term or do not alter existing social or economic conditions in a way that is disruptive or costly to the community.
Infrastructure/Utilities	The project would not noticeably affect or disrupt the normal or routine functions of public institutions, roads, electricity, and other public utilities and services in the project area.
Noise	Noise levels in the project area would not exceed ambient noise level standards as determined by the Federal, state, and/or local government.
Human Health and Safety	The project, with current and updated safety procedures, would pose no more than a minimal risk to the health and safety of onsite workers and the local population.
Waste Management	The action, along with planned mitigation measures, would not cause air, water, or soil to be contaminated with hazardous material that poses a threat to human or ecological health and safety.

* Recovery in a reasonable time: Constant, sustainable improvement is apparent and measurable when the site is routinely observed, and full recovery is achieved over a period of no more than several years.

4.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

4.1 Air Quality

4.1.1 Description

The USEPA Region 3 and the MDE regulate air quality in Maryland. The CAA (42 USC 7401-7671q) gives USEPA the responsibility to establish the primary and secondary NAAQS (40 CFR Part 50) that set acceptable concentration levels for seven criteria pollutants: PM₁₀, PM_{2.5}, SO₂, CO, nitrogen oxides (NO_x), O₃, and lead. Short-term standards (1-, 8-, and 24-hour periods) have been established for pollutants that contribute to acute health effects, while long-term standards (annual averages) have been established for pollutants that contribute to chronic health effects. Each state has the authority to adopt standards stricter than those established under the Federal program; however, Maryland accepts the Federal standards.

Federal regulations designate Air-Quality Control Regions (AQCRs) that are in violation of the NAAQS as nonattainment areas and those in accordance with the NAAQS as attainment areas. Baltimore County, MD (and therefore the proposed facility) is within the Metropolitan Baltimore Intrastate AQCR (40 CFR 81.23) and within the O₃ transport region (OTR). The USEPA has designated Baltimore County as the following:

- Moderate nonattainment Area for the 8-hour O₃ NAAQS;
- Nonattainment for the PM_{2.5} NAAQS (1997); and
- Attainment for all other criteria pollutants (USEPA, 2011a).

The existing facility has three air permits. One (Permit Number 005-5-1673M) limits premises-wide NO_x emissions to maximum 25 tons in any rolling 12-month period. The facility is not currently required to submit an emission inventory to MDE (Pujara, 2011a).

Climate, Green House Gases, and Global Warming. Greenhouse gases (GHG) are components of the atmosphere that contribute to the greenhouse effect and global warming. Some GHG occur naturally in the atmosphere, while others result from human activities such as the burning of fossil fuels. Federal agencies, states, and local communities address global warming by preparing GHG inventories and adopting policies that would result in a decrease of GHG emissions. There are six GHGs: carbon dioxide (CO₂), nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (UNFCC, 2007). Although the direct GHG (CO₂, methane, and nitrous oxide) occur naturally in the atmosphere, human activities have changed their atmospheric concentrations. On a global scale, fossil fuel combustion added approximately 30 x10⁹ tons (27 x10⁹ metric tons) of CO₂ to the atmosphere in 2004, of which the United States accounted for about 22 percent (USEPA, 2007). Since 1900, the Earth's average surface air temperature has increased by about 1.2 to 1.4°F. The warmest global average temperatures on record have all occurred within the past 15 years, with the warmest year being 2005 (USEPA, 2011b).

The CEQ recently released draft guidance on when and how Federal agencies should consider GHG emissions and climate change in NEPA. The draft guidance includes a presumptive effects

threshold of 25,000 metric tons of carbon dioxide equivalent emissions from an action (CEQ, 2010). Notably, the total greenhouse gas emissions from the facility based on actual 2010 fuel usage was 1,390 tons (1,261 metric tons) expressed as CO₂ equivalents.

4.1.2 Effects of GM’s Proposed Project

Short- and long-term minor adverse effects on air quality would be expected. The effects would be from air emissions during construction and from operational sources of air emissions at the proposed facility. Increases in emissions would not exceed applicability thresholds or contribute to a violation of any Federal, state, or local air regulation.

Estimated Emissions and General Conformity. The General Conformity Rule specifies applicability thresholds by pollutant to determine if the conformity requirements apply to a project located in a nonattainment or maintenance area. These applicability thresholds vary based on pollutant type and the level of nonattainment. The applicability thresholds for the site are 100 tons per year (tpy) for PM_{2.5}, NO_x, and SO₂ and 50 tpy for volatile organic compounds (VOCs). If the total direct and indirect emissions associated with the action are greater than these levels, a formal conformity determination would be required.

All direct and indirect emissions of criteria pollutants for GM’s proposed project have been estimated and compared to the applicability thresholds to determine the applicability of the general conformity rules and the level of impact under NEPA. The total direct and indirect emissions associated with the following activities were accounted for:

- Constructing the new facilities,
- Operating vehicles for construction workers,
- Paving parking areas,
- Operating personal vehicles for employees,
- VOCs from industrial processes, and
- Operating new stationary sources of air emissions (i.e. boilers).

The requirements of the general conformity rule are not applicable because the highest total annual direct and indirect emissions from these alternatives would not exceed the applicability threshold for any criteria pollutant (Table 4.1.2-1). These effects would be minor. A detailed breakdown of construction and operation emissions is in Appendix C.

Activity	Annual emissions (tpy)						Applicability threshold (tpy)	Would emissions exceed applicability thresholds? [Yes/No]
	CO	NO _x	VOC	SO _x	PM ₁₀	PM _{2.5}		
Construction	9.5	11.7	2.2	<0.1	2.0	0.8	100 (50)*	No
Operation	18.8	3.7	3.7	<0.1	0.3	0.2		

* For a moderate nonattainment area for the 8-hour O₃ NAAQS within the OTR, the applicability criterion is 50 tpy for VOCs. Note: SO_x is sulfur oxides.

For the purposes of calculating emissions, it was assumed that approximately 200 permanent personnel would be employed at the proposed site. Moderate changes in the size or type of equipment ultimately selected or the number of personnel would not substantially change the total direct or indirect emissions or the level of impact under NEPA.

GHG and Global Warming. GM’s proposed project would introduce a long-term minor increase to GHG in the atmosphere. The increase in CO₂ from use of fossil fuel based electricity and fossil fuel based heat would be 3,150 tpy (2,864 metric tpy) and 338 tpy (308 metric tpy) respectively. This is equivalent to annual GHG emissions from 622 passenger vehicles or the electricity use of 385 homes for one year (USEPA, 2011c). GM’s proposed project would be below the threshold outlined in the draft CEQ guidance on greenhouse gas emissions.

Regulatory Review. The CAA, as amended in 1990, mandates that state agencies adopt and implement State Implementation Plans (SIPs) to eliminate or reduce the severity and number of violations of the NAAQS. Since 1990, Maryland has developed a core of air quality regulations that the USEPA has approved. These approvals signified the development of the general requirements of the SIP. Maryland programs for regulating air emissions affect industrial sources, commercial facilities, and residential development activities. Regulation occurs primarily through a process of reviewing engineering documents and other technical information, applying emission standards and regulations in permit issuance, performing field inspections, and assisting industries in determining their compliance status with applicable requirements.

As part of these requirements, MDE oversees programs for permitting the construction and operation of new or modified stationary source air emissions. MDE air permitting is required for many industries and facilities that emit regulated pollutants. These requirements include Title V permitting of major sources, New Source Review (NSR), Prevention of Significant Deterioration (PSD), New Source Performance Standards (NSPS) for selected categories of industrial sources, and the National Emission Standards for Hazardous Air Pollutants (NESHAP). An overview of the applicability of these regulations to the project is outlined in Table 4.1.2-2.

Regulation	
Nonattainment New Source Review (NNSR)	The potential emissions would not exceed NNSR threshold and would be exempt from NNSR permitting requirements. A state permit to construct would be required at the site.
PSD	Potential emissions would not exceed the 250-tpy PSD threshold. Therefore, the project would not be subject to PSD review.
Title V Permitting Requirements	The facility’s potential to emit would be below the Title V major source threshold and would not require a Title V permit.
NESHAP	Potential Hazardous Air Pollutant emissions would not exceed NESHAP thresholds. Therefore, the use of Maximum Available Control Technology (MACT) would not be required.
NSPS	All new stationary sources would meet NSPS if required.

Varnish application for the motor manufacturing is estimated to emit 2.0 tpy (or less) of VOC. Other new sources of emissions such as aqueous parts washers in hybrid and electric car manufacturing, epoxy usage and wet machining in motor manufacturing, and building Heating, Ventilation, and Air Conditioning (HVAC) units would also generate some criteria pollutants.

However, the total NO_x and VOC emissions from all new sources combined would be below 25 tons per year. The facility's current air permit would be amended, if required, to cover the modification to machine components and assemble hybrid and electric drive transmissions. An air permit application for new electric motor manufacturing operation was submitted in February 2011 and is pending with MDE (Pujara, 2011a).

Emission control devices include mist collectors and thermal oxidizers currently in operation in the existing facility. For equipment not required to have controls under applicable laws, emissions would be vented via general ventilation or through stacks. GM is reviewing low VOC varnishes that would not require thermal oxidizer control technology to enable GM to meet the air permit VOC emission limit for this process. If low VOC varnishes are properly validated, GM will be able to meet air permit emission limits without any new add-on control technology (Pujara, 2011b; GM, 2011a).

Other non-permitting requirements may be required through the use of compliant practices and/or products. These regulations are outlined in COMAR Title 26, Subtitle 11, *Air Quality* and include:

- Particulate Matter from Materials Handling and Construction (COMAR 26.11.06.03.D)
- Open Fires (COMAR 26.11.06)
- Control of Emissions of VOCs from Architectural Coatings (COMAR 26.11.33)
- Control of Emissions of VOCs from Consumer Products (COMAR 26.11.32)
- Control of Emissions of VOCs from Adhesives and Sealants (COMAR 26.11.35)

In addition to those outlined above, during construction, reasonable measures may be required to prevent unnecessary amounts of particulate matter from becoming airborne (COMAR 26.11.06.03.D). This listing is not all-inclusive; GM and any contractors would comply with all applicable air pollution control regulations. Outside of these BMPs, no mitigation measures would be required for the construction and operation of the proposed facilities. Overall, with BMPs in place, the projected impacts would be less than the significance threshold.

4.1.3 Effects of No-Action Alternative

Selecting the no-action alternative would result in no impact to ambient air-quality. No construction would be undertaken, and no new facility operations would take place. Ambient air-quality conditions would remain as described in Section 4.1.1.

4.1.4 Cumulative Effects

The State of Maryland takes into account the effects of all past, present, and reasonably foreseeable emissions during the development of their SIP. The state accounts for all significant stationary, area, and mobile emission sources in the development of this plan. Estimated emissions generated by GM's proposed project would be *de minimis*; therefore, it would not contribute significantly to adverse cumulative effects to air quality.

4.2 Geology and Soils

4.2.1 Description

The project site lies within a physiographic province named the Atlantic Coastal Plain and more specifically the region within the province known as the Western Shore Lowlands Region. In this province and region, there is a low marine terrace adjacent to Chesapeake Bay with sea level marshes and several tidal streams. The underlying rocks in this area are obscured by thick, unconsolidated marine sediment. In some places, the sediment has been removed by erosion, leaving isolated sedimentary caps, often quite thin, over the underlying rock (Reybold and Matthews, 1976; MGS, 2009).

Mineral resources of the Coastal Plain are chiefly sand and gravel, and are used as aggregate materials by the construction industry. Clay for brick and other ceramic uses is also important. Small deposits of iron ore are of historical interest. Plentiful supplies of groundwater are available from a number of aquifers throughout much of this region. The Atlantic Continental Shelf contains abundant sand deposits that are useful for beach restoration (MGS, 2009).

The existing GM facility contains soil designated as “made land” (Reybold and Matthews, 1976). Made land is created when tidal flats are filled in to expand areas along the coastline to make them suitable for development. For the GM White Marsh site, unknown soil types were used to create the made land. According to the Natural Resource Conservation Service (NRCS), the proposed project is on land designated as Udorthents (Figure 4.2.1) (NRCS, 2009). Udorthents consists of moderately coarse textured soil material. The permeability and stability of this group are variable (NRCS, No date).

Throughout the history of Baltimore County going back to April 1758, there have been earthquake tremors that have been felt in the county. Most of the earthquakes that were felt have had epicenters outside the county (USGS, 2009). Despite this history, the area is located in seismic zone 1, the second lowest seismic risk zone defined by the Uniform Building Code, which has no additional enforceable requirements for structural design due to earthquakes in this zone.

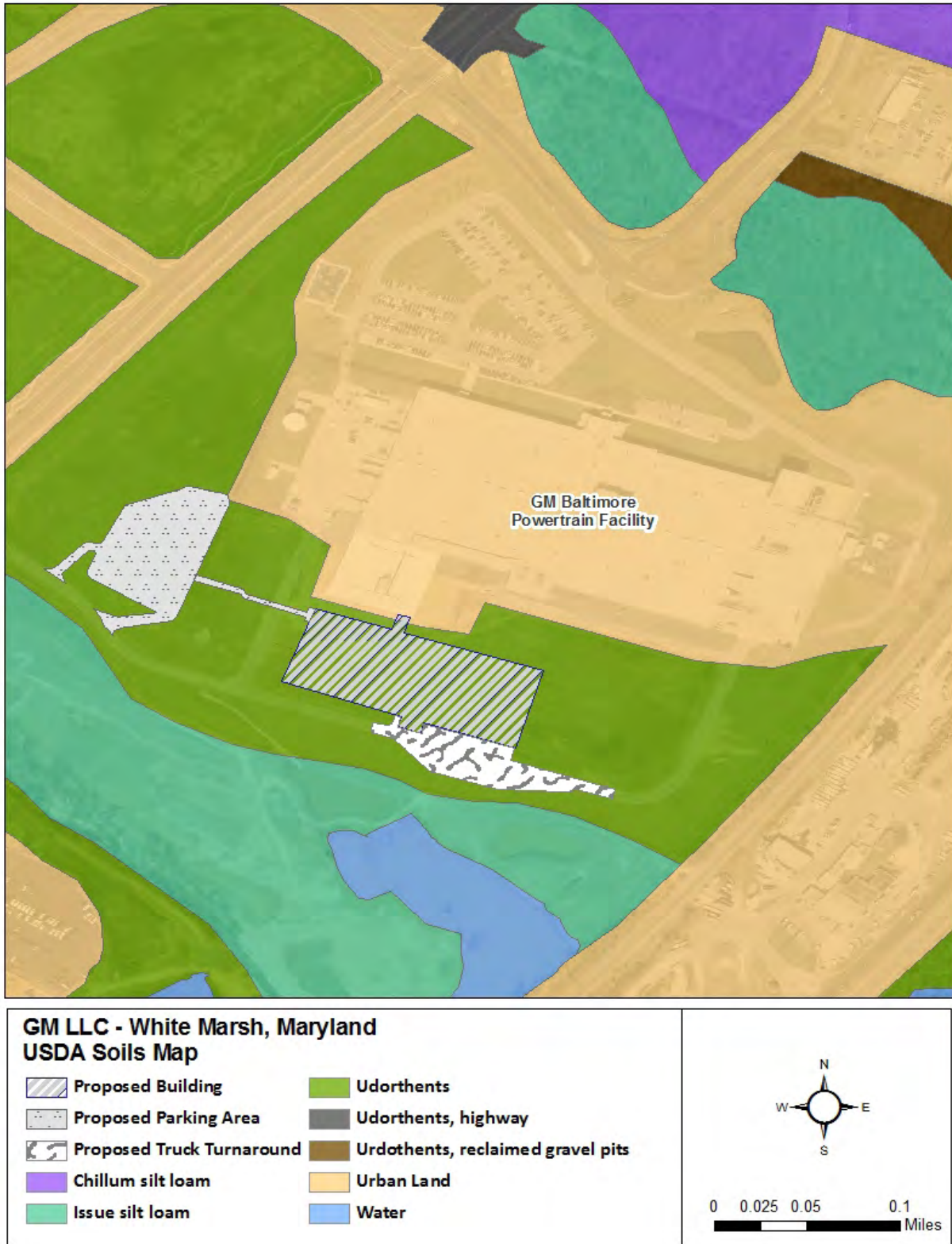


Figure 4.2.1. Soil Map
Sources: (ESRI, 2010; NRCS, 2009)

4.2.2 Effects of GM's Proposed Project

Construction activities would have the greatest potential to generate effects on geological and soil resources. Proposed construction is limited to surface and near-surface activity that would have no potential to affect minerals and deeper geological strata. Seismic activity in this region is negligible and would be adequately addressed through compliance with local building codes.

Soil loss and erosion are the major geological resources to be considered and managed with this project. Planned BMPs that can effectively prevent major effects to this resource include stormwater training for onsite personnel, use of erosion control blankets where soil would otherwise be exposed, avoidance of excessive soil stockpiling where soil is exposed to wind and rain, a sediment settling basin as part of the runoff control program, use of water and dust palliatives on soils that are temporarily exposed to erosive elements, and proper use of temporary or permanent landscaping that would hold soils in place and prevent unwanted soil movement.

Operation activities would have negligible impacts to soils and geology because the activities would occur in buildings or on impervious surface of a parking lot, truck turnaround, or sidewalk.

