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DOE/EA 1628

**MITIGATION ACTION PLAN FOR THE FINAL ENVIRONMENTAL ASSESSMENT,  
NOTICE OF WETLAND INVOLVEMENT, AND FINDING OF NO SIGNIFICANT IMPACT  
FOR THE CONSTRUCTION AND OPERATION OF A LIGNOCELLULOSIC  
BIOREFINERY, POET PROJECT LIBERTY, LLC., EMMETSBURG, IOWA**

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**September 2008**

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## 1.0 Introduction

The United States Department of Energy (DOE) has issued a Final Environmental Assessment (EA) and Notice of Wetland Involvement (NOWI) and a Finding of No Significant Impact (FONSI) for the proposed construction and operation of a lignocellulosic ethanol biorefinery, POET Project LIBERTY, LLC (POET) near Emmetsburg, Iowa. The EA for this project was completed in compliance with the National Environmental Policy Act (NEPA) as required by 40 Code of Federal Regulations (CFR) 1508.18. The Final EA and NOWI and the FONSI are available at [http://www.eere.energy.gov/golden/reading\\_room.aspx](http://www.eere.energy.gov/golden/reading_room.aspx).

Through the environmental review process, the DOE determined that there would be potential environmental impacts from the proposed project that would require mitigation to assure that the impacts would not become significant. Therefore, the DOE prepared this Mitigation Action Plan (MAP) to establish conditions for issuing the FONSI as required by 10 Code of Federal Regulations (CFR) 1021.322, which stipulates that:

*(b) In addition to the requirements found at 40 CFR 1508.13, a DOE FONSI shall include the following:*

*(1) Any commitments to mitigations that are essential to render the impacts of the proposed action not significant, beyond those mitigations that are integral elements of the proposed action, and a reference to the Mitigation Action Plan prepared under 1021.331 of this part:*

The potential impacts requiring commitments and mitigation relate to the following:

1. Ambient air quality impacts from air pollutants emitted by POET;
2. Truck traffic on 470<sup>th</sup> Street;
3. Genetically modified yeast strains for fermentation;
4. Ground water use by local residents;
5. Storage and handling of hazardous materials;
6. Storm water impacts from construction and operation of Project LIBERTY; and
7. Wetland impacts from the proposed natural gas pipeline construction by Northern Natural Gas Company (NNG).

### 1.1 Purpose of the Mitigation Action Plan

The purpose of this MAP is to specify the methods for implementing mitigation measures that address the potential environmental impacts identified in the DOE EA and NOWI 1628. The development of these measures and an implementation plan, as a necessary condition for the FONSI, is described by 40 CFR 1021.331(b) "Mitigation action plans", as follows:

*(b) In certain circumstances, as specified in §1021.322(b)(2), DOE shall also prepare a Mitigation Action Plan for commitments to mitigations that are essential to render the impacts of the proposed action not significant. The Mitigation Action Plan shall address all commitments to such necessary mitigations and explain how mitigation will be planned and implemented. The Mitigation Action Plan shall be prepared before the FONSI is issued and shall be referenced therein.*

Mitigation measures identified herein shall be incorporated and enforceable through DOE's Technology Investment Agreement with POET Project LIBERTY, LLC. DOE will require POET to demonstrate successful

metrics for each criterion identified in this MAP. In the event that any of the metrics identified are not met successfully, DOE will require POET to propose and implement additional mitigation measures until success is demonstrated.

## **1.2 Structure of the Mitigation Action Plan**

This MAP is organized as follows:

- Section 1 presents the introduction, purpose and structure;
- Section 2 presents the potential impacts, mitigation measures, metrics for defining success or failure of the mitigation measures, and monitoring methods for the potential ambient air quality impacts;
- Section 3 presents the potential impacts, mitigation measures, metrics for defining success or failure of the mitigation measures, and monitoring methods for the potential truck traffic impacts on 470th street;
- Section 4 presents the potential impacts, mitigation measures, metrics for defining success or failure of the mitigation measures, and monitoring methods for the potential impacts associated with the use of genetically modified yeasts and enzymes;
- Section 5 presents the potential impacts, mitigation measures, metrics for defining success or failure of the mitigation measures, and monitoring methods for the potential impacts on ground water resources;
- Section 6 presents the potential impacts, mitigation measures, metrics for defining success or failure of the mitigation measures, and monitoring methods for the potential impacts due to storage and use of hazardous materials;
- Section 7 presents the potential impacts, mitigation measures, metrics for defining success or failure of the mitigation measures, and monitoring methods for the potential storm water impact due to construction and operation of the proposed facility; and
- Section 8 presents the potential impacts, mitigation measures, metrics for defining success or failure of the mitigation measures, and monitoring methods for the potential wetland impacts associated with the NNG natural gas pipeline project.

## 2.0 Ambient Air Quality

This section of the MAP presents the potential impacts, mitigation measures, metrics for defining success or failure of the mitigation measures, and monitoring methods for the potential ambient air quality impacts.

### 2.1 Potential Impacts

The existing conventional ethanol plant at Emmetsburg is a source of air pollutants including particulate matter (PM), particulate matter less than 10 micron (PM<sub>10</sub>), nitrogen oxides (NO<sub>x</sub>), sulfur oxides (SO<sub>x</sub>), carbon monoxide (CO), and volatile organic compounds (VOC). The operation of the planned conventional plant expansion as described in the EA/NOWI and Project LIBERTY would result in an increase in the emissions of these pollutants. The following table summarizes the potential to emit from the facility.

**Summary of Potential to Emit**

<b>Pollutant</b>	<b>Conventional Plant With Expansion</b>	<b>Project LIBERTY</b>	<b>Cumulative</b>
PM	133.7 tons/year	182.7 tons/year	316.4 tons/year
PM <sub>10</sub>	107 tons/year	181.6 tons/year	288.6 tons/year
NO <sub>x</sub>	164.7 tons/year	167 tons/year	331.7 tons/year
CO	149.4 tons/year	210 tons/year	359.4 tons/year
VOCs	179.7 tons/year	51.3 tons/year	231 tons/year
SO <sub>2</sub>	2.9 tons/year	107.5 tons/year	110.4 tons/year

The potential impact to air quality requiring mitigation is that the emissions from the combined biorefinery would cause or contribute to an exceedance of the National Ambient Air Quality Standards (NAAQS) specified in 40 CFR 50.

### 2.2 Mitigation Measures

In accordance with Iowa Administrative Code (IAC) 567 Chapter 22.1(1), an air permit would be required for Project LIBERTY from the Iowa Department of Natural Resources (IDNR) before construction of the proposed facility may be started. Prior to submitting the application for the air permit to the IDNR, POET would complete an ambient air quality modeling analysis of the air pollutant emissions from the combined biorefinery to demonstrate whether it would cause or contribute to a potential exceedance of the NAAQS. The modeling analysis would be completed in accordance with the most recent protocol published by the IDNR. In the event that the ambient air quality modeling analysis found that the combined biorefinery would cause or contribute to a potential exceedance of the NAAQS, POET would redesign the facility and/or its pollution control equipment to reduce the ambient air quality impacts until the potential modeled exceedance was no longer indicated.

The modeling analysis and air permit application would be submitted to the IDNR. The IDNR would review both the application and modeling analysis. If the IDNR determines that the modeling analysis and application meet all applicable requirements, the IDNR would issue an air permit for construction. In accordance with IAC 567 Chapter 22.1(2), construction of Project LIBERTY must not begin until the modeling analysis shows that the combined biorefinery would not cause or contribute to a potential exceedance of the NAAQS and the permit for construction has been issued.

### **2.3 Metrics for Determining Success or Failure of the Mitigation Measures**

The metric for determining success of the modeling analysis would be the IDNR confirmation that the ambient air quality analysis was completed correctly, that the combined biorefinery would not cause or contribute to a potential modeled exceedance of the NAAQS, and an air permit for construction of Project LIBERTY has been issued. A copy of the air permit issued by the IDNR would be submitted to the DOE.