Changes in geological or soil stability, permeability, or productivity would be limited in extent. Full recovery would occur in a reasonable time, as provided for in permit conditions for the project; therefore, the projected impact to geology and soils would be less than the significance threshold.

4.2.3 Effects of No-Action Alternative

Under the no-action alternative, none of the proposed construction activities or the operation activities would occur. The absence of construction or operation activities would cause no effects on this resource.

4.2.4 Cumulative Effects

There are no past, present, or foreseeable future projects that can be analyzed collectively with GM's proposed project that would result in a greater cumulative effect on this resource than what would occur singularly as a result of GM's proposed project.

4.3 Water Resources

4.3.1 Description

The project site lies within the Bird River watershed in eastern Baltimore County. The watershed's major tributary, White Marsh Run, passes within 0.25 miles southwest of the project site before it enters Bird River just east of Route 40 at Ebenezer Road. The community of White Marsh is one of the original designated growth areas of Baltimore County. The area was targeted for intensive residential, commercial, and industrial development and currently clusters

of financial, insurance and health care operations, light manufacturing, technology, and distribution surround the town center (BALCO, 2011).

The Bird River watershed was also targeted for the County's first comprehensive watershed plan, which was completed in 1995. To date, over five miles (eight km) of stream restoration have been completed on the main stem and tributaries of White Marsh Run and Honeygo Run. In addition, numerous water quality retrofit projects have been implemented in this watershed as well as the dredging of Bird River and Railroad Creek (BALCO, 2011).

The project proponent would utilize public systems for water supply and wastewater disposal. There is a current wastewater pretreatment permit WWDP #1507 that covers discharges arising from activities associated with the proposed project. Pretreatment of wastewater would be performed before it enters the public wastewater collection system. Operational wastewater discharges are estimated to be 1,040 gallons per day (gpd) non-contact cooling water, 1,490 gpd of process water, and 2,870 gpd of sanitary sewage and/or grey water (GM, 2011c). The project would utilize 25% of existing facility floor space, so water surplus from the displaced functions would reduce the new project demand.

The project proponents would also implement erosion control measures during and after construction. There would be new underground storm sewers installed to take the new roof drainage into the existing nearby storm sewer. The project would utilize existing storm sewers and two detention ponds onsite. The existing conditions were designed and installed based on a larger footprint than exists today (including the future expansion) (Seibert, 2009).

4.3.2 Effects of GM's Proposed Project

Both construction and operation activities have the potential to affect water resources in the project area. During the construction and operations phases, erosion control measures are planned in compliance with local regulations.

Infrastructure capacity is sufficient for water supply and onsite pretreatment of wastewater prior to discharge to a public system. The project would not require GM to revise any permits or contracts. Additionally, no new types of contaminants in the wastewater would be additions to the current discharges to the publicly owned treatment works (Seibert, 2011b). Since water supply and wastewater treatment would be accomplished through properly sized public and onsite systems, any potential concerns with groundwater sources and unregulated waste disposal are avoided. The operational activities would also occur indoors or on impervious surface, which would minimize impacts to runoff with implementation of BMPs.

Slight changes to surface water quality or hydrology are confined to the immediate project area. Full recovery would occur in a reasonable time, as provided for in NPDES permit conditions for the project; therefore, the projected impact from the proposed project would be less than the significance threshold.

4.3.3 Effects of No-Action Alternative

Under the no-action alternative, none of the proposed construction activities or the operation activities would occur. The absence of construction or operation activities would cause no effects on this resource.

4.3.4 Cumulative Effects

There are no past, present, or reasonably foreseeable future projects, which can be analyzed collectively with GM's proposed project that would result in a greater cumulative effect on this resource than what would occur singularly as a result of GM's proposed project.

4.4 Wetlands and Floodplains

4.4.1 Description

Wetlands and floodplains exist near the project site (Figure 4.4.1).

The construction would occur within the existing footprint of the GM property. No wetlands on a National Wetlands Inventory (NWI) exist in the proposed project footprint, but some lakes and ponds are nearby (USFWS, 2010). Previous permitted filling activities have brought the GM facility including the proposed project area out of the 100-year floodplain. Thus, the project would be outside the 100-year floodplain that is now outside the ring road (Seibert, 2011b; USACE, 1997; USACE, 1998; GM, No date). However, the project's sidewalk with no curb would be in the 500-year floodplain.

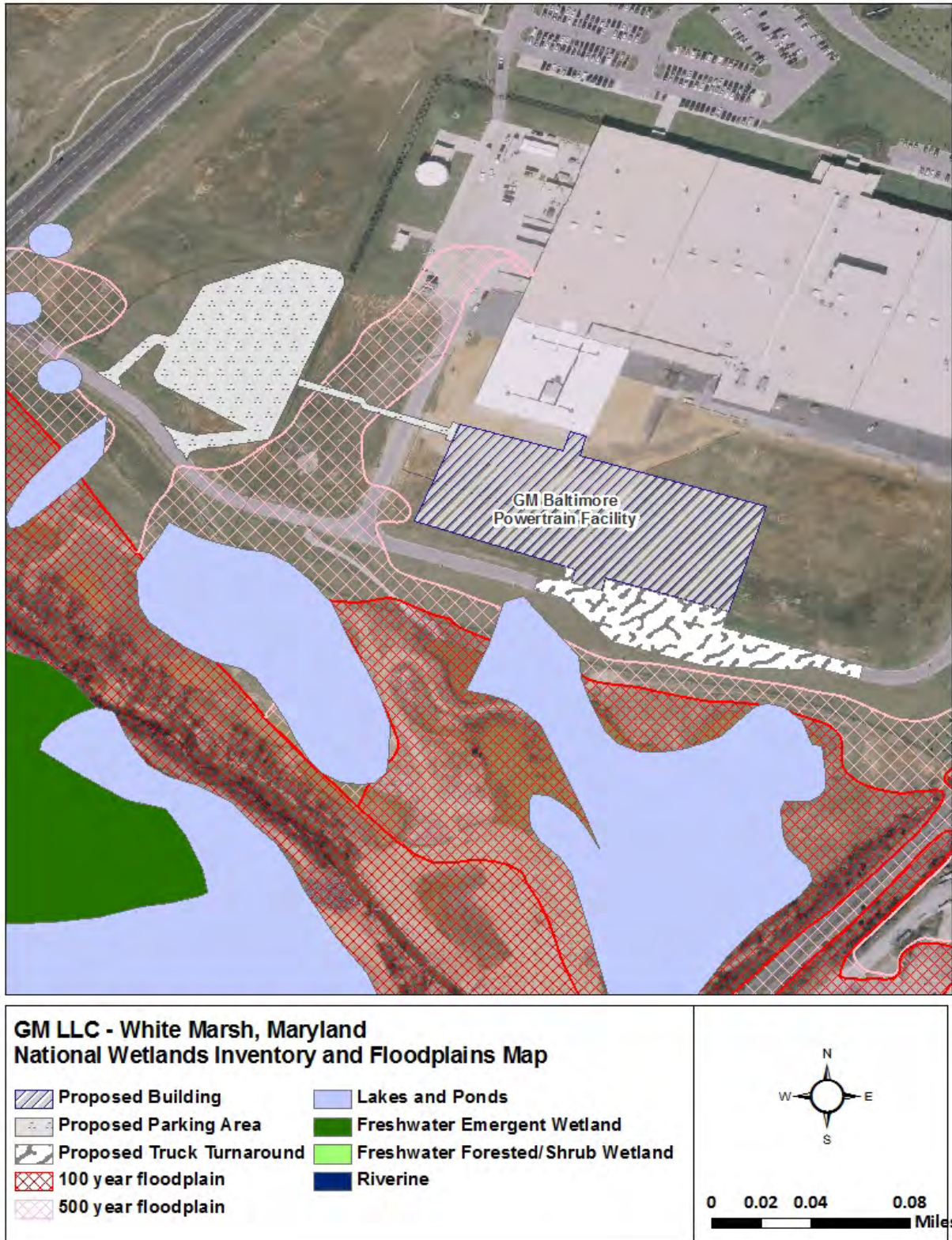


Figure 4.4.1. Wetlands and Floodplains
Sources: (ESRI, 2010; USFWS, 2010)

4.4.2 Effects of GM's Proposed Project

Based on the previous wetland permits, no wetlands are in the project area (USACE, 1997; USACE, 1998). BMPs should be implemented to avoid runoff into the nearby lakes. Earthmoving activities would not occur in the 100-year floodplain, but the pedestrian sidewalk with no curb would intersect the 500-year floodplain. A consultation letter was sent to Federal Emergency Management Agency (FEMA) (Appendix D). The parking lot connector and the truck turnaround were relocated to avoid the 500-year floodplain, but the sidewalk cannot be and still perform its function of connecting the parking lot and the proposed building. Since the sidewalk would be small and would have no curb, this addition to the 500-year floodplain is not anticipated to have more than negligible impacts to the function of the floodplain. Therefore, with appropriate regulatory compliance and implementation of BMPs, impacts to wetlands and floodplains should be less than the significance threshold, unless FEMA determines otherwise.

4.4.3 Effects of No-Action Alternative

Under the no-action alternative, the construction and other project components would not occur. Thus, no impacts to wetlands or floodplains would occur due to lack of earthmoving or ground disturbance activities.

4.4.4 Cumulative Effects

Past activities have altered the floodplains and wetlands in the area. The proposed project would represent a negligible impact, at most, to floodplains and wetlands due to the size of the proposed activity, lack of these resources in the proposed project footprint, and compliance with applicable regulations and BMPs implementation. Further, there are no other known present or reasonably foreseeable projects impacting these same resources. Therefore, the cumulative impacts are expected to be less than the significance threshold.

4.5 Terrestrial Vegetation

4.5.1 Description

The open area proposed for the new construction in Maryland was previously disturbed to construct the existing facility, access road, and stormwater detention ponds; therefore, existing vegetation consists of landscaping and turf grasses. The land use for the area that would be impacted is categorized as industrial (See Section 2.5: Land Use). Vegetation in the surrounding wooded areas likely includes poplar (*Populus*), ash (*Fraxinus*), oak (*Quercus*), and hickory (*Carya*) trees with possibly some white or loblolly pines (*Pinus strobus* or *Pinus taeda*). Understory shrubs species likely include dogwood, juniper, sumac, and serviceberry.

Executive Order 13112 - Invasive Species directs federal agencies to make efforts to prevent the introduction and spread of invasive plant species. Invasive species are usually destructive, difficult to control or eradicate, and generally cause ecological and economic harm. A noxious weed is any plant designated by a federal, state, or county government as injurious to public

health, agriculture, recreation, wildlife, or property. Maryland's Weed Control Law lists species that may not be grown in the state and must be controlled on both public and private lands. This law is enforced by the Maryland Department of Agriculture and county weed control coordinators. Maryland also restricts the use of certain seeds in grass mixes (MDA, 2009).

4.5.2 Effects of GM's Proposed Project

The White Marsh project would include a new building of approximately 104,000 square feet, as well as a parking lot and a truck widening area (See Figure 2.1.1). This infrastructure would be located adjacent to the existing facility and access road and within the existing developed boundaries of the property (Seibert, 2011a; Seibert, 2011b). Grading the site for construction would impact the maintained landscape and mowed grounds. Disturbed areas around the new facility would be landscaped with native vegetation and seed mixtures approved by the Maryland Department of Agriculture. There are no plans for nearby forests to be encroached upon in this project. The only trees that may be removed are 'ornamental' trees near the current facility, and trees would be added to the parking lot area (Seibert, 2011b). When disturbed areas are reclaimed, plants would be added to blend with the current existing vegetation surrounding the existing facility. Impacts to vegetation would be negligible.

Noxious weeds and invasive plant species are generally found in disturbed soil conditions. Surface disturbance and construction activities could facilitate the establishment and spread of noxious weeds. Aggressive non-native species could become established if ground disturbance during construction is extensive and lengthy. The construction period is expected to be less than one year (Seibert, 2011b). The size of disturbance for the proposed manufacturing facility and the short length of time before the ground surface is stabilized would minimize the risk of noxious weeds becoming established and therefore any potential impacts would be negligible.

Preventive measures such as monitoring and eradication would be implemented to reduce weeds from emerging after ground disturbance occurs. Any hay bales used to control surface runoff during construction would be certified as free from weed seeds. Heavy equipment transferring among construction sites could also introduce noxious weeds; however, because of the relatively small scale of the proposed facility, it is likely that equipment would mobilize to the site only once and thereby minimize this risk, though movement and use is at the contractors' discretion (GM, 2011c). With preventative measures implemented, including those listed above, the risks of invasive species should be minimized.

Overall, any changes to native vegetation would be limited to a small area and would not affect the viability of the resources. Full recovery would occur in a reasonable time, considering the size of the project and the affected resource's natural state. Therefore, impacts on terrestrial vegetation would not be expected to exceed the significance threshold.

4.5.3 Effects of No-Action Alternative

Site conditions would remain unchanged under the no-action alternative. The surface soils would not be disturbed for construction, and no impacts to vegetation would occur.

4.5.4 Cumulative Effects

Expansion of industrial development in the area would have a cumulative effect to native vegetation in the area; however, no reasonably foreseeable projects in the vicinity exist that would have such an effect with GM's proposed project. Cumulative impacts from the proposed project when added to other past, present, and reasonably foreseeable future actions would be minimally adverse and are not expected to exceed the threshold of significance.

4.6 Wildlife

4.6.1 Description

Wildlife that could typically be found in a rural/urban interface area similar to the project area in Maryland, include white-tailed deer (*Odocoileus virginianus*), fox (*Vulpes*), rabbit (*Syvilagus*), chipmunk (*Eutamia*), squirrel (*Citellus*), skunk, and different species of mice, moles, shrews, and bats. Avian species may include passerines (such as sparrows, bluebirds, waxwings, robins, and orioles), doves, woodpeckers, crows, ravens, and raptors (hawks and owls). With the close proximity to surface water sources (White Marsh Run and stormwater detention ponds), amphibian and reptile species such as turtles, salamanders, and frogs are likely present in the project area.

Most birds are protected by the Migratory Bird Treaty Act that prohibits the destruction of active nesting habitat. The wooded areas to the south and east of the GM facility likely provide habitat for foraging and nesting for various species of birds.

4.6.2 Effects of GM's Proposed Project

Construction activities would occur adjacent to the existing White Marsh facility and access road. Common wildlife species inhabiting or using this area for forage or cover would be displaced and direct mortality of less mobile species could potentially occur. Similar habitat on adjacent wooded and open land would support the displaced species and thus potential impacts would be negligible. The typical species that could be impacted are widely distributed, and thus loss of some individuals and habitat would not impact the populations throughout their range. Reviews indicate that there are no sensitive or unique habitats that would be impacted by this project (GM, 2010). The Critical Habitat mapper image shows that there are no critical habitats on or near the site (Figure 4.6.2).

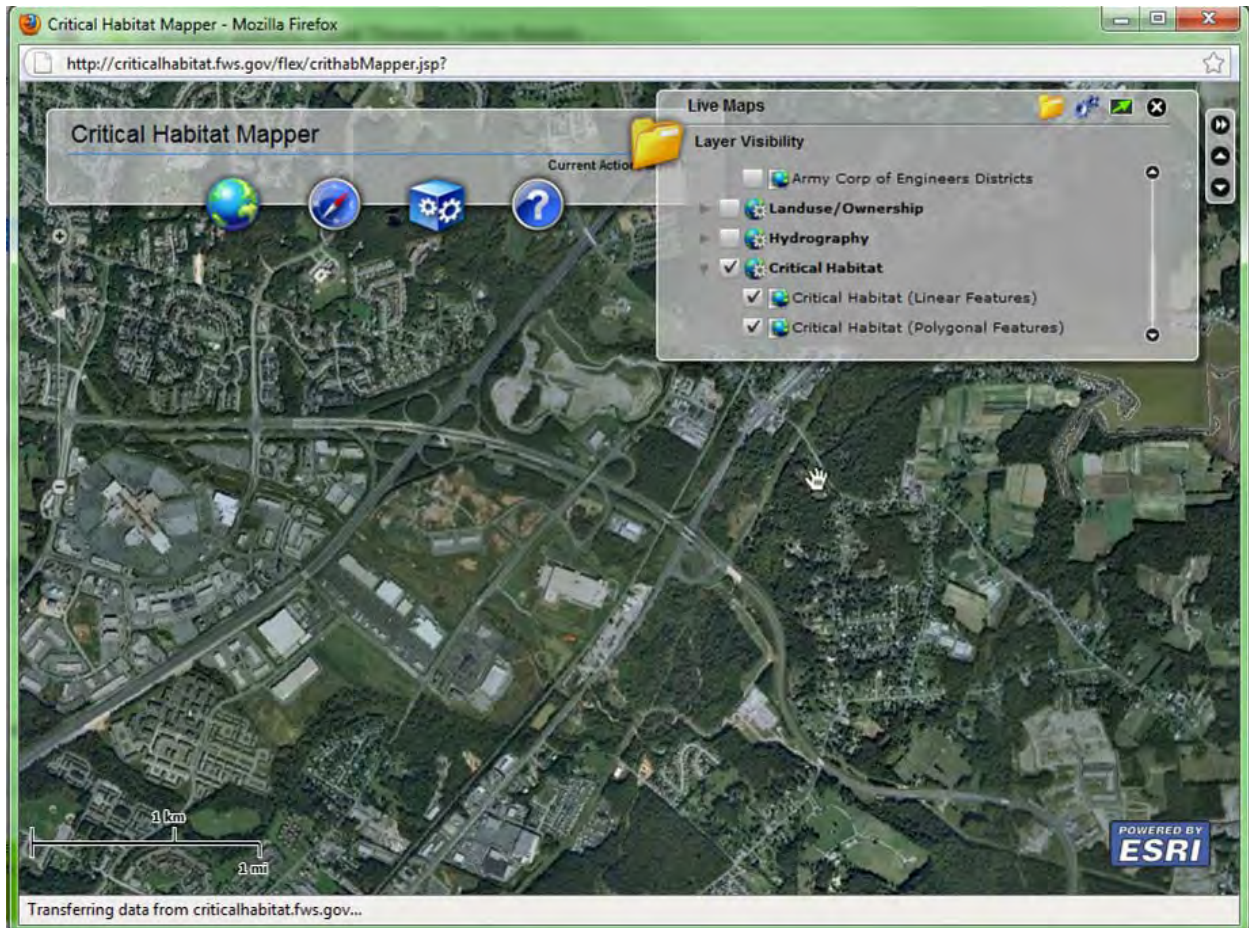


Figure 4.6.2. Map of USFWS Identified Critical Habitats in the White Marsh Site Vicinity
Source: (USFWS, No date)

Construction activities could disturb any birds foraging, roosting, or nesting in the nearby wooded area and along White Marsh Run; however, potential impacts would be negligible because of distance between the construction site and habitat, and mobility of the species to move away from the disturbance. New trees planted in the parking lot area may help offset disturbances for birds and other wildlife. Additionally, a soil and erosion plan to protect the stormwater detention ponds near the project would be created (West, 2011). Thus, there would be negligible impacts to existing wildlife due to the small population affected. These impacts are not likely to jeopardize the viability of the resources.

After construction, operations at the White Marsh facility would create noise, vehicle and human traffic, and other disturbances that typically impact wildlife. However, the current White Marsh facility and other industrial facilities have been operating at some capacity continuously since 2000; therefore, it is reasonable to assume that any highly sensitive species would have already relocated to more appropriate habitats and that other organisms that currently live near the facility have acclimated to the operational impacts of the facility.

Overall, any impacts on wildlife from GM's proposed project would be limited to a small portion of the population and would not affect the viability of the resource. Full recovery would occur in

a reasonable time, considering the size of the project and the affected species' natural state. Therefore, overall impacts on wildlife would not be expected to exceed the significance threshold.

4.6.3 Effects of No-Action Alternative

Under this alternative, there would be no construction that would disturb habitat or displace wildlife species, so there would be no impacts to wildlife.

4.6.4 Cumulative Effects

Conversion of open land to industrial development would have a cumulative effect to wildlife species in the area. However, there are no reasonably foreseeable projects in the vicinity that would have an incremental effect with GM's proposed project. Cumulative impacts from the proposed project when added to other past, present, and reasonably foreseeable future actions would be minimally adverse and are not expected to exceed the threshold of significance.

4.7 Threatened and Endangered Species

4.7.1 Description

A species listed under the ESA is so designated because of danger of its extinction as a consequence of economic growth and development without adequate conservation.

With regard to potential impacts to threatened and endangered species at the proposed Maryland site, the sandplain gerardia (*Agalinis acuta*) is a federally listed plant species known to occur in Baltimore County, Maryland. It was listed in 1988 as endangered by the USFWS under the ESA. The sandplain gerardia is also listed by the State of Maryland as endangered. The favored growing conditions of the plant are native grasslands on sandy loam, loam, and loamy sand soils (USFWS, 1989). Maryland's single known population grows on a site that has been protected for over 20 years as a state Natural Environmental Area (MDNR, No date).

The bog turtle (*Glyptemys muhlenbergii*), a federally listed animal (reptile) species, is also known to occur in the county. It was listed as threatened by the USFWS in 1997. Bog turtle habitat includes wetlands and freshwater marshes in northern Maryland counties. The turtles depend on a mosaic of microhabitats for foraging, nesting, basking, hibernation, and shelter (NatureServe, 2009). Larger population sizes in Maryland are associated with circular basins with spring-fed pockets of shallow water, bottom substrate of soft mud and rock, dominant vegetation of low grasses and sedges, and interspersed wet and dry pockets (NatureServe, 2009). A consultation letter was sent to USFWS to confirm that no other federally listed species exist in the project area (Appendix E).

There are a number of other species found in Baltimore County that have been listed by the State of Maryland as threatened or endangered that are not federally listed (MDNR, 2010). Some of these organisms have habitats that require further consideration for this project. These species and a brief description of their habitat are discussed in Table 4.7.1 below. Many other species

listed as threatened or endangered found in Baltimore County have habitats that allow them to be dismissed. A list of these organisms is found in Appendix F. Habitats that allowed for immediate dismissal included wetlands, aquatic, and marine ecosystems, as well as forests, rocky outcrops, and similar habitats (NRCS, 2011; Flora of North America, 1993+; NatureServe, 2009). Since these habitats would not be impacted by the proposed project, these organisms would not be impacted. Several organisms did not have habitat requirements listed in any database searched. Given the disturbed nature of this site, it is not expected that these organisms are present, so these species are listed in Appendix F. Additionally, a consultation letter has been sent to the Maryland Department of Natural Resources Wildlife and Heritage Service, who concluded no known state listed species at the site (see Appendix G).

Table 4.7.1. Threatened or Endangered Species (State Status) of Baltimore County, Maryland That Were Considered Further Due to Habitat Considerations			
Scientific Name	Common Name	State Status	Habitat
<i>Cicindela patruela</i>	Green-patterned Tiger Beetle	Endangered	Open grounds within woodlands, pine barrens, along trails, on outcrops, etc.
<i>Chenopodium standleyanum</i>	Standley's Goosefoot	Endangered	Shaded wooded areas in disturbed soils
<i>Coeloglossum viride</i>	Long-bracted Orchis	Endangered	Sub-arid soil in damp open woods, frequent in disturbed areas
<i>Lupinus perennis</i>	Wild Lupine	Threatened	Dry, open, sandy woods, clearings with little shade; occurs in disturbed areas
<i>Lygodium palmatum</i>	Climbing Fern	Threatened	Poorly drained, after disturbance
<i>Pycnanthemum torrei</i>	Torrey's Mountain-mint	Endangered	Exposures of xeric, rocky, wooded habitat; dry power line corridors
<i>Spiranthes ochroleuca</i>	Yellow Nodding Ladys' Tresses	Endangered	Open woodlands, outcrops, old fields

Sources: (NRCS, 2011; Flora of North America, 1993; NatureServe, 2009; MDNR, 2010)

4.7.2 Effects of GM's Proposed Project

The known habitats for sandplain gerardia and bog turtle are not on or near the White Marsh project area, and thus, construction and operation activities for the new facility would not affect either species. The USFWS confirmed the determination of no impacts to threatened and endangered species for the original project last year. A new consultation letter was sent for the expanded project (Appendix E).

Several species identified as threatened or endangered by the State of Maryland live in disturbed or modified habitat, and thus were considered further. The habitats of *Chenopodium standleyanum*, *Coeloglossum virid*, and *Lupinus perennis* all include disturbed areas. However, their optimal habitats are also woody. While there are woodlands near the projects, these woody

areas would not be impacted by the proposed project. Therefore, these three plant species are unlikely to be impacted.

Lygodium palmatum thrives after disturbance in poorly drained soil. While it is possible that there would temporarily be disturbed, poorly drained soil during construction, this kind of habitat is not currently found on the project site, so it is highly unlikely that this species is present. *Pycnanthemum torrei* thrives in power line corridors, which are a type of disturbed area. However, the open areas on this project site are currently covered with manicured lawn, which is ecologically different from the described habitat of this organism. Similarly, *Spiranthes ochroleuca*'s habitat includes old fields, but the open areas on this site are covered in lawn, which is not likely to be an ideal habitat of this plant. It is not likely that any of these plant species are currently present in this project site or would be impacted by this action.

The habitat of the Green-patterned Tiger Beetle (*Cicindela patruela*) is described as including open ground. This beetle may live in open ground on the site. However, this habitat description refers to open ground found in within woodlands, pine barrens, or other less disturbed areas. As can be seen in Figure 2.1.1, most of the open area in the project site area is manicured lawn. Therefore, it is not highly likely that this site provides habitat for this beetle.

Overall, though there a large number of species listed as threatened or endangered by Maryland, it is unlikely that this project would impact habitat or population size of any of these species. Unless USFWS or MDNR determines otherwise or a discovery of previously unknown threatened and endangered species occurs, impacts from implementing this alternative would be expected to be less than the significance threshold.

4.7.3 Effects of the No-Action Alternative

There is no known threatened or endangered species habitat in the vicinity of the GM facility in White Marsh, Maryland. Taking no action would have no effect on listed species.

4.7.4 Cumulative Effects

Because GM's proposed project would have no effect to listed species or habitat, it would not contribute to any cumulative effects on the species due to loss of potential habitat from other development in the project area. Cumulative impacts from the proposed project when added to other past, present, and reasonably foreseeable future actions would be minimally adverse and are not expected to exceed the threshold of significance.

4.8 Socioeconomic Resources

Socioeconomic factors describe the local demographics, economy, and employment that could be influenced by GM's proposed project.

4.8.1 Description

Because the 2010 Census data will not be available until 2012, the 2005-2009 American Community Survey 5-Year Estimates are the most recent reliable information. White Marsh, MD is an unincorporated community and a census-designated place in Baltimore County, MD, with roughly 9,103 residents (Census, No date[a]). It is a relatively new community, being formally designated as a town center in the Baltimore County Master Plan in 1979 (DOE, 2010).

Almost a third (28.1%) of White Marsh's population works in educational services, and health care, and social assistance industry. Only 6.3% work in construction, and manufacturing employs 5.6% of White Marsh's population (Census, No date[d]). The most current unemployment data is only available down to the Baltimore metro area level. The preliminary Baltimore, Maryland metro area had an unemployment rate of 7.7% in February 2011, below the national average of 9.5%, but slightly higher than the Maryland rate of 6.9% in March 2011 (BLS, 2011a; BLS, 2011b).

4.8.2 Effects of GM's Proposed Project

This section addresses the potential for positive and negative socioeconomic impacts that might occur in the local community.

GM's proposed project would involve constructing a building of approximately 104,000 ft², a parking lot of approximately 150,000 ft², a truck turnaround area, and a small pedestrian sidewalk with no curb in a period of 11 months in White Marsh to house its electric motor component production facility.

The electric motor component manufacturing process would initially be developed and validated at the Wixom Validation Center, which was analyzed in the 2010 EA (DOE, 2010). Then, the hybrid and electric drive unit component manufacturing and assembly process, including electric motor components, would be designed and validated to meet the production target. Machine, tooling, and equipment requirements would be specified, and vendors would be selected. The factory floor in the electric motor component production facility would be designed for the most efficient implementation of the manufacturing process. The existing 2-mode drive unit component manufacturing area would be adapted for production of components (DOE, 2010). A new hybrid and electric drive unit assembly area would be designed within the footprint of the same facility. GM's proposed project would generate minor beneficial increases in economic activity in the following ways:

- (1) The construction of the White Marsh facility is expected to create approximately 50 FTE construction jobs over the 11 months of construction. The total project estimate is \$25 million with 55% or \$13.75 million being labor costs (Seibert, 2011a; Seibert, 2011b).
- (2) Once operational, the White Marsh facility is expected to produce about 200 FTE operational positions (Gieseking, 2011a). The addition of 200 permanent manufacturing jobs to the community would have a minor beneficial impact on

economic activity in the region, as the salaries and wages paid to facility staff flow through the local and regional economy in the purchase of goods and services.

- (3) The sale of manufactured products creates employment both “backwards”—in mining and construction—and “forward”, in the transportation, finance, and wholesale trade sectors. The U.S. Department of Commerce estimated that every dollar in final sales of manufactured products supports \$1.40 in other sectors of the economy (TMI, 2009).

GM anticipates that both the temporary construction jobs and the ongoing operation jobs could be filled from local or nearby communities. Otherwise, the workers would come from different counties or even states (Giesecking, 2011b). Even if all 200 workers came outside of the community, they would represent approximately a two percent increase in population. Thus, the influx should be able to be accommodated by the White Marsh area without strain. This would include finite community resources, such as schools, housing, health facilities, or law enforcement capabilities. Therefore, the impacts from implementing this alternative would be beneficial but less than the significance threshold.

4.8.3 Effects of No-Action Alternative

If the construction facility were not built, the opportunity to create short-term construction jobs, long-term manufacturing jobs, and the benefits of resulting economic activity would be lost, which would be less than the significance threshold because this alternative would represent a lost opportunity for a relatively small number of jobs and income in the community. Thus, this alternative would not worsen current conditions. Therefore, the impacts would be less than the significance threshold.

4.8.4 Cumulative Impacts

GM’s proposed project would not add to local economic development pressures in the White Marsh, since the new facilities are proposed within the existing GM property footprint. In addition, incremental cumulative economic impacts are unlikely because GM’s proposed project is not large enough to result in enough increased demands for goods and services that would trigger further economic development and because there are no other planned or reasonably foreseeable projects affecting the same socioeconomic resources. Therefore, the cumulative impacts would be expected to be less than the significance threshold. Similarly, cumulative impacts of less than the significance threshold would occur from implementing the no-action alternative due to the small lost opportunity.

4.9 Infrastructure/Utilities

Characterization of the infrastructure and utilities within the project area focuses on the ability of these elements to serve existing demand as well as any increase that may result from implementation of GM’s proposed project.

4.9.1 Description

Traffic in White Marsh is generated primarily by personal operating vehicles. However, the proposed location also has direct access to Maryland Transit Administration (MTA) bus routes on Philadelphia Avenue and White Marsh Boulevard. Regional access to White Marsh is provided by Interstate-95 (I-95) traveling north to south between Wilmington, Delaware and Baltimore, Maryland approximately one-half mile west of the site. Once entering the area, travelers would approach the site most efficiently via Route 43 that exits directly onto Philadelphia Avenue and into the existing GM facility. Depending on their point of origin, travelers could approach via Route 40 from the south, or via Whitmarsh Boulevard from the east and west. The existing facility has electrical transmission lines, potable water utilities, and sewage access.

4.9.2 Effects of GM's Proposed Project

Short- and long-term minor adverse effects on transportation, infrastructure, and utilities would be expected from implementing GM's proposed project. The changes would be due to construction vehicles and small changes in localized traffic patterns from the additional personnel. The project would not noticeably affect or disrupt the normal or routine functions of public institutions, roads, electricity, and other public utilities and services in the project area; therefore, the impact would be less than the significance threshold.

Traffic would increase because of additional construction vehicles and traffic delays near the construction sites. These effects would be temporary in nature and would end with the construction phase. The local roadway infrastructure would be sufficient to support any increase in construction vehicle traffic. Such effects would be minimized by placing construction staging areas where they interfere with traffic the least. All construction vehicles would be equipped with backing alarms, two-way radios, and Slow Moving Vehicle signs when appropriate.

Access to the site would be limited to a single entrance/exit from Philadelphia Road (Route 7), which would result in effects that are more noticeable on streets near the site than on any of the regional roadways. GM's proposed project would introduce approximately 200 permanent employees at the proposed hybrid and electric drive unit facility. These personnel would constitute approximately 700 more vehicle trips per normal weekday, and fewer on the weekend (ITE, 2003). There would be a small increase in public bus use on routes servicing the facility. No changes in rail or air traffic would be expected. Parking would be adequate for the additional personnel.

Only a fraction of the new vehicle trips would occur during peak traffic periods. These small increases in traffic would not affect the capacity of any nearby roadway segments or intersections. These effects would be minor. Moderate changes in the number of additional personnel would not substantially change the number of daily trips, the times of travel, or the level of impact under NEPA.

The site would require substantial utility upgrades and services to support the proposed facilities; primarily electrical, water, and sewage. Baltimore County provides service and information to

residential and commercial customers through the county Public Works department. Baltimore County Bureau of Utilities is made up of four divisions: Sewer, Water, and Storm Drain; Pipeline Maintenance Division; Pumping & Treatment Division; and Engineering and Regulations Division (Baltimore County, 2010). In the final design stages, all utility upgrades would be reviewed carefully to ensure compatibility with the site as well as local zoning ordinances. There would be limited potential to alter or disturb power or other infrastructure services to the area because of GM’s proposed project. These effects would be minor and below the threshold of significance.

4.9.3 Effects of No-Action Alternative

Selecting the no-action alternative would result in no impact to infrastructure and utilities. No construction or changes in facility operations would take place. Conditions would remain unchanged when compared to existing conditions (Section 4.9.1).

4.9.4 Cumulative Impacts

Cumulative impacts would not be anticipated with GM’s proposed project. There are no planned or reasonably foreseeable actions, which when added to the effect of GM’s proposed project, would substantially change local road use or traffic patterns. There would be limited potential to alter or disturb power or other infrastructure services to the area as a result of GM’s proposed project. Cumulative impacts from the proposed project when added to other past, present, and reasonably foreseeable future actions would be minimal and not expected to exceed the threshold of significance.