The metric for failure would be a Notice of Deficiency from the IDNR regarding the modeling analysis or a denial of the permit by the IDNR because the project would cause or contribute to a potential modeled exceedance of the NAAQS. In accordance with IAC 567 22.3(4), POET would have the opportunity to revise the facility design, emission parameters or modeling analysis to address IDNR comments to achieve a successful mitigation.

### **2.4 Monitoring Techniques for Mitigation Measures**

The monitoring method for the mitigation would be construction and operation of the combined biorefinery in accordance with the Terms and Conditions of the air permit for construction issued by the IDNR.

## **3.0 Truck Traffic**

This section presents the potential impacts, mitigation measures, metrics for defining success or failure of the mitigation measures, and monitoring methods for the potential truck traffic impacts on 470th street.

### **3.1 Potential Impacts**

During construction of Project LIBERTY, the sub-contractor labor force would average around 200 employees, with a peak of nearly 325. Therefore, a maximum of approximately 150 cars per day and an average of 80 cars per day would be associated with construction staff. Truck traffic for construction is highly variable depending on the phase of construction. POET's experience with construction at Emmetsburg and other sites in Iowa indicates that peak truck traffic would occur during delivery of construction steel with up to 6 steel trucks a day for approximately one week, plus two small carrier deliveries (United Parcel Service style truck), four mid-size truck deliveries, and five semi-load deliveries for a maximum of approximately 17 trucks per day. The average number of trucks would be approximately 11 trucks per day. Construction would take approximately 12 to 14 months.

Construction traffic patterns for Project Liberty would have the majority of contractors and deliveries entering the site from 470<sup>th</sup> Street.

Project LIBERTY would require a maximum of 170 trucks per day to deliver cobs during operations. The maximum delivery periods are expected to be in the fall during harvest and during the spring, just prior to planting season. In addition, approximately 11 trucks per day would be used to bring fermentation enzymes and process chemicals to the facility. Shipment of biosolids from the anaerobic digester and boiler ash could reach a maximum of approximately 19 trucks per day. Therefore, the total maximum additional truck traffic from Project LIBERTY could reach 200 trucks per day.

### **3.2 Mitigation Measures**

POET plans to construct a new facility entrance for Project LIBERTY off of 470<sup>th</sup> Street on the west side of the site. POET has entered into an agreement to deed a 50 foot right of way to Palo Alto County along 470<sup>th</sup> Street for the construction of a turn lane into the facility. This turn lane would mitigate the potential for traffic delays on 470<sup>th</sup> Street due to truck traffic.

POET would collect traffic data and complete a traffic Level of Service (LOS) analysis on 380<sup>th</sup> Street at the Existing Plant entrance and 470<sup>th</sup> Street at the proposed Project LIBERTY entrance prior to initiating construction of Project LIBERTY. POET would also collect traffic data and complete a LOS analysis during construction and operation of Project LIBERTY.

LOS Threshold	Traffic Flow Conditions
A	Free flow operations. Vehicles are almost completely unimpeded in their ability to maneuver with the traffic stream. The general level of physical and psychological comfort provided to the driver is high.
B	Reasonable free flow operations. The ability to maneuver within the traffic stream is only slightly restricted and the general level of physical and psychological comfort provided to the driver is still high.
C	Flow with speeds at or near free flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted and lane changes require more vigilance on the part of the driver. The driver notices an increase in tension.
D	Speeds decline with increasing traffic. Freedom to maneuver within the traffic stream is more noticeably limited. The driver experiences reduced physical and psychological comfort levels.
E	At lower boundary, the facility is at capacity. Operations are volatile because there are virtually no gaps in the traffic stream. There is little room to maneuver. The driver experiences poor levels of physical and psychological comfort.
F	Breakdowns in traffic flow. The number of vehicles entering the highway section exceed the capacity or ability of the highway to accommodate that number of vehicles. There is little room to maneuver. The driver experiences poor levels of physical and psychological comfort.

### 3.3 Metrics for Determining Success or Failure of the Mitigation Measures

The metrics for determining success would be:

1. Completion of the land deed to Palo Alto County and documentation from the County of their contractual agreement with a construction firm to install the right turn lane.
2. Completion of the LOS analysis for existing conditions, construction conditions, and operational conditions. The LOS would not drop below a "C" Threshold under maximum traffic conditions. In the event that the LOS is degraded to a level below a "C" Threshold during construction and/or operation of Project LIBERTY, DOE will require POET to propose and implement additional mitigation measures sufficient to achieve a LOS "C".

The metrics for determining failure would be a LOS threshold of "D" or lower.

A copy of the deed and contract, as well as the LOS analyses would be submitted to the DOE upon completion.

### 3.4 Monitoring Techniques for Mitigation Measures

Monitoring of traffic levels in order to complete the LOS analysis prior to initiation of construction, during construction, and during operation would be required for this mitigation measure.



## 4.0 Genetically Modified Yeasts and Enzymes

This section presents the potential impacts, mitigation measures, metrics for defining success or failure of the mitigation measures, and monitoring methods for the potential impacts associated with the use of genetically modified yeasts and enzymes.

### 4.1 Potential Impacts

Project LIBERTY would use one or more yeast strains that are effective at fermenting sugars released from the pretreated cob and fiber. The yeasts would consume the available sugars and convert them into ethanol and carbon dioxide (CO<sub>2</sub>). Project LIBERTY would also use one or more enzymes to promote fermentation and improve efficiency of the fermentation process. Multiple yeast strains and enzymes may be required if multiple parallel fermentation systems are used.

The yeast would be a mix of common brewers yeast (*Saccharomyces cerevisiae*) and a genetically modified form (GMO) derived from a common commercial brewers yeast. The genetic modification would be necessary to enhance the ability of the yeast to preferentially metabolize sugars from the lignocellulose feedstock into ethanol before metabolizing sugars from a starch feedstock. Although the specific yeasts that would be used are still under development, potential impacts are expected to be similar to current commercially available genetically modified strains of brewers yeasts, which have been approved as food additives by the US Food and Drug Administration (FDA) and are classified as Substances Generally Recognized as Safe (GRAS) per 21 CFR 170.36 (for example, GRAS NOTICE No. GRN 000120).

### 4.2 Mitigation Measures

Project LIBERTY would only use enzymes and yeast strains for fermentation that have been approved for commercial sale. Once the specific genetically modified yeast strain has been identified, POET would incorporate facility design and operating practices to allow the purchase, transport, storage, and use of any genetically modified yeasts in accordance with applicable federal, state, or local regulations, as well as those specific requirements established by the manufacturer of the genetically modified yeast strains.

### 4.3 Metrics for Determining Success or Failure of the Mitigation Measures

The metric for success would be purchase of yeast strains approved for commercial sale and construction of the storage and handling system and procedures for the yeasts in accordance with the yeast manufacturers' recommendations.

### 4.4 Monitoring Techniques for Mitigation Measures

POET would maintain documentation of the yeast strains purchased along with verification documentation from the manufacturer of the GRAS identification, and/or the government issued approvals for commercial sale. POET would also maintain records of the yeast manufacturers' recommended storage and handling systems and procedures for each yeast strain. POET would self-assess the yeast storage and handling system design to ensure conformance to the manufacturers' recommendations prior to receipt of the yeast strains. POET would self-assess the use of procedures for handling the yeast strains following facility start-up.

POET would maintain documentation on the yeast strains purchased, the manufacturers' storage and handling system recommendations, and the self-assessments for the duration of the contract with the DOE.

Copies of the above documentation would be provided to the DOE.

## 5.0 Groundwater Resources

This section presents the potential impacts, mitigation measures, metrics for defining success or failure of the mitigation measures, and monitoring methods for the potential impacts on ground water resources.