4.10 Noise

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise, the distance between the noise source and the receptor, receptor sensitivity, and time of day.

Sound varies by both intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz (Hz) are used to quantify sound frequency. The human ear responds differently to different frequencies. A-weighting, described in a-weighted decibels (dBA), approximates this frequency response to express accurately the perception of sound by humans. Sounds encountered in daily life and their approximate levels in dBA are provided in Table 4.10.

Outdoor	Sound level (dBA)	Indoor
Snowmobile	100	Subway train
Tractor	90	Garbage disposal
Noisy restaurant	85	Blender
Downtown (large city)	80	Ringling telephone

Outdoor	Sound level (dBA)	Indoor
Freeway traffic	70	TV audio
Normal conversation	60	Sewing machine
Rainfall	50	Refrigerator
Quiet residential area	40	Library

Source: (Harris, 1998)

The dBA noise metric describes steady noise levels. Very few noises are, in fact, constant, so a noise metric, day-night sound level (DNL) has been developed. DNL is defined as the average sound energy in a 24-hour period with a 10-dB penalty added to nighttime levels (10 p.m. to 7 a.m.). DNL is a useful descriptor for noise because it averages ongoing yet intermittent noise, and it measures total sound energy over a 24-hour period. In addition, equivalent sound level (L_{eq}) is often used to describe the overall noise environment. L_{eq} is the average sound level in dB.

The Noise Control Act of 1972 (Public Law 92-574) directs Federal agencies to comply with applicable Federal, state, interstate, and local noise control regulations. In 1974, the USEPA provided information suggesting that continuous and long-term noise levels in excess of DNL 65 dBA are normally unacceptable for noise-sensitive land uses such as residences, schools, churches, and hospitals.

4.10.1 Description

The State of Maryland’s Environmental Noise Act of 1974 limits both the overall noise environment and the maximum allowable noise level in residential, industrial, and commercial areas (Table 4.10.1-1). In addition, a person may not cause or permit noise levels emanating from construction or demolition site activities that exceed 90 dBA during daytime hours (7 a.m. to 10 p.m.). Baltimore County maintains a nuisance noise ordinance; however, it does not specifically outline not-to-exceed noise levels or standards (Baltimore County, 2011).

Day/Night	Industrial	Commercial	Residential
Maximum Allowable Noise Level (L_{max})			
Day	75	67	65
Night	75	62	55
Overall Environmental Noise Standards			
24-hour	$L_{eq} > 70$	DNL > 64	DNL > 55

Source: (COMAR, Title 26.02.03)

Note: Daytime construction noise limits are 90 dBA for all land use categories, and the symbol “>” means greater than.

Existing sources of noise near the site include highway and local road traffic, rail traffic, high altitude aircraft, and natural noises such as leaves rustling and bird vocalizations. The site is one-half mile west of I-95 and is adjacent to a major north-south rail corridor. There are no nearby airfields.

Existing noise levels (DNL and L_{eq}) were estimated for the site and surrounding areas using the techniques specified in the *American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound Part 3: Short-term measurements with an observer present* (ANSI, 2003). Table 4.10.1-2 outlines the closest noise-sensitive areas such as residents, schools, churches, and hospitals, and the estimated existing noise levels at each location. Notably, nearby areas are primarily industrial and commercial, and there are no residences, churches, schools, or hospitals within one-half mile of the site.

Closest noise-sensitive area			Estimated existing sound levels (dBA)		
Distance	Direction	Type	DNL	L_{eq} (Daytime)	L_{eq} (Nighttime)
2,600 feet (ft) (780 meters (m))	South	Quiet Urban Residential	55	56	50
3,400 ft (1,000 m)	Southeast				

Source: (ANSI, 2003)

4.10.2 Effects of GM’s Proposed Project

Short-term, minor, and adverse effects on the noise environment would be expected. Noise levels would not exceed Federal, state, or local noise standards. Minor increases in noise would be primarily from using heavy equipment during construction at the proposed site. Noise from facility operations would be negligible.

GM’s proposed project would require the construction of new facilities at the proposed site. Individual pieces of construction equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 feet (Table 4.10.2). With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of active construction sites. The zone of relatively high construction noise levels typically extends to distances of 400 to 800 feet from the site of major equipment operations. There are no residences closer than 800 feet to the site that would experience appreciable amounts of construction noise. Given the temporary nature of the construction, and the distance to the nearest sensitive receptor, it would have a minor effect and would be below the threshold of significance.

Construction Phase	dBA L_{eq} at 50 ft from Source
Ground Clearing	84
Excavation, Grading	89
Foundations	78
Structural	85
Finishing	89

Source: (USEPA, 1974)

Although construction-related noise effects would be minor, contractors would limit construction to occur primarily during normal weekday business hours and properly maintain construction

equipment mufflers. It is not expected, therefore, that construction noise would violate the state or local noise ordinances. Noise effects on construction personnel could be limited by ensuring that all personnel wear adequate personal hearing protection to limit exposure and ensure compliance with Federal health and safety regulations.

Operation of the proposed hybrid and electric drive unit facility would not generate disruptive noise levels. All equipment would be completely enclosed in the proposed facilities. In the final design stages, care would be taken to ensure compliance with Federal, state, and local noise regulations.

4.10.3 Effects of No-Action Alternative

Selecting the no-action alternative would result in no effect on the ambient noise environment. No construction would be expected. Ambient noise conditions would remain as described in Section 4.10.1.

4.10.4 Cumulative Impacts

GM's proposed project would introduce short-term incremental increases to the noise environment. These changes would be minor and temporary. Also, taken as a whole, the cumulative impacts from the proposed project when added to other past, present, and reasonably foreseeable future actions would be minimally adverse and are not expected to exceed the threshold of significance.

4.11 Human Health and Safety

4.11.1 Description

Air pollution causes human health problems. Air pollution can cause breathing problems; throat and eye irritation; cancer; birth defects; and damage to immune, neurological, reproductive, and respiratory systems (USEPA, 2010). National and state ambient air quality standards represent the maximum allowable atmospheric concentrations that may occur while still protecting public health and welfare with a reasonable margin of safety (See Section 4.1). In addition, OSHA regulations specify appropriate protective measures for all employees.

Spills from the construction of GM's proposed project and its operation could also be a source of possible impacts to human health and safety. Spills can introduce soil contamination and allow exposure pathways to workers and the public. The risks and effects of a spill depend on its composition. Similarly, waste management also is a source of possible human health and safety risks from exposure to contaminants (See Section 4.12).

A primary concern to human health and safety within the project area would be industrial accidents. Although the proposed project would be using innovative technology, the new building construction and operation would not present unusual risks for the workers due to the BMPs and safety protocols present as well as the similar nature to the tasks already occurring. Thus, the workers on the project would be subject to the same types of health risks that are

generally associated with their professions. The most fatalities of any industry in the private sector in 2009 occurred in the construction industry with 816 deaths (BLS, 2010a; BLS, 2010b). The 2009 nonfatal workplace injuries and illnesses rate was 3.6 per 100 equivalent full-time workers. The transportation equipment manufacturing 2009 nonfatal occupational injuries and illnesses rate was 72.8 per 100 equivalent full-time workers (BLS, 2010c).

Before GM allows any new or modified materials on the facility, the site Hazardous Materials Control Committee reviews each chemical and its proposed use, handling, and storage activities. This committee is a cross functional group of site experts typically from safety, environmental, medical, manufacturing, engineering, and representative personnel from the United Auto Workers. This committee reviews proposed materials to be brought onsite to ensure that the site can handle every chemical appropriately, safely, and in compliance with all regulations applicable to the site as well as identifying applicable training to employees and other personnel who would come in contact with these chemicals to ensure that hazards are understood and that the materials are handled in a safe manner while they are present at the site. This is an ongoing safety oversight procedure that would occur for GM's proposed project (Seibert, 2011c).

4.11.2 Effects of GM's Proposed Project

The objective of the proposed three-year project is to construct and validate a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components facility and assemble hybrid and electric drive units at GM's White Marsh, MD site.

General Motors Company has a global safety program applicable for all its facilities. This program includes a plant safety review board, safe operating practices, periodic safety observation tours, incident investigation, and an employee safety concern process (GM, 2005a). The purpose of these programs is to establish a robust health and safety leadership culture that eliminates or mitigates health and safety risks.

If GM's proposed project were implemented, the equipment and operations used in the project should only present minimal risks to human health and safety when operated under normal conditions and equipment is maintained. Thus, if BMPs, maintenance, and regulations are followed, the equipment should pose little impact to human health and safety. All personnel would be trained regarding the safety measures and procedures (such as handling hazardous materials) associated with the job. All necessary safety equipment would be worn during operating hours or while on the premises. If necessary, the GM safety manual would be updated. Following safety protocols and other necessary measures would minimize occupational hazards.

GM's proposed project would cause some increase in traffic, which increases the potential for accidents. The White Marsh facility currently has about 200 employees (GM, 2011d). While implementing GM's proposed project would mean that the number of employees would double, the infrastructure could handle the increase in the number of trips from the current level of vehicle activity (See Section 4.9). Because current roads near the site should be able to handle the increase in vehicles associated with this project, the risks of accidents are reduced. Thus, the impact to human health and safety from the increase in transportation is not expected to exceed the level of significance threshold.

Air emissions from GM's proposed project are anticipated to be less than significant (See Section 4.1). Thus, the impacts to human health from air emissions would not be expected to exceed the significance threshold. Following BMPs would reduce any impacts to human health from air quality. Further, workers would follow OSHA procedures, which would further reduce the impact to human health. Therefore, there would be a minimal risk to human health and safety as long as safety procedures are followed.

The soils are not highly erodible (See Section 4.2); therefore, water contamination from increased runoff, which could lead to human health and safety risks, is not a major issue (See Section 4.3). If significant changes were to occur to stormwater runoff, a new or modified NPDES permit would be required. Further, wastewater would be collected and treated according to applicable regulations and by qualified personnel (See Section 4.3). Therefore, the overall effect of GM's proposed project to surface water quality would not be expected to exceed the significance threshold.

Currently, there are no chemicals planned in GM's proposed project that would need special handling, notification, or permits other than what GM currently manages and has identified during various review and permitting activities (e.g., those required under the Clean Air Act, the Clean Water Act). Chemicals would be of a similar nature to the ones currently being used. All chemicals would be handled in compliance with all safety and environmental regulations applicable to the site (Seibert, 2011c).

If safety procedures and BMPs were followed, spills and leaks from equipment and processes (other than the hazardous wastes) would be of small volumes as well as nonhazardous and non-toxic. This would represent a low risk to human health and safety. Under normal conditions, hazardous and toxic materials can be used safely when appropriate safety precautions are followed. Some hazardous materials would be used or created during the project but in quantities small enough to maintain small generator status since Maryland does not recognize conditionally exempted small quantity generators. All generated waste materials would be handled and disposed of in accordance with applicable regulations.

With regard to the handling of hazardous materials, GM effectively controls chemicals and exposure with the GM Hazardous Materials Control Program developed to protect health, safety, and the environment. GM has documented, validated, and fully implemented plans for managing the life-cycle of chemicals and materials used in GM manufacturing processes and facilities. This includes procurement, storage, use, disposal, or reuse as well as a plan to limit exposure to hazardous chemicals based on GM Global Air Sampling Plans and Occupational Exposure Guidelines (GM, 2005b).

Elements of the "2005 safety plan," referenced in the 2010 EA (DOE, 2010), would be updated as appropriate with information still pertinent to the GM White Marsh site. For GM's proposed project, the safety plan would be developed (updated to reflect current program requirements) prior to and implemented during the building expansion construction activity (Seibert, 2011c).

The current Baltimore manufacturing facility also has comprehensive detailed safety elements (plan) that must be complied with for manufacturing, maintenance, and other operational activities that occur at the site. These safety requirements would also be applicable to the operations that would occur under this project once manufacturing gets under way (Seibert, 2011c).

Appropriate monitoring equipment and systems that are consistent with all BMPs and regulations would be in place for the materials and wastes produced. This operating procedure would detect leaks and equipment malfunctions to ensure the safety of the workers and enable appropriate early responses to any problems. This would reduce the risk to human health and safety on the site as well as in the local community. As a further precaution, and when necessary as required by regulatory mandate, the local communities and other relevant agencies would be notified of the materials present so that appropriate emergency plans could be modified. Therefore, risks to human health and safety from chemical handling and wastes would be below the significance threshold.

Facility decommissioning would represent the same types of risks as the operation. Thus, with proper safety procedures, the impact to human health and safety should be minimal. Appropriate BMPs and adherence to regulations would minimize the risks present with project implementation. Therefore, the overall impact to human health and safety would not be expected to exceed the significance threshold.

4.11.3 Effects of No-Action Alternative

Under the no-action alternative, there would be no construction, operation, or decommissioning of the proposed project. Thus, none of the risks listed in the previous section would occur, which would mean no impacts to human health and safety. The exception would be the fact that GM's proposed project's purpose, which is to further the research and manufacture of advanced electric drive systems while providing economic stimulation, would not be implemented. EDV technology could result in lower air emissions, which would improve human health and safety. However, many other projects are in operation or being proposed to assist in the EDV technology and stimulate the economy. Thus, all possible issues with delaying the advancement of EDV research and economic stimulation would not be attributable to implementing the no-action alternative (DOE declining to fund GM's proposed project) for this project. Nevertheless, while the no-action alternative does represent some risk to human health and safety through the lack of EDV system manufacturing, impacts to human health and safety from implementing the no-action alternative would be expected to be below the significance threshold.

4.11.4 Cumulative Effects

The cumulative impacts of existing activities in and around the project area do not represent a substantial risk to human health and safety with existing and upcoming mitigation and safety procedures in place. Further, the proposed project would contribute minimally to cumulative impacts due to the minimal risk to human health and safety with BMPs in place. Therefore, the cumulative impacts with implementing GM's proposed project would not be expected to exceed the significance threshold.

Since the current projects in the area do not pose a substantial risk to human health and safety, the no-action alternative does not represent any additional risks to human health and safety. As described in the previous section, the exception is that not implementing GM's proposed project (thus, implementing the no-action alternative) would have an adverse impact on the progress towards solutions for electric drive system manufacturing and economic stimulus. However, since this is a single project of many, the cumulative impacts to human health and safety for the no-action alternative are not expected to exceed the threshold of significance.

4.12 Waste Management

4.12.1 Description

The GM Baltimore Allison Transmission Plant in Maryland is identified by the USEPA as a conditionally exempt small quantity generator (CESQG) of hazardous waste under identification number MDR000019596 (USEPA, 2011d). In 2009, only one hazardous waste shipment was sent, which was 200 pounds of aerosol cans Manifest #002563125 FLE. Clean Harbors Environmental Services, Inc is the hauler (EPA# MAD039322250). This waste went through the Clean Harbors of Baltimore facility (MDD980555189) and eventually disposed/recycled at Clean Harbors Eldorado LLC (ARD069748192) in Eldorado, Arkansas. Clean Harbors of Baltimore is used by the Baltimore Transmission plant for disposing of hazardous wastes and some non-hazardous waste streams. The present hazardous waste streams are not and should not be associated with GM's proposed project, since Baltimore is in the process of eliminating the use of aerosol cans. Any hazardous wastes generated during the manufacturing of the hybrid and electric drive units would be dealt with upon determination (Seibert, 2010).

The White Marsh facility manufactures vehicle parts and accessories, electrical equipment for internal combustion engines, aluminum die castings, and plastics products. As a CESQG, the facility generates less than 220 pounds (100 kilograms) of hazardous waste per calendar month. The State of Maryland does not have a CESQG status and therefore classifies generators of less than 220 pounds (100 kilograms) hazardous waste per calendar month as small quantity generators (SQG). The waste stream includes used oil filters, waste oil, solvents, and sludge filter media. The White Marsh facility has been operating at reduced capacity since 2007 (GM, 2009). The White Marsh facility does not dispose of any of its production waste in a landfill; as such, it is a landfill free facility. Most of the non-hazardous materials associated with the GM White Marsh facility operations are recycled (Seibert, 2009).

4.12.2 Effects of GM's Proposed Project

Construction activities present the potential to encounter previously unidentified contaminated soils or groundwater. Based on a database search of known locations of hazardous sources and reported activity near the GM facility at White Marsh (EDR, 2009b), the likelihood of encountering contamination is low and impacts from contaminants expected during construction would be negligible. Small amounts of potentially hazardous waste materials (e.g., waste oils, lubricants, solvents, cleaners, and paints) would be generated during construction, but proper use and storage of the materials would ensure no impact to workers and the environment. Use or

storage of hazardous materials onsite during construction would be in accordance with applicable regulations, and appropriate spill prevention measures would be implemented (See Section 4.11). If hazardous materials are spilled or deposited on the site during or after construction, the responsible party would immediately notify appropriate regulatory parties, take all necessary actions to clean up and properly dispose of the materials, and complete all reporting requirements.

Operations at the White Marsh facility are not expected to generate hazardous waste of a different type or amount than what is currently generated or was generated at the facility at full operational capacity, and therefore, no changes to GM's status as a CESQG at White Marsh are anticipated. The plant has been operating at a reduced level currently. Operation of the facility proposed in this project is not expected to produce waste levels that would exceed waste levels when the plant was operating at full production in the past. In 2007, the last year in which the facility was operating at full capacity, 700 total tons of solid waste was generated at the site. The solid waste generated from this project would be a portion of the overall solid waste production of the GM facility (GM, 2011c). Minor amounts of hazardous wastes (code D001, which generally are solvents) may be generated at the White Marsh facility from the manufacturing process (GM, 2009), having a negligible impact on accumulation quantities or time limits, or frequency of off-site transport.

Additionally, before any new or modified materials on the facility, the site Hazardous Materials Control Committee reviews each chemical and its proposed use, handling, and storage activities. The committee ensures that any new chemical brought onsite is one that the site can handle appropriately, safely, and in compliance with all applicable regulations. However, there are currently no chemicals planned that would require special handling, notification, or permits other than what the facility currently manages.

Increases in office trash are expected with the approximately 200 additional employees expected to operate the new facility at White Marsh. Non-hazardous solid waste generated by the new manufacturing process would be approximately 700 tons (635 metric tons) annually from the White Marsh facility (GM, 2011c), similar to historic waste levels,. All of the non-hazardous solid waste generated is recycled, and thus, the amount of solid waste requiring disposal by the new development, validation, and manufacturing processes would be a negligible impact on the volume received. The solid waste generated at the White Marsh facility is anticipated to be similar to the amount generated by past manufacturing at full production rates (GM, 2009), and thus, any impact from disposal would be negligible. Any hazardous waste generated during construction or operations would be collected and stored in drums or other Department of Transportation (DOT) approved containers. The operation of this facility would not generate any recyclables, byproducts, and waste materials that are not currently being handled at the site, so it is not expected that new transportation activity or waste disposal plans or processes would need to be developed (Seibert, 2011b). Therefore, overall impacts to waste management from implementing this alternative would be expected to be less than the significance threshold.

4.12.3 Effects of No-Action Alternative

The construction of a new manufacturing facility at White Marsh would not occur under the no-action alternative. There would be no new development, validation, and manufacturing processes affecting the management of existing hazardous and solid waste at these facilities.

4.12.4 Cumulative Impacts

Increased manufacturing of parts for electric drive vehicles would have a cumulative beneficial effect on the environment from improved electric drive vehicles. There are no reasonably foreseeable projects in the vicinity of either facility that would have similar effects as GM's proposed project. Cumulative impacts from the proposed project when added to other past, present, and reasonably foreseeable future actions would be minimally adverse and are not expected to exceed the threshold of significance.

4.13 Sustainability

EO 13541 on Federal Sustainability issued on 5 October 2009, states in part that it is the **policy** of the Federal government “*to create a clean energy economy*” and that “*Federal agencies shall increase energy efficiency; measure, report, and reduce their greenhouse gas emissions from direct and indirect activities; conserve and protect water resources through efficiency, reuse, and stormwater management; eliminate waste, recycle, and prevent pollution; ...design, construct, maintain, and operate high performance sustainable buildings in sustainable locations; and strengthen the vitality and livability of the communities in which Federal facilities are located.*”

Section 2(f)(iv) of the EO states that each agency shall “*advance regional and local integrated planning by ... identifying and analyzing impacts from energy usage and alternative energy sources in all Environmental Impact Statements and Environmental Assessments for proposals for new or expanded Federal facilities under the National Environmental Policy Act of 1969, as amended (42 USC 4321 et seq.).*”

GM's proposed project reviewed by this EA is part of a larger national effort to move this country to a more sustainable future. Efforts are underway to begin the move from non-renewable fuel sources to renewable fuel sources to power our economy. A major part of that non-renewable fuel use is in personal transportation and the use of internal combustion engines in our automobiles. A shift to electric vehicles can be viewed as viable means to a more sustainable future.

The action proposed and reviewed in this EA is a part of that effort. If initiated, not only would this project assist in the development of the viable use of electric vehicles but also GM would implement specific project designs that would increase the sustainability of the proposed project. For example, it is the intent of GM to add a reclamation system (provides fluid dehydration, filtration, and temperature stabilization) to reclaim synthetic oil from drive unit test stands as an integral part of the project (DOE, 2010).

GM currently has ongoing programs to engineer out waste generation from their products, optimize first time through build quality to maximize manufacturing efficiency, and to minimize environmental impacts on waste, water usage, and utility use (Seibert, 2011b). The GM White Marsh site has been landfill free since 2007, which means that waste is either recycled or sent to a waste-to-energy plant, and it would continue this status with the proposed project (Seibert, 2011b; GM, 2010). The White March facility has reduced its energy usage by 54% since 2003. The site also has an International Organization for Standardization 14001-certified Environmental Management System, which is a system to improve environmental performance of a business. Recently, as an effort to enhance the surrounding area, GM planted 200 trees on the property, which increases the buffer around the facility (GM, 2011e). GM plans to continue sustainability efforts during the proposed project.

5.0 CONSULTATION AND COORDINATION

A kick-off meeting was held on October 20, 2009, at NETL office in Morgantown, West Virginia, with representatives from NETL and Mangi Environmental Group to begin formally the NEPA for the Electric Drive Vehicle Battery and Component Manufacturing Initiative projects. Subsequent to the determination of a supplemental EA, a review was made of available information necessary for the completion of the EA and data gaps were sent to NETL and General Motors Company.

5.1 Agency Coordination

The CEQ's regulations for implementing NEPA allows federal agencies to invite comment from Tribal, state, and local agencies, as well as other federal agencies in the preparation of EAs. The purpose of this coordination is to obtain special expertise with respect to environmental and cultural issues in order to enhance interdisciplinary capabilities and otherwise ensure successful, effective consultation in decision-making. The below entities were contacted for this effort.

5.1.1 U.S. Fish and Wildlife Service (USFWS)

The mission of the USFWS is to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of American people. Consultation with USFWS also assists with the Endangered Species Act compliance.

See Appendix E for correspondence with this agency.

5.1.2 State Historic Preservation Office (SHPO)

The NHPA requires DOE to consult with the SHPO prior to any construction to ensure that no historical properties would be adversely affected by a proposed project. DOE must also afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the proposed project.

See Appendix A for correspondence with this agency.

5.1.3 Bureau of Indian Affairs

The American Indian Religious Freedom Act, 42 USC § 1996, establishes policy to protect and preserve the inherent and Constitutional right of Native Americans to believe, express, and exercise their traditional religions. The law ensures the protection of sacred locations; access of Native Americans to those sacred locations and traditional resources that are integral to the practice of their religions; and establishes requirements that would apply to Native American sacred locations, traditional resources, or traditional religious practices potentially affected by construction and operation of proposed facilities.

See Appendix B for correspondence with the Bureau of Indian Affairs.

5.1.4 Other Agencies

Other consultation letters and responses are in Appendices D and G.

6.0 LIST OF PREPARERS

James Mangi: Contract Management, Project Oversight

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8.0 GLOSSARY

A-weighted Decibels - An expression of the relative loudness of sounds in air as perceived by the human ear.

Air-Quality Control Region - A contiguous area where air quality is relatively uniform. AQCRs may consist of two or more cities, counties or other governmental entities, and each region is required to adopt consistent pollution control measures across the political jurisdictions involved.

Alluvial Soil - Clay, silt, or gravel carried by rushing streams and deposited where the stream slows down.

Ambient - The natural surroundings of a location.

Anode - The *anode* of a device is the terminal where electric current flows in.

Attainment Areas - A zone within which the level of a pollutant is considered to meet the National Ambient Air Quality Standards.

Barrens - Land with sparse vegetation, often with bedrock at or very near the surface (especially in mountainous states, often populated with scrubby pines).

Best Management Practices - Methods or techniques found to be the most effective and practical means in achieving an objective (such as preventing or minimizing pollution) while optimally using the firm's resources.

Cathode - The *cathode* of a device is the terminal where current flows out.

Criteria Pollutants - The Clean Air Act requires USEPA to set standards for six common air pollutants. These commonly found air pollutants (also known as "criteria pollutants") are found all over the United States. They are particle pollution (often referred to as particulate matter), ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead.

Cumulative Effects - Those effects on the environment that result from the incremental effect of the action when added to past, present and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions.

Day-night Sound Level - The A-weighted equivalent sound level for a 24-hour period with 10 dB added to levels between 10 p.m. to 7 a.m.

dB (Decibel) - A unit of measurement that expresses the magnitude of a physical quantity (usually intensity) relative to a specified or implied *reference level*. The decibel is useful for a wide variety of measurements in science (for this application, it is sound).

Demographics - The characteristics of human population and population segments, especially when used to describe consumer markets.

EA (Environmental Assessment) - A concise public document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action, alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an environmental impact statement or finding of no significant impact (40 CFR 1508.9).

EIS (Environmental Impact Statement) - A detailed written statement required by Section 102(2) (C) of the National Environmental Policy Act, analyzing the environmental impacts of a GM's proposed project, adverse effects of the project that cannot be avoided, alternative courses of action, short-term uses of the environment versus the maintenance

and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources (40 CFR 1508.11).

Electrolytes - In chemistry, an *electrolyte* is any substance containing free ions that make the substance electrically conductive.

Endangered Species - A species that is threatened with extinction throughout all or a significant portion of its range.

Environmental Justice - The confluence of social and environmental movements, which deals with the inequitable environmental burden borne by groups such as racial minorities, women, or residents of developing nations.

Equivalent Sound Level - The level of a steady-state noise without impulses or tone components that is equivalent to the actual noise emitted over a period of time.

Estuaries - Part of the seacoast over which the tide ebbs and flows, an inlet or arm of the sea; especially the wide mouth of a river, where the tide meets the current.

Fen - A general term used in reference to habitats that are fed throughout the year by a flow of water at or just beneath the surface.

Floodplain - The lowlands and relatively flat areas adjoining inland waters, including flood prone areas, which are inundated by a flood.

FONSI (Finding of No Significant Impact) - A document prepared in compliance with the National Environmental Policy Act, supported by an environmental assessment, that briefly presents why a Federal action will have no significant effect on the human environment and for which an environmental impact statement, therefore, will not be prepared (40 CFR 1508.13).

Hazardous Waste/Materials - Waste substances that can pose a substantial or potential hazard to human health or the environment when improperly managed.

Hertz - A unit of frequency equal to one cycle per second.

Humus - The organic component of soil, formed by the decomposition of leaves and other plant material by soil microorganisms.

Invasive Species - An alien (nonnative to the ecosystem) species whose introduction does or is likely to cause economic or environmental harm or harm to human health.

Ions - An *ion* is an atom or molecule where the total number of electrons is not equal to the total number of protons, giving it a net positive or negative electric charge.

Lithium - A soft, silver-white metal that belongs to the alkali metal group of chemical elements.

Marsh - An area of low-lying land that is flooded in wet seasons or at high tide, and typically remains waterlogged at all times.

Mitigation - Methods or actions taken to improve site conditions by limiting, reducing or controlling adverse impacts to the environment.

NAAQS (National Ambient Air Quality Standards) - Standards established by the USEPA that apply to outdoor air throughout the country. Primary standards are designed to protect human health, with an adequate margin of safety, including sensitive populations such as children, the elderly, and individuals suffering from respiratory disease.

National Emissions Standards for Hazardous Air Pollutants - Emissions standards set by the USEPA for an air pollutant not covered by NAAQS that may cause an increase in fatalities or in serious, irreversible, or incapacitating illness.

Native - A species that historically occurs in an area or one that was not introduced (brought) from another area.

NEPA (National Environmental Policy Act) - Requires all agencies, including Department of Energy, to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documents to facilitate better environmental decision making (40 CFR 1500).

New Source Performance Standards - Pollution control standards issued by the USEPA. The term is used in the Clean Air Act to refer to air pollution emission standards, and in the Clean Water Act referring to standards for discharges of industrial wastewater to surface waters.

Nonattainment Areas - A locality where air pollution levels persistently exceed national standards or that contributes to ambient air quality in a nearby area that fails to meet standards.

Nonpoint Source Pollution - Water pollution affecting a water body from diffuse sources, rather than a point source that discharges to a water body at a single location.

NPDES (National Pollutant Discharge Elimination System) - The national program for administering permits (and pretreatment requirements) under sections 307, 402, 318, and 405 of the Clean Water Act. The term includes state or tribal approved programs.”

Overburden - The term used in mining and archaeology to describe material that lies above the area of economic or scientific interest.

Particulate Matter - Small solid particles and liquid droplets in the air.

Peat - A brown, soil-like material characteristic of boggy, acid ground, consisting of partly decomposed vegetable matter.

Physiographic - Pertaining to the science of physical geography.

PM₁₀ - Particulate matter less than 10 microns in diameter.

PM_{2.5} - Particulate matter less than 2.5 microns in diameter.

Potential to Emit (PTE) - The maximum amount of air contaminants that your source could emit if each process is operated at 100% of its design capacity; each process operated 24 hours/day, 365 days/year; materials that emit the most air contaminants are materials that emit the most air contaminants are used or processed 100% of the time; and air pollution control equipment is turned off.

Prime Farmland - Land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oil seed crops and is available for these uses. Public land is land not available for farming in National forests, National parks, military reservations, and State parks.

Reclamation - The process of reclaiming something from a loss or more useful condition

Refurbishment - The process of major maintenance or minor repair of an item, either aesthetically or mechanically.

Retrofit - To adapt to a new purpose or need.

Savannah - A temperate grassland with scattered oaks.

Scrub - Vegetation consisting chiefly of stunted trees or shrubs.

Sedimentary - Formed by the deposition of sediment, as certain rocks.

Serpentine - Derived from ultramafic rocks, in particular serpentine, a rock formed by the hydration and metamorphic transformation of ultramafic rock from the Earth's mantle.

Silt - Fine sand, clay, or other material carried by running water and deposited as a sediment, especially in a channel or harbor.

State Implementation Plan - The state plan for complying with the federal Clean Air Act. A SIP consists of narrative, rules, technical documentation, and agreements that an individual state will use to clean up area not meeting the National Ambient Air Quality Standards.

Sustainability - The capacity to endure. In ecology, the word describes how biological systems remain diverse and productive over time

Threatened Species - A species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Vernally - occurring in the spring.


Wetland - Area inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Xeric - Containing little moisture; very dry.

APPENDICES

Appendix A SHPO Consultation

U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility



PROJECT REVIEW FORM
Request for Comments from the Maryland Historical Trust/
MDSHPO on State and Federal Undertakings

MHT USE ONLY

Date Received: _____ Log Number: _____

Submit hard copy of form and all attachments to:
Beth Cole, MHT, 100 Community Place, Crownsville, MD 21032 Print Form

Section A: General Project Information

Project Name: County:

This is a new submittal OR This is additional information related Project Log Number:

Section B: Primary Contact Information

Contact Name: Company/Agency:

Mailing Address:

City: State: Zip:

Email: Phone Number: Ext.:

Section C: Description of Undertaking

Location - Attach a map, preferably a section of a USGS quad, showing the location and boundaries of the project

Address: City/Vicinity:

	Agency Type	Agency/Program/Permit Name	Project/Permit/Tracking Number (if applicable)
List all federal and state agencies / programs (funding, permits, licenses) involved in this project (e.g. Bond Bill Loan of 2009, Chapter #; Transportation Enhancement Grant; HUD/CDBG; MDE/COE permit, etc.).	Federal	Department of Energy, NETL	Transportation Electric Drive Vehicle Battery

Proposed Work - Attach project description, scope of work, site plans / drawings

This project includes (check all applicable): New Construction Demolition Remodeling/Rehabilitation

This project involves: State or Federal Rehabilitation Tax Credits
 Properties subject to an easement held by MHT, MET, or another entity

Section D: Identification of Historic Properties

This project involves: Properties designated as historic by a local government, listed in the National Register, or included in Maryland Inventory of Historic Properties

Property/District Name:

The subject property has has not been the subject of previous archeological, architectural, or historical investigations.

Please describe:

Attachments Map Project Description/Scope of Work Site Plans/Drawings

Photographs - Attach prints or digital photographs showing the project site including images of all buildings and structures, preferably keyed to a site plan

Conditions - Attach a brief description of past and present conditions of the project area (wooded, mined, developed, agricultural uses, etc) including construction dates of buildings, if known.