## **5.1 Potential Impacts**

The Existing Plant plus the Starch Expansion would use a maximum of approximately 390 Million gallons per year (MMgal/year). Project LIBERTY would require a maximum of approximately 157 MMgal/yr for a total biorefinery complex requirement of 547 MMgal/year. The additional water would come from groundwater resources. The existing production wells have a demonstrated capacity of approximately 583 MMgal/year (1,110 gallons per minute). POET would install an additional production well to supply water to Project LIBERTY.

POET would be required to obtain a Water Use permit from the IDNR prior to beginning operation of Project LIBERTY. The Water Use permit would specify the amount of groundwater that could be used annually, as well as, the maximum amount of groundwater that could be used per minute.

As noted in the EA, regional groundwater levels appear to have been steadily increasing in the last three years. However, local decreases in water levels may occur as a result of Project LIBERTY. One private well located northeast of the POET site may be impacted if water levels decrease sufficiently; however, this is unlikely because that well is completed in a shallow water bearing zone that is not hydraulically connected to the Dakota Sandstone.

## **5.2 Mitigation Measures**

POET would monitor the groundwater elevations in their on-site monitoring wells as an indicator of potential interferences with nearby water wells. In the unlikely event that well interference is observed, POET would proactively participate in informal negotiations and/or settlement procedures as outlined by Iowa Administrative Code 567-54. Actions that may be taken include lowering the pump in the affected well, drilling a replacement well, or extending the water line from the Emmetsburg Municipal Utilities District (District) and connecting the affected party to the District system.

POET would comply with the terms and conditions of the Water Use permit, including maintaining records of the amount of water pumped per year and the water levels measured in the on-site monitoring wells.

## **5.3 Metrics for Determining Success or Failure of the Mitigation Measures**

The metrics for success would be one or more of the following:

1. Compliance with the Terms and Conditions of the Water Use Permit;
2. Groundwater elevation data collected from on-site monitoring wells does not indicate interference with the local residential wells;
3. Well interference is not observed by the IDNR, local residents, or the Municipal Utilities District of Emmetsburg; and
4. If interference is detected, implementation of the negotiated mitigation measure.

## **5.4 Monitoring Techniques for Mitigation Measures**

POET would maintain the documentation required by the Water Use permit, but at a minimum would maintain annual water level measurement data from the on-site monitoring wells for the duration of the contract with the DOE.

Copies of the above documentation would be provided to the DOE.

## 6.0 Hazardous Material Storage and Use

This section presents the potential impacts, mitigation measures, metrics for defining success or failure of the mitigation measures, and monitoring methods for the potential impacts due to storage and use of hazardous materials.

### 6.1 Potential Impacts

Project LIBERTY would store and use various hazardous materials. The following table summarizes the hazardous chemicals that would be present on-site in significant quantities.

**Summary of Hazardous Materials Storage Tanks for Project LIBERTY**

Contents	Location	Storage Capacity	Hazardous Characteristics	Spill Control Measure
Fermentation Enzyme	Inside	25,000 gallon aboveground storage tank (AST)	None	Inside a building, spill kit available, 24 hour manned facility
Pretreatment Chemicals <ul style="list-style-type: none"> <li>• Acid</li> <li>• Base</li> </ul>	Inside	30,000 gallon AST 30,000 gallon AST	Reactive, Acute and chronic health affect	Inside a building, spill kit available, 24 hour manned facility
Alkaline Cleaner	Inside	1,000 gallon AST	Reactive with strong acids, slight acute and chronic health hazard from chemical exposure	Inside a building, spill kit available, 24 hour manned facility
Acid Cleaner	Inside	1,000 gallon AST	Reactive with strong bases, slight acute and chronic health hazard from chemical exposure	Inside a building, spill kit available, 24 hour manned facility
Cooling Water Treatment	Inside	Four - 1,000 gallon ASTs	Reactive with strong oxidizing agents, slight acute and chronic health hazard from chemical exposure	Inside a building, spill kit available, 24 hour manned facility
Clean in Place (CIP) Makeup	Inside	25,000 gallon AST	Reactive with strong acids, slight acute and chronic health hazard from chemical exposure	Inside a building, spill kit available, 24 hour manned facility
Waste CIP	Inside	25,000 gallon AST	Reactive with strong acids, slight acute and chronic health hazard from chemical exposure	Inside a building, spill kit available, 24 hour manned facility

Contents	Location	Storage Capacity	Hazardous Characteristics	Spill Control Measure
50% Caustic	Inside	6,000 gallon AST	Reactive with strong acids, acute and chronic health hazard from chemical exposure	Inside a building, spill kit available, 24 hour manned facility

The potential impact to the environment would be a spill or release of one or more hazardous material to the environment.