MHT Determination MHT Reviewer: _____ Date: _____

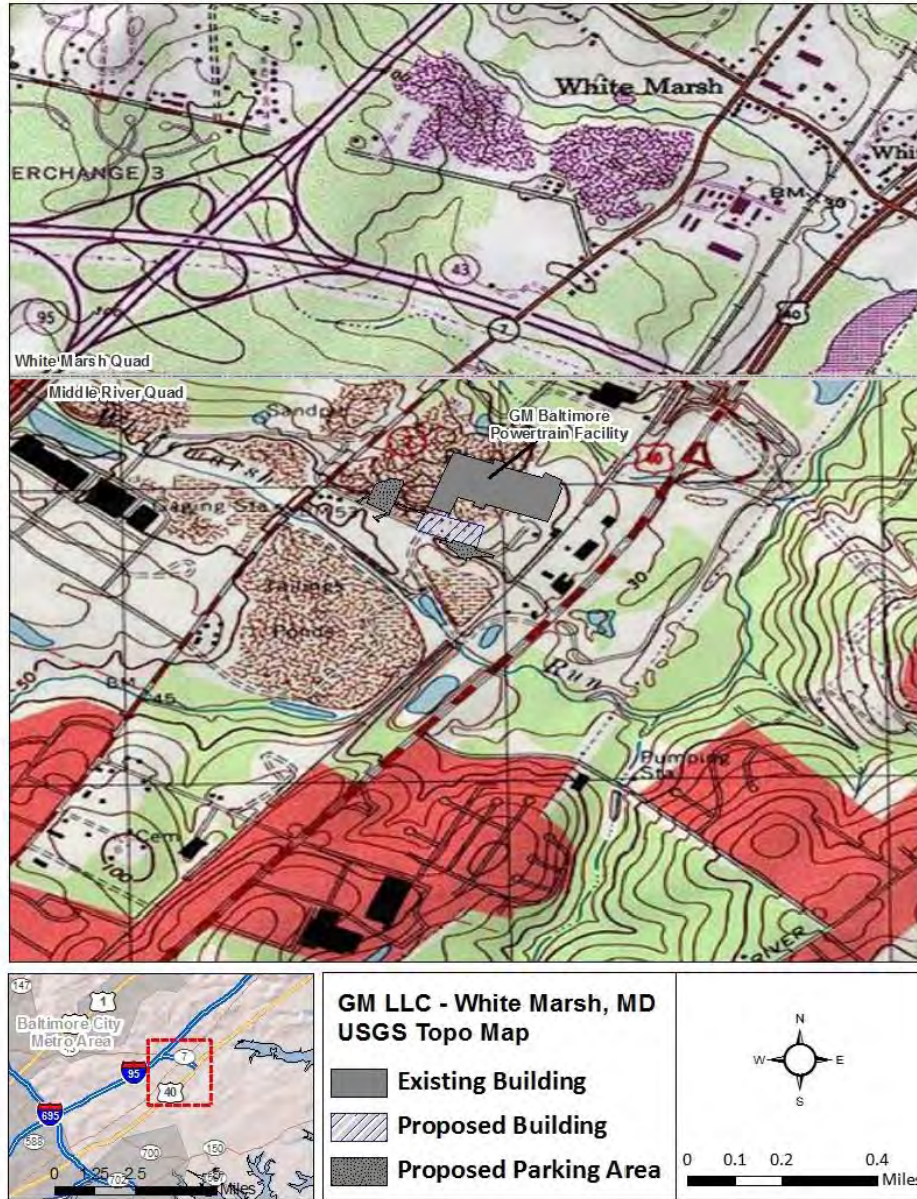
There are **NO HISTORIC PROPERTIES** in the area of potential effect The project will have **NO ADVERSE EFFECT WITH CONDITIONS**

The project will have **NO EFFECT** on historic properties **MHT REQUESTS ADDITIONAL INFORMATION**

The project will have **NO ADVERSE EFFECT** on historic properties The project will have **ADVERSE EFFECTS** on historic properties

U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric
Validation Center at its White Marsh, Maryland Facility

Map:



U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility

Project Description

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Vehicle Technologies (VT) Program for the Office of Energy Efficiency and Renewable Energy. A key objective of the VT program is accelerating the development and production of electric drive vehicle systems in order to substantially reduce the United States' consumption of petroleum. Another of its 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 VT program in the American Recovery and Reinvestment Act of 2009, Public Law 111-5 (Recovery Act) in order to stimulate the economy and reduce unemployment in addition to furthering the existing objectives of the VT program. NETL is considering funding the proposed U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center as one of 30 DOE selected for funding under the Recovery Act.

The objective of the proposed three-year project is to construct and validate a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components and assemble a second-generation global RWD electric drive unit, designated "GRE." The GRE motor design requires significant advances in manufacturing process technology because of the complexities of the motor components. Therefore, a supporting objective is to develop and validate novel motor manufacturing technology.

GM intends to expand the size of its new manufacturing building in White Marsh, Maryland about three-fold from the original proposal (from approximately 37,000 square feet to 104,000 square feet). The previous proposal under the same project name had project number 200904598 and received "no historic properties affected" determination from your office on January 7, 2010.

The expanded new building, and related improvements, will be situated within the existing property boundary. This building size increase is necessary to accommodate more manufacturing equipment and provide office space. The proposal includes 308 new parking spaces and widening of a truck dock area as shown in the following site drawings as well as the above figure. GM will use the expanded area and a quarter of the existing facility to manufacture Global Rear Wheel Electric and other electric drive units for vehicles.

DOE is requesting information or concerns you may have on properties of traditional, religious, or cultural significance in the vicinity of the proposed GM project site. Any information you provide will assist the Department in the preparation of a supplemental environmental assessment (EA) and fulfillment of its responsibilities under Section 106 of the National Historic Preservation Act.

As designed, the proposed project would avoid any disturbance to known cultural or archeological sites. If any cultural materials were to be discovered during the construction phase of the project, all work would cease until the Maryland Historical Trust is contacted and corrective measures implemented.

U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric
Validation Center at its White Marsh, Maryland Facility

DOE will provide you a copy of the Draft Supplemental EA, once completed, where you may again respond to any specific concerns you may have. All correspondence(s) with your office will be included in an appendix to the supplemental EA. At this time, DOE is anticipating a 15-day public comment period.

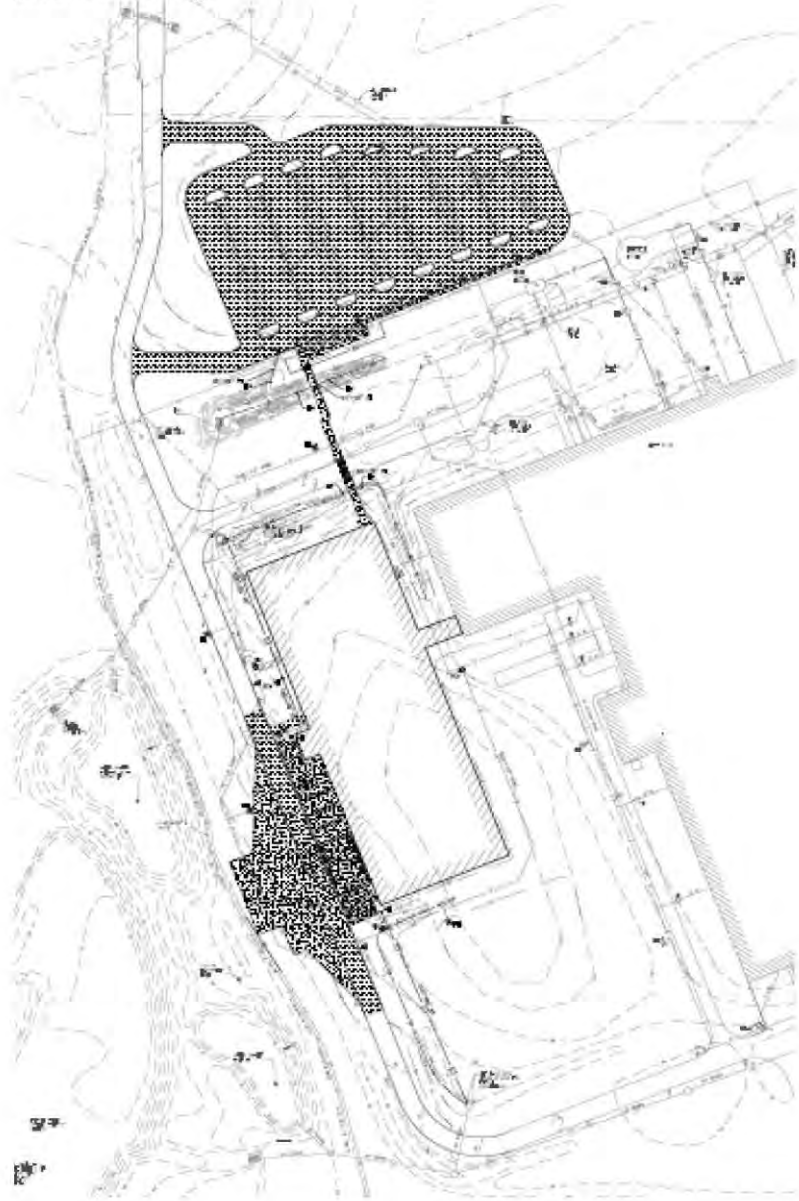
Because this is a Recovery Act project, we would appreciate a quick response to our request for consultation. Should you require additional information, please contact me by telephone at (412) 386-5428 or by email at piecina.fayish@netl.doe.gov.

Conditions

The past condition of the property was a gravel pit before GM built the facility. The current use of the property is an activity industrial complex with other industrial facilities nearby. There is also some wooded area near the facility that would not be removed with the proposed project. The date of the buildings is unknown but likely not historical given the previous project approval.

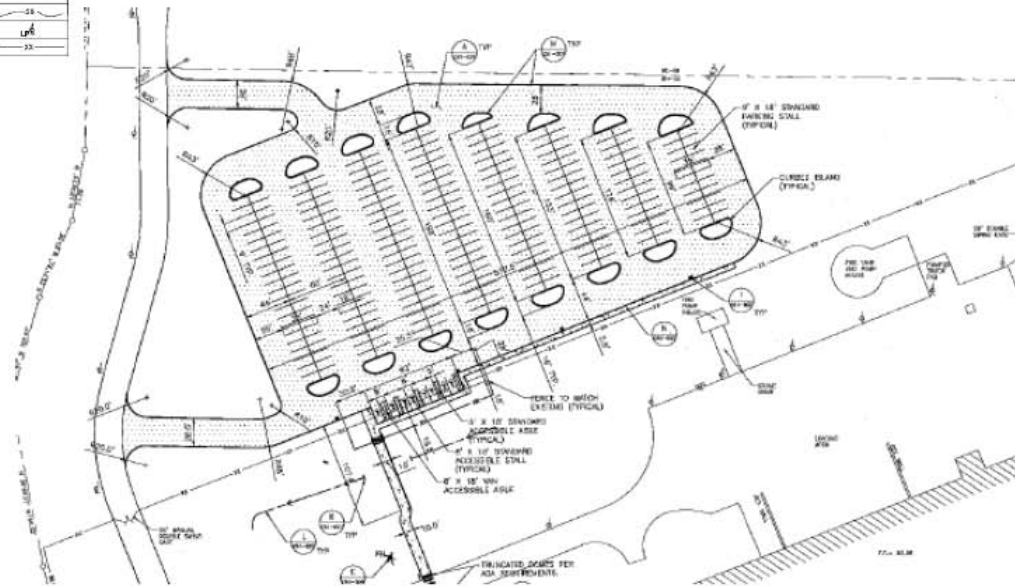
U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric
Validation Center at its White Marsh, Maryland Facility

Site Plans/Drawings

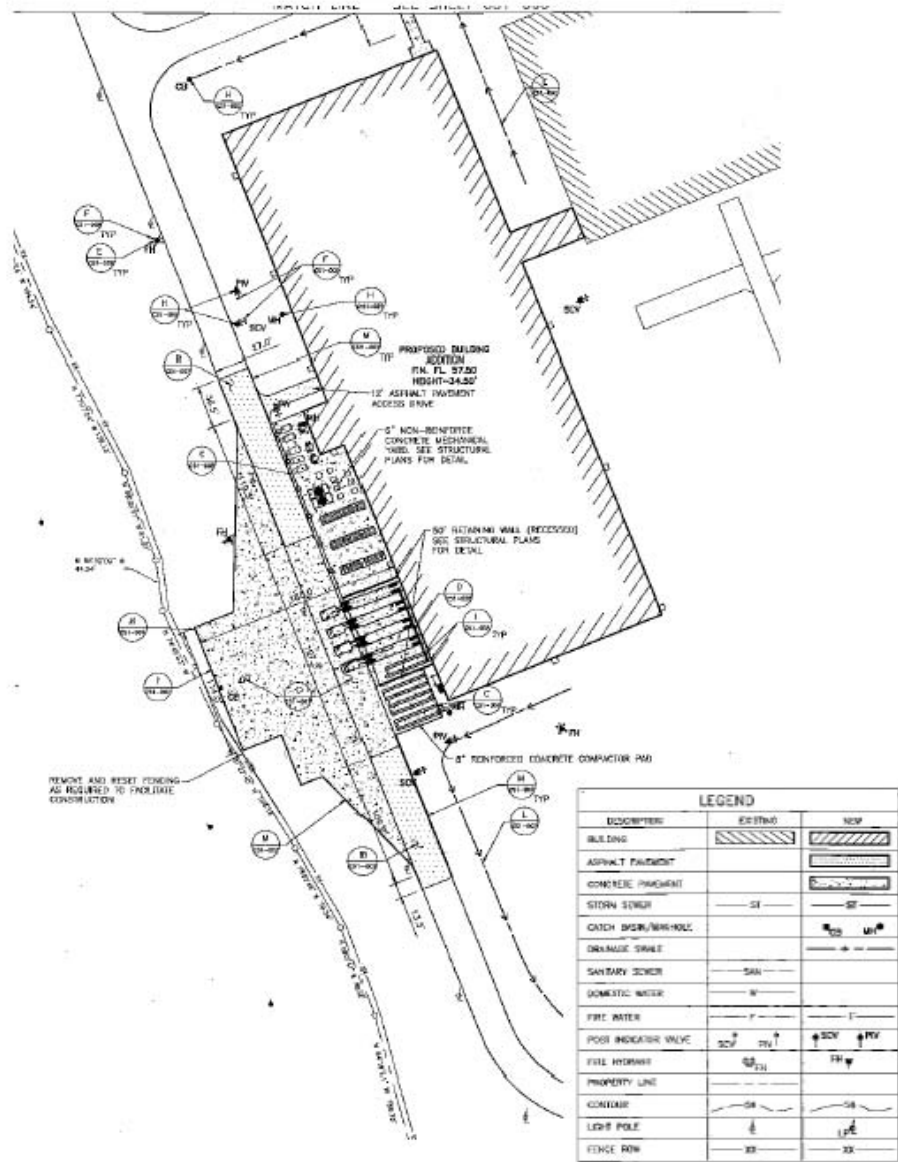


U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility

LEGEND		
DESCRIPTION	SYMBOL	NOV
BUILDING	[Hatched pattern]	[Hatched pattern]
ASPHALT PAVEMENT	[Hatched pattern]	[Hatched pattern]
CONCRETE PAVEMENT	[Hatched pattern]	[Hatched pattern]
SEWER STENCH	—S1	—S2
CATCH BASIN/MANHOLE		CS MH
DRAINAGE CHANNE		—D
SEWERY SERVICE	—SW	
DOMESTIC WATER	—W	
FIRE WATER	—FW	
PERE INDICATOR VALVE	SCV	PTV
FIRE HYDRANT	—FH	—FH
PROPERTY LINE	—PL	
CONTOUR	—58	—58
LIGHT POLE	—L	—LP
FENCE ROW	—FR	



U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility



U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility

Site Photo



SHPO Response

U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility



PROJECT REVIEW FORM

Request for Comments from the Maryland Historical Trust/
MDSHPO on State and Federal Undertakings

MHT USE ONLY
Date Received: 4/15/11
Log Number: 201101498
FES

Submit hard copy of form and all attachments to:

Beth Cole, MHT, 100 Community Place, Crownsville, MD 21032

Print Form

Section A: General Project Information
Project Name: U.S. Electric Drive Manufacturing Center -- Global Rear-Wheel Drive (RWD) Electric
County: Baltimore County
 This is a new submittal OR This is additional information related Project Log Number:

Section B: Primary Contact Information
Contact Name: Pierina Fayish
Company/Agency: U.S. Department of Energy
Mailing Address: Office: 922-M-218 Mail Stop: 922-M217 626 Cochrans Mill Road P.O. Box 10940
City: Pittsburgh State: Pennsylvania Zip: 15236
Email: Pierina.Fayish@NETL.DOE.GOV Phone Number: +1 (412) 386-5428 Ext.:

Section C: Description of Undertaking
Location - Attach a map, preferably a section of a USGS quad, showing the location and boundaries of the project
Address: 10301 Philadelphia Road City/Vicinity: White Marsh
List all federal and state agencies / programs (funding, permits, licenses) involved in this project (e.g. Bond Bill Loan of 2009, Chapter #: Transportation Enhancement Grant; HUD/CDBG; MDE/COE permit; etc.).

Agency Type	Agency/Program/Permit Name	Project/Permit/Tracking Number (if applicable)
Federal	Department of Energy, NETL	Transportation Electric Drive Vehicle Battery

Proposed Work - Attach project description, scope of work, site plans / drawings
This project includes (check all applicable): New Construction Demolition Remodeling/Rehabilitation
This project involves: State or Federal Rehabilitation Tax Credits
 Properties subject to an easement held by MHT, MET, or another entity

Section D: Identification of Historic Properties
This project involves: Properties designated as historic by a local government, listed in the National Register, or included in Maryland Inventory of Historic Properties
Property/District Name:
The subject property has has not been the subject of previous archeological, architectural, or historical investigations.
Please describe: prior review 200904598

Attachments Map Project Description/Scope of Work Site Plans/Drawings
 Photographs - Attach prints or digital photographs showing the project site including images of all buildings and structures, preferably keyed to a site plan
 Conditions - Attach a brief description of past and present conditions of the project area (wooded, mined, developed, agricultural uses, etc) including construction dates of buildings, if known.

MHT Determination - MHT Reviewer: Jonathan Lopez Date: 4/21/11
 There are **NO HISTORIC PROPERTIES** in the area of potential effect The project will have **NO ADVERSE EFFECT WITH CONDITIONS**
 The project will have **NO EFFECT** on historic properties **MHT REQUESTS ADDITIONAL INFORMATION**
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Appendix B Contact with the Bureau of Indian Affairs



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



April 12, 2011

Franklin Keel, Regional Director
Bureau of Indian Affairs, Eastern Regional Office
545 Marriott Drive, Suite 700
Nashville, TN 37214

Subject: U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD)
Electric Validation Center at its White Marsh, Maryland Facility

Dear Mr. Keel:

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Vehicle Technologies (VT) Program for the Office of Energy Efficiency and Renewable Energy. A key objective of the VT program is accelerating the development and production of electric drive vehicle systems in order to substantially reduce the United States' consumption of petroleum. Another of its 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 VT program in the American Recovery and Reinvestment Act of 2009, Public Law 111-5 (Recovery Act) in order to stimulate the economy and reduce unemployment in addition to furthering the existing objectives of the VT program. NETL is considering funding the proposed U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center as one of 30 DOE under the Recovery Act.

The objective of the proposed three-year project is to construct and validate a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components and assemble a second-generation global RWD electric drive unit, designated "GRE." The GRE motor design requires significant advances in manufacturing process technology because of the complexities of the motor components. Therefore, a supporting objective is to develop and validate novel motor manufacturing technology.

DOE previously prepared an environmental assessment (EA) for this project (DOE/EA-1723), which resulted in Finding of No Significant Impact (FONSI) in April 2010. GM intends to expand the size of its new manufacturing building in White Marsh, Maryland about three-fold from the original proposal (from approximately 37,000 square feet to 104,000 square feet). The expanded new building, and related improvements, will be situated within the existing property boundary. This building size increase is necessary to accommodate more manufacturing equipment and provide office space. The proposal includes 308 new parking spaces and widening of a truck dock area as shown in enclosed figure. GM will use the expanded area and a quarter of the existing facility to manufacture Global Rear Wheel Electric and other electric drive units for vehicles.

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

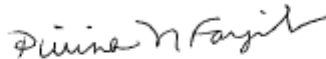
In light of the change to the construction plans, DOE is requesting information or concerns you may have on properties of traditional, religious, or cultural significance in the vicinity of the proposed GM project site. Any information you provide will assist the Department in the preparation of a supplemental environmental assessment (SEA) and fulfillment of its responsibilities under Section 106 of the National Historic Preservation Act.

As designed, the proposed project would avoid any disturbance to known cultural or archeological sites. If any cultural materials were to be discovered during the construction phase of the project, all work would cease until the Maryland Historical Trust is contacted and corrective measures implemented.

DOE will provide you a copy of the Draft SEA, once completed, where you may again respond to any specific concerns you may have. All correspondence(s) with your office will be included in an appendix to the SEA. At this time, DOE is anticipating a 15-day public comment period.

Because this is a Recovery Act project, we would appreciate a quick response to our request for consultation. Should you require additional information, please contact me by telephone at (412) 386-5428 or by email at pierina.fayish@netl.doe.gov.

Sincerely,



Pierina Fayish
NEPA Document Manager

Enclosure

Note: The enclosure was the site map (Figure 2.1.1).

Response



United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Eastern Regional Office
545 Marriott Drive, Suite 700
Nashville, TN 37214

MAY - 2 2011

IN REPLY REFER TO:
Trust Services
Environment, Safety, and Cultural Resources Division

Ms. Pierina Fayish
NEPA Document Manager
U.S. Department of Energy
National Energy Technology Laboratory
P.O. Box 10940
Pittsburgh, Pennsylvania 15236-0940

**RE: U.S. Electric Drive Manufacturing Center – Global Rear Wheel Drive Electric
Validation Center at its White Marsh, Maryland Facility**

Dear Ms. Fayish:

Thank you for contacting the Bureau of Indian Affairs (BIA), Eastern Regional Office, about the location of significant American Indian traditional, sacred, and religious properties in White Marsh, Baltimore County, Maryland. There are no federally recognized American Indian tribes or nations in Maryland, and the project cited above does not concern the BIA.

Tribal consultation information is available to you on the internet. An annually updated tribal leaders directory for federally recognized tribes and nations can be found on the internet at <http://www.bia.gov> - **Site Map - BIA – OIS – Division of Tribal Government Services - Tribal Directory**. A map titled *Indian Reservations in the Continental United States* is located at <http://www.nps.gov/history/nagpra/documents>, and a Native American Consultation Database is at <http://home.nps.gov/nacd>. Maps of each reservation are available at http://www.census.gov/geo/bas/bas10/aia/entlist_aia.html. For additional consultation, a current list of State Historic Preservation Officers is at <http://www.ncshpo.org>, and a current list of Tribal Historic Preservation Officers is at <http://www.nathpo.org>.

If you have questions, please contact David Saunders, Eastern Regional Archaeologist, at (615) 564-6840.

Sincerely,

A handwritten signature in cursive script that reads "Scott C. Menely".

Acting Director, Eastern Region

Appendix C Air Emission Calculations

Table C-1. Construction Equipment Use				
Equipment Type	Number of Units	Days on Site	Hours per Day	Operating Hours
Excavators Composite	2	115	4	920
Rollers Composite	2	173	8	2768
Rubber Tired Dozers Composite	2	115	8	1840
Plate Compactors Composite	4	115	4	1840
Trenchers Composite	4	58	8	1856
Air Compressors	4	115	4	1840
Cement and Mortar Mixers	4	115	6	2760
Cranes	2	115	7	1610
Generator Sets	3	115	4	1380
Tractors/Loaders/Backhoes	3	230	7	4830
Pavers Composite	2	58	8	928
Paving Equipment	3	58	8	1392

Note: Some inconsistencies due to rounding may occur.

Table C-2. Construction Equipment Emission Factors (pounds/hour)						
Equipment	CO	NO_x	VOC	SO_x	PM₁₀	PM_{2.5}
Excavators Composite	0.5828	1.3249	0.1695	0.0013	0.0727	0.0727
Rollers Composite	0.4341	0.8607	0.1328	0.0008	0.0601	0.0601
Rubber Tired Dozers Composite	1.5961	3.2672	0.3644	0.0025	0.1409	0.1409
Plate Compactors Composite	0.0263	0.0328	0.0052	0.0001	0.0021	0.0021
Trenchers Composite	0.5080	0.8237	0.1851	0.0007	0.0688	0.0688
Air Compressors	0.3782	0.7980	0.1232	0.0007	0.0563	0.0563
Cement and Mortar Mixers	0.0447	0.0658	0.0113	0.0001	0.0044	0.0044
Cranes	0.6011	1.6100	0.1778	0.0014	0.0715	0.0715
Generator Sets	0.3461	0.6980	0.1075	0.0007	0.0430	0.0430
Tractors/Loaders/Backhoes	0.4063	0.7746	0.1204	0.0008	0.0599	0.0599
Pavers Composite	0.5874	1.0796	0.1963	0.0009	0.0769	0.0769
Paving Equipment	0.0532	0.1061	0.0166	0.0002	0.0063	0.0063

Table C-3. Construction Equipment Emissions (tons per year)						
Equipment	CO	NO_x	VOC	SO_x	PM₁₀	PM_{2.5}
Excavators Composite	0.2681	0.6095	0.0780	0.0006	0.0335	0.0335
Rollers Composite	0.6008	1.1912	0.1838	0.0011	0.0832	0.0832
Rubber Tired Dozers Composite	1.4684	3.0058	0.3353	0.0023	0.1296	0.1296
Plate Compactors Composite	0.0242	0.0302	0.0047	0.0001	0.0019	0.0019
Trenchers Composite	0.4714	0.7644	0.1718	0.0006	0.0639	0.0639
Air Compressors	0.3479	0.7342	0.1134	0.0007	0.0518	0.0518
Cement and Mortar Mixers	0.0617	0.0907	0.0156	0.0001	0.0061	0.0061
Cranes	0.4839	1.2961	0.1432	0.0011	0.0576	0.0576
Generator Sets	0.2388	0.4816	0.0742	0.0005	0.0297	0.0297
Tractors/Loaders/Backhoes	0.9813	1.8706	0.2908	0.0019	0.1446	0.1446
Pavers Composite	0.2726	0.5009	0.0911	0.0004	0.0357	0.0357
Paving Equipment	0.0370	0.0738	0.0115	0.0001	0.0044	0.0044
Total	5.26	10.65	1.51	0.0094	0.64	0.64

Table C-4. Painting			
VOC Content	0.84	pounds (lbs)/gallon	
Coverage	400	ft ² /gallon	
Emission Factor	0.0021	lbs/ft ²	
Building/Facility	Wall Surface	VOC (lbs)	VOC (tpy)
All Buildings Combined	208,000	436.8	0.218
Total	208,000	436.80	0.22

Table C-5. Delivery of Equipment and Supplies						
Number of Deliveries	4					
Number of Trips	2					
Miles Per Trip	30					
Days of Construction	230					
Total Miles	55200					
Pollutant	CO	NO_x	VOC	SO_x	PM₁₀	PM_{2.5}
Emission Factor (lbs/mile)	0.0219	0.0237	0.0030	0.0000	0.0009	0.0007
Total Emissions (lbs)	1211.59	1308.93	165.20	1.42	47.26	40.81
Total Emissions (tpy)	0.61	0.65	0.08	0.0007	0.02	0.02
Source: (CARB, 2007)						

Table C-6. Surface Disturbance						
TSP Emissions	80	lbs/acre				
PM ₁₀ /TSP	0.45					
PM _{2.5} /PM ₁₀	0.15					
Period of Disturbance	30	days				
Capture Fraction	0.5					
Building/Facility	Area (acres)	TSP (lbs)	PM₁₀ (lbs)	PM₁₀ (tons)	PM_{2.5} (lbs)	PM_{2.5} (tons)
Demolition	2.4	5741	2583	1.29	194	0.10
Total	2.4	5741	2583	1.29	194	0.10

Sources: (USEPA, 1995; USEPA, 2005) Note: TSP is Total Suspended Particles.

Table C-7. Construction Worker Commutes						
Number of Workers	50					
Number of Trips	2					
Miles Per Trip	30					
Days of Construction	115					
Total Miles	345000					
Pollutant	CO	NO_x	VOC	SO_x	PM₁₀	PM_{2.5}
Emission Factor (lbs/mile)	0.0105	0.0011	0.0011	0.0000	0.0001	0.0001
Total Emissions (lbs)	3639.21	380.49	372.32	3.71	29.34	18.26
Total Emissions (tpy)	1.82	0.19	0.19	0.0019	0.01	0.01

Source: (CARB, 2007)

Table C-8. Total Construction Emissions (tons per year)						
Activity/Source	CO	NO_x	VOC	SO_x	PM₁₀	PM_{2.5}
Construction Equipment	5.26	10.65	1.51	0.0094	0.64	0.64
Painting	0.00	0.00	0.22	0.0000	0.00	0.00
Delivery of Equipment and Supplies	0.61	0.65	0.08	0.0007	0.02	0.02
Surface Disturbance	0.00	0.00	0.00	0.0000	1.29	0.10
Worker Commutes	3.64	0.38	0.37	0.0037	0.03	0.02
Total Construction Emissions	9.5	11.7	2.2	<0.1	2.0	0.8

Table C-9. Boiler Emissions								
Emission Factor (lbs/MMcf), From AP-42 Table 1.4-1 and 1.4-2								
NO _x	CO	Total PM	VOC	SO _x				
100	84	7.6	5.5	0.6				
Combined Max Heat Input Capacity (MMBTU/hr)	Max Hourly Natural Gas Usage (cf/hr)	Annual Operating Hours	Annual Natural Gas Usage (MMcf/yr)	Emissions (tons/yr)				
				NO _x	CO	PM	VOC	SO _x
8.62	8620	4440	38.3	1.91	1.61	0.15	0.11	0.011

Notes: MMBTU is Million British Thermal Units, MMcf is million cubic feet, hr is hour, yr is year, and cf is cubic feet. Source: (GM, 2011f).

Table C-10. Worker Commutes						
Number of Workers	209					
Number of Trips	2					
Miles Per Trip	30					
Days of Work	260					
Total Miles	3260400					
Pollutant	CO	NO _x	VOC	SO _x	PM ₁₀	PM _{2.5}
Emission Factor (lbs/mile)	0.0105	0.0011	0.0011	0.0000	0.0001	0.0001
Total Emissions (lbs)	34392.12	3595.84	3518.60	35.04	277.31	172.57
Total Emissions (tons)	17.20	1.80	1.76	0.02	0.14	0.09

Source: (CARB, 2007)

Table C-11. VOC Emissions from Electric Motor Manufacturing Process								
Material	Maximum Annual Usage [Gallons]	VOC [lbs/gal]	Total VOC [lbs]	Total VOC [tons]	VOC [lbs/hr]	VOC [lbs/day]	VOC [lbs/month]	Notes
Dupont Voltatex 4201	5000	0.58	2904.0	1.5	0.5	9.7	242.0	0.1123 lbs/gal VOC plus 5% by wt vinyl toluene
Dupont Voltatex 5050	30	8.00	241.0	0.1	0.0	0.8	20.1	Cleaning material, assumed all VOC
Three Bond 2273E	2000	0.03	58.0	0.0	0.0	0.2	4.8	Emission factor per material data sheet

Table C-11. VOC Emissions from Electric Motor Manufacturing Process

Material	Maximum Annual Usage [Gallons]	VOC [lbs/gal]	Total VOC [lbs]	Total VOC [tons]	VOC [lbs/hr]	VOC [lbs/day]	VOC [lbs/month]	Notes
Houghton Rust Veto 4222-S	1000	0.42	420.0	0.2	0.1	1.4	35.0	Per emission factor provided by the supplier of the material
Total			3623.0	1.8	0.6	12.1	302.0	

Source: (GM, 2011f).
Notes: 1 VOC lbs/hr numbers are based on 2 10-hr shifts per day (120 operating hours per week), 50 operating weeks per year and 6000 operating hours per year; however, the operation is designed for 24 hours per day and 7 days per week
2 VOC lbs/day numbers are based 300 operating days per year, however, the operation is designed for 365 days per year

Table C-12. Total Operational Emissions (tons)

Activity/Source	CO	NO_x	VOC	SO_x	PM₁₀	PM_{2.5}
Boiler Emissions	1.61	1.91	0.11	0.01	0.15	0.15
Worker Commutes	17.20	1.80	1.76	0.02	0.14	0.09
Varnish Application Process	0.00	0.00	1.80	0.00	0.00	0.00
Total Operational Emissions	18.8	3.7	3.7	0.03	0.3	0.2

Appendix D FEMA Consultation



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



April 27, 2011

Catharine McManus
FEMA, Region III
615 Chestnut Street
One Independence Mall, Sixth Floor
Philadelphia, PA 19106-4404

Subject: U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD)
Electric Validation Center at its White Marsh, Maryland Facility

Dear Ms. McManus:

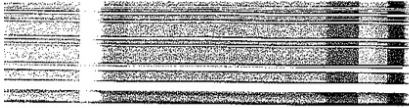
The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Vehicle Technologies (VT) Program for the Office of Energy Efficiency and Renewable Energy. A key objective of the VT program is accelerating the development and production of electric drive vehicle systems in order to substantially reduce the United States' consumption of petroleum. Another of its 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 VT program in the American Recovery and Reinvestment Act of 2009, Public Law 111-5 (Recovery Act) in order to stimulate the economy and reduce unemployment in addition to furthering the existing objectives of the VT program. DOE is considering funding the proposed U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center project. DOE determined that an environmental assessment (EA) is the appropriate level of NEPA review for this project. DOE previously prepared an EA for this project (DOE/EA-1723), which resulted in Finding of No Significant Impact (FONSI) in April 2010. GM has proposed project scope changes, which require a Supplemental EA.

The objective of the proposed three-year project is to construct and validate a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components and assemble a second-generation global RWD electric drive unit, designated "GRE." The GRE motor design requires significant advances in manufacturing process technology because of the complexities of the motor components. Therefore, a supporting objective is to develop and validate novel motor manufacturing technology.

GM intends to expand the size of its new manufacturing building in White Marsh, Maryland about three-fold from the original proposal (from approximately 37,000 square feet to 104,000 square feet). The expanded new building, and related improvements, will be situated within the existing property boundary. This building size increase is necessary to accommodate more manufacturing equipment and provide office space. The proposal includes 308 new parking

626 Cochran's Mill Road, P.O. Box T0940, Pittsburgh, PA 15236



spaces and widening of a truck dock area as shown in enclosed figure. GM will use the expanded area and a quarter of the existing facility to manufacture Global Rear Wheel Electric and other electric drive units for vehicles.

Our review of the FEMA floodplain data shows that the planned pedestrian sidewalk with no curb transverses the 500-year floodplain. Consequently, DOE is requesting information or concerns you may have on floodplains in the vicinity of the proposed GM project site. Any information you provide will assist the Department in the preparation of a supplemental environmental assessment (SEA).

DOE will provide you a copy of the Draft SEA, once completed, where you may again respond to any specific concerns you may have. All correspondence(s) with your office will be included in an appendix to the SEA. At this time, DOE is anticipating a 15-day public comment period.

Because this is a Recovery Act project, we would appreciate a quick response to our request for consultation. Should you require additional information, please contact me by telephone at (412) 386-5428 or by email at pierina.fayish@netl.doe.gov.

Sincerely,

Pierina Fayish
NEPA Document Manager

Enclosure

Note: The enclosure was Figure 4.4.1.

Appendix E USFWS Consultation



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



April 12, 2011

Devin Ray
U.S. Fish and Wildlife Service
177 Admiral Cochrane Drive
Annapolis, MD 21401

Subject: U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD)
Electric Validation Center at its White Marsh, Maryland Facility

Dear Mr. Ray:

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Vehicle Technologies (VT) Program for the Office of Energy Efficiency and Renewable Energy. A key objective of the VT program is accelerating the development and production of electric drive vehicle systems in order to substantially reduce the United States' consumption of petroleum. Another of its 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 VT program in the American Recovery and Reinvestment Act of 2009, Public Law 111-5 (Recovery Act) in order to stimulate the economy and reduce unemployment in addition to furthering the existing objectives of the VT program. NETL is considering funding the proposed U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center as one of 30 DOE selected for funding under the Recovery Act.

The objective of the proposed three-year project is to construct and validate a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components and assemble a second-generation global RWD electric drive unit, designated "GRE." The GRE motor design requires significant advances in manufacturing process technology because of the complexities of the motor components. Therefore, a supporting objective is to develop and validate novel motor manufacturing technology.

DOE previously prepared an environmental assessment (EA) for this project (DOE/EA-1723), which resulted in Finding of No Significant Impact (FONSI) in April 2010. GM intends to expand the size of its new manufacturing building in White Marsh, Maryland about three-fold from the original proposal (from approximately 37,000 square feet to 104,000 square feet). The expanded new building, and related improvements, will be situated within the existing property boundary. This building size increase is necessary to accommodate more manufacturing equipment and

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

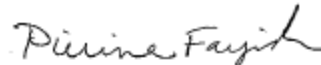
provide office space. The proposal includes 308 new parking spaces and widening of a truck dock area as shown in enclosed figure. GM will use the expanded area and a quarter of the existing facility to manufacture Global Rear Wheel Electric and other electric drive units for vehicles.

Your office determined on January 6, 2010 for the original proposal under the same project name that "no federally proposed or listed endangered or threatened species are known to exist within the project impact area," so no further consultation was required. In light of the proposed changes to the construction area, DOE is requesting information or concerns you may have on federally listed species in the vicinity of the proposed GM project site. Any information you provide will assist the Department in the preparation of a supplemental environmental assessment (SEA) and fulfillment of its responsibilities under the Endangered Species Act.

DOE will provide you a copy of the Draft SEA, once completed, where you may again respond to any specific concerns you may have. All correspondence(s) with your office will be included in an appendix to the SEA. At this time, DOE is anticipating a 15-day public comment period.

Because this is a Recovery Act project, we would appreciate a quick response to our request for consultation. Should you require additional information, please contact me by telephone at (412) 386-5428 or by email at pierina.fayish@netl.doe.gov.

Sincerely,



Pierina Fayish
NEPA Document Manager

Enclosure

Note: The enclosure was the site map (Figure 2.1.1).

Appendix F Dismissed Maryland Threatened and Endangered Species

Table F-1. Threatened or Endangered Species (State Status) of Baltimore County, Maryland That Were Dismissed from Further Consideration Due to Habitat Requirements or Whose Habitat Data Was Not Available			
Scientific Name	Common Name	State Status	Habitat*
<i>Alasmidonta undulata</i>	Triangle Floater	Endangered	Aquatic
<i>Alasmidonta varicosa</i>	Brook Floater	Endangered	Aquatic
<i>Bartramia longicauda</i>	Upland Sandpiper	Endangered	Marine
<i>Cicindela patruela</i>	Green-patterned Tiger Beetle	Endangered	Open ground and coarse gravel or eroding sandstone, woodlands , pine barrens
<i>Erynnis martialisjo</i>	Mottled Duskywing	Endangered	Hilly country, near woods or open brushy fields
<i>Graptemys geographica</i>	Northern Map Turtle	Endangered	Rivers and lakes
<i>Lanius ludovicianus</i>	Loggerhead Shrike	Endangered	Shrubs, small trees, open country with scattered trees and shrubs
<i>Laterallus jamaicensis</i>	Black Rail	Endangered	Marshes
<i>Ophiogomphus incurvatus incurvatus</i>	Appalachian Snaketail	Endangered	Clear streams
<i>Satyrium edwardsii</i>	Edwards' Hairstreak	Endangered	Scrub oak; rocky sparsely wooded ridges
<i>Satyrium favonius ontario</i>	Northern Oak hairstreak	Endangered	Open woodlands, oak groves, coastal barrens
<i>Sternula antillarum</i>	Least Tern	Threatened	Seacoasts, beaches, estuaries etc.
<i>Agalinis obtusifolia</i>	Blunt-leaved Gerardia	Endangered	Dry or seasonally dry habitats; clayey or sandy; shallow soil; limestone in pinelands
<i>Agastache scrophulariifolia</i>	Purple Giant Hyssop	Threatened	Forest
<i>Arabis missouriensis</i>	Missouri Rockcress	Endangered	Acid soils, rocky, wooded slopes, upland ridges, sand hills
<i>Arnica acaulis</i>	Leopard's-bane	Endangered	Savannahs, pine barrens, open woodlands
<i>Asplenium pinnatifidum</i>	Lobed Spleenwort	Endangered	Cliffs, ledges, boulders of sandstone
<i>Carex hystericina</i>	Porcupine Sedge	Endangered	Open swamps, sedge meadows, fen, stream, pond, etc.
<i>Carex meadii</i>	Mead's Sedge	Endangered	Prairies, fens, cedar glades, moist depressions
<i>Carex richardsonii</i>	Richardson's Sedge	Endangered	Vernally moist, open woodlands, floodplains edges
<i>Carex vestita</i>	Velvety Sedge	Threatened	Dry to moist, open, sandy or gravelly meadows
<i>Corallorhiza wisteriana</i>	Wister's Coralroot	Endangered	Deciduous and coniferous woods
<i>Desmodium strictum</i>	Stiff Tick-trefoil	Endangered	Sandy habitats, fire maintained forests and woodlands
<i>Diplazium pycnocarpon</i>	Glade Fern	Threatened	Moist woods and slopes in neutral soil
<i>Eleocharis intermedia</i>	Matted Spikerush	Endangered	Fresh wet, along streams lakeshores, etc.
<i>Equisetum sylvaticum</i>	Wood Horsetail	Endangered	Moist forests, greenland
<i>Eriocaulon parkeri</i>	Parker's Pipewort	Threatened	Muddy tidewater banks, marsh

Table F-1. Threatened or Endangered Species (State Status) of Baltimore County, Maryland That Were Dismissed from Further Consideration Due to Habitat Requirements or Whose Habitat Data Was Not Available			
Scientific Name	Common Name	State Status	Habitat*
<i>Eupatorium leucolepis</i>	White-bracted Boneset	Threatened	Bay
<i>Hydrastis canadensis</i>	Goldenseal	Threatened	Hardwood (2nd growth) forests
<i>Iris prismatica</i>	Slender Blue Flag	Endangered	Swampy, peaty soil
<i>Juncus torreyi</i>	Torrey's Rush	Endangered	Wet sandy shores, edges of sloughs, watercourses
<i>Limosella australis</i>	Mudwort	Endangered	Fresh water, intertidal
<i>Linum intercursum</i>	Sandplain Flax	Threatened	Open oak and pine and open places on coastal plain; sandy soil on coastal plain
<i>Melanthium latifolium</i>	Broad-leaved Bunchflower	Endangered	Dry, rocky, wooded slopes
<i>Monotropsis odorata</i>	Sweet Pinesap	Endangered	Mixed-deciduous or coniferous forests
<i>Panicum flexile</i>	Wiry Witch-grass	Endangered	Dry exposed limestone bluffs, seepage fens, damp sandy areas
<i>Platanthera blephariglottis</i>	White Fringed Orchid	Threatened	In full sun or semi shade in damp acidic situations
<i>Platanthera ciliaris</i>	Yellow Fringed Orchid	Threatened	Variety of habitats, wet, humus to dry rocky mountain slopes
<i>Platanthera grandiflora</i>	Large Purple Fringed Orchid	Threatened	Alluvial and swamp forests, stream banks
<i>Platanthera peramoenaa</i>	Purple Fringeless Orchid	Threatened	Alluvial forests, stream banks
<i>Polemonium vanbruntiae</i>	Jacob's-ladder	Threatened	Wetlands
<i>Polygala senega</i>	Seneca Snakeroot	Threatened	Woods, shores and prairies; rocks, gravels, thin soils; wet or boggy
<i>Rhynchospora cephalantha</i>	Capitate Beakrush	Endangered	Sandy silts, sands, peats, boggy streams
<i>Silene nivea</i>	Snowy Champion		Woods and alluvium, distributed floodplains and stream banks
<i>Spiranthes lucida</i>	Wide-leaved Ladys' Tresses	Endangered	Rocky and sandy riverbanks
<i>Symphyotrichum depauperatum</i>	Serpentine Aster	Endangered	Serpentine barrens, open areas
<i>Talinum teretifolium</i>	Fameflower	Threatened	Rock outcrops
<i>Limotettix minuendus</i>	Eastern Sedge Barrens Planthopper	Endangered	Habitat Data Not Available
<i>Adlumia fungosa</i>	Climbing Fumitory	Threatened	Habitat Data Not Available
<i>Agalinis setacea</i>	Thread-leaved Gerardia	Endangered	Habitat Data Not Available
<i>Asclepias rubra</i>	Red Milkweed	Endangered	Habitat Data Not Available
<i>Bromus latiglumis</i>	Broad-glumed Brome	Endangered	Habitat Data Not Available
<i>Deschampsia cespitosa</i>	Tufted Hairgrass	Endangered	Habitat Data Not Available
<i>Desmodium lineatum</i>	Linear-leaved Tick-trefoil	Endangered	Habitat Data Not Available
<i>Desmodium rigidum</i>	Rigid Tick-trefoil	Endangered	Habitat Data Not Available
<i>Epilobium ciliatum</i>	Northern Willowherb	Endangered	Habitat Data Not Available
<i>Filipendula rubra</i>	Queen-of-the-prairie	Endangered	Habitat Data Not Available
<i>Gentiana andrewsii</i>	Fringe-tip Closed Gentian	Threatened	Habitat Data Not Available
<i>Gentiana villosa</i>	Striped Gentian	Endangered	Habitat Data Not Available
<i>Gentianopsis crinita</i>	Fringed Gentian	Endangered	Habitat Data Not Available
<i>Helianthemum bicknellii</i>	Hoary Frostweed	Endangered	Habitat Data Not Available
<i>Hierochloe odorata</i>	Holy Grass	Endangered	Habitat Data Not Available
<i>Hypericum denticulatum</i>	Coppery St. John's-wort	Threatened	Habitat Data Not Available

Table F-1. Threatened or Endangered Species (State Status) of Baltimore County, Maryland That Were Dismissed from Further Consideration Due to Habitat Requirements or Whose Habitat Data Was Not Available			
Scientific Name	Common Name	State Status	Habitat*
<i>Linum sulcatum</i>	Grooved Flax	Endangered	Habitat Data Not Available
<i>Matelea obliqua</i>	Climbing Milkweed	Endangered	Habitat Data Not Available
<i>Pedicularis lanceolata</i>	Swamp Lousewort	Endangered	Habitat Data Not Available
<i>Phlox pilosa</i>	Downy Phlox	Endangered	Habitat Data Not Available
<i>Polanisia dodecandra</i>	Clammyweed	Endangered	Habitat Data Not Available
<i>Pycnanthemum verticillatum</i>	Whorled Mountain-mint	Endangered	Habitat Data Not Available
<i>Sanguisorba canadensis</i>	Canada Burnet	Threatened	Habitat Data Not Available
<i>Scutellaria leonardii</i>	Leonard's Skullcap	Threatened	Habitat Data Not Available
<i>Sphenopholis pensylvanica</i>	Swamp-oats	Threatened	Habitat Data Not Available
<i>Symphyotrichum concolor</i>	Silvery Aster	Endangered	Habitat Data Not Available
<i>Thaspium trifoliatum</i>	Purple Meadow-parsnip	Endangered	Habitat Data Not Available
<i>Triosteum angustifolium</i>	Narrow-leaved Horse-gentian	Endangered	Habitat Data Not Available

*Sources: (NRCS, 2011; Flora of North America, 1993+; NatureServe, 2009)

Appendix G Other Agencies



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



April 12, 2011

Lori Byrne
DNR Wildlife & Heritage Service
580 Taylor Ave.
Tawes Office Bldg E-1
Annapolis, MD 21401

Subject: U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD)
Electric Validation Center at its White Marsh, Maryland Facility

Dear Ms. Byrne:

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Vehicle Technologies (VT) Program for the Office of Energy Efficiency and Renewable Energy. A key objective of the VT program is accelerating the development and production of electric drive vehicle systems in order to substantially reduce the United States' consumption of petroleum. Another of its 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 VT program in the American Recovery and Reinvestment Act of 2009, Public Law 111-5 (Recovery Act) in order to stimulate the economy and reduce unemployment in addition to furthering the existing objectives of the VT program. NETL is considering funding the proposed U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center as one of 30 projects under the Recovery Act.

The objective of the proposed three-year project is to construct and validate a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components and assemble a second-generation global RWD electric drive unit, designated "GRE." The GRE motor design requires significant advances in manufacturing process technology because of the complexities of the motor components. Therefore, a supporting objective is to develop and validate novel motor manufacturing technology.

DOE previously prepared an environmental assessment (EA) for this project (DOE/EA-1723), which resulted in Finding of No Significant Impact (FONSI) in April 2010. GM intends to expand the size of its new manufacturing building in White Marsh, Maryland about three-fold from the original proposal (from approximately 37,000 square feet to 104,000 square feet). The expanded new building, and related improvements, will be situated within the existing property boundary.

This building size increase is necessary to accommodate more manufacturing equipment and provide office space. The proposal includes 308 new parking spaces and widening of a truck dock

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

area as shown in enclosed figure. GM will use the expanded area and a quarter of the existing facility to manufacture Global Rear Wheel Electric and other electric drive units for vehicles.

In light of the project changes, DOE is requesting information or concerns you may have on state listed species in the vicinity of the proposed GM project site. Any information you provide will assist the Department in the preparation of a supplemental environmental assessment (SEA).

DOE will provide you a copy of the Draft SEA, once completed, where you may again respond to any specific concerns you may have. All correspondence(s) with your office will be included in an appendix to the SEA. At this time, DOE is anticipating a 15-day public comment period.

Because this is a Recovery Act project, we would appreciate a quick response to our request for consultation. Should you require additional information, please contact me by telephone at (412) 386-5428 or by email at pierina.fayish@netl.doe.gov.

Sincerely,



Pierina Fayish
NEPA Document Manager

Enclosure

Note: The enclosure was the site map (Figure 2.1.1).



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



April 12, 2011

MDE Main Office
1800 Washington Blvd.
Baltimore, MD 21230

Subject: U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD)
Electric Validation Center at its White Marsh, Maryland Facility

Dear Sir or Madam:

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Vehicle Technologies (VT) Program for the Office of Energy Efficiency and Renewable Energy. A key objective of the VT program is accelerating the development and production of electric drive vehicle systems in order to substantially reduce the United States' consumption of petroleum. Another of its 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 VT program in the American Recovery and Reinvestment Act of 2009, Public Law 111-5 (Recovery Act) in order to stimulate the economy and reduce unemployment in addition to furthering the existing objectives of the VT program. NETL is considering funding the proposed U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center as one of 30 DOE selected for funding under the Recovery Act.

The objective of the proposed three-year project is to construct and validate a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components and assemble a second-generation global RWD electric drive unit, designated "GRE." The GRE motor design requires significant advances in manufacturing process technology because of the complexities of the motor components. Therefore, a supporting objective is to develop and validate novel motor manufacturing technology.

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

In light of the proposed change to the construction area, DOE is requesting information or concerns you may have on environmental issues in the vicinity of the proposed GM project site. Any information you provide will assist the Department in the preparation of a supplemental environmental assessment (SEA).

DOE will provide you a copy of the Draft SEA, once completed, where you may again respond to any specific concerns you may have. All correspondence(s) with your office will be included in an appendix to the SEA. At this time, DOE is anticipating a 15-day public comment period.

Because this is a Recovery Act project, we would appreciate a quick response to our request for consultation. Should you require additional information, please contact me by telephone at (412) 386-5428 or by email at pierina.fayish@netl.doe.gov.

Sincerely,



Pierina Fayish
NEPA Document Manager

Enclosure

Note: The enclosure was the site map (Figure 2.1.1).

Response



May 5, 2011

Pierina Fayish
National Energy Technology Laboratory
PO Box 10940
Pittsburgh, PA 15236

RE: Environmental Review for GM, LLC Powertrain facility, proposed expansion for US Electric Drive Manufacturing Center, Global Rear-Wheel Drive Electric Validation Center at White Marsh Facility, Baltimore County, MD.

Dear Ms. Fayish:

The Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2011.0519.ba