## 6.2 Mitigation Measures

The storage tanks located outside would be designed and constructed with secondary containment structures sufficient to hold the contents of the largest tanks plus sufficient additional volume for rain or snow fall. Tanks located inside the buildings may also be located in secondary containment if determined to be necessary for employee safety or protection of the environment. Each storage tank would be constructed using materials compatible with the chemical being stored. The spill response plan would be updated to include the storage areas associated with Project LIBERTY. Additional spill kits would be acquired as needed. Spill response training would be provided to employees working with the hazardous materials stored and used on-site. These measures would prevent potential impacts from spills of hazardous materials.

POET would review and revise the existing Integrated Contingency Plan (ICP) and Emergency Response Plan (ERP) to address the medical and environmental hazards associated with Project LIBERTY. The revisions would be completed in accordance with federal and Iowa Occupational Health and Safety Administration (OSHA) and United States Environmental Protection Agency (USEPA) regulations and guidance. POET would also review and revise the Process Safety Management (PSM) program safety and emergency response procedures for construction activities, excavation and trenching, electrical, hazardous chemicals, hot work permits, fall prevention, proper equipment usage, confined space entry, fire protection and prevention, and hearing and respiratory protection for employees, contractors and visitors. These updates would be completed prior to bringing the hazardous materials on site.

## 6.3 Metrics for Determining Success or Failure of the Mitigation Measures

The metric for determining success would be the completion of revisions to the ICP, ERP and PSM programs.

Copies of the revised ICP, ERP and PSM programs would be provided to the DOE.

## 6.4 Monitoring Techniques for Mitigation Measures

No monitoring would be required for this mitigation measure.

## **7.0 Stormwater**

The section presents the potential impacts, mitigation measures, metrics for defining success or failure of the mitigation measures, and monitoring methods for the potential stormwater impact due to construction and operation of the proposed facility.

### **7.1 Potential Impacts**

Construction activities for Project LIBERTY would require permanent grading and excavation on approximately 55 acres of land currently used for row crop production. These construction activities would expose the soil to stormwater and have the potential to cause sedimentation in Dry Ditch, which runs across the southwestern most tip of the project site.

During operation, lignocellulose/cob storage, haul roads, and spent lignocellulose handling would be potential sources of contaminants to the surface and stormwater.

### **7.2 Mitigation Measures**

POET would prepare a Storm Water Pollution Prevention Plan (SWPPP) for Project LIBERTY construction activities. The construction SWPPP would contain Best Management Practices (BMPs) regarding erosion and sedimentation control and spill response and control measures necessary to prevent impacts to the environment. These BMPs may include:

- Installation of silt fencing;
- Installation of hay bales for sediment control;
- Construction of temporary stormwater retention ponds;
- Retention of vegetative cover where practical.

The POET PM would revise the existing SWPPP for operations of Project LIBERTY. The operation SWPPP would contain BMPs regarding storage and handling of materials and spill control measures.

### **7.3 Metrics for Determining Success or Failure of the Mitigation Measures**

The metrics for success would be:

1. Completion and implementation of the construction erosion control plan and SWPPP. Inspections to ensure the BMPs were implemented would be completed and documented routinely throughout the construction activities.
2. Completion and implementation of the SWPPP for facility operations. Inspections to ensure the BMPs were implemented would be completed and documented routinely during the operation of the facility.

### **7.4 Monitoring Techniques for Mitigation Measures**

POET would conduct routine site inspections throughout the construction activities and operation of the facility. The site inspections would be documented and records maintained on-site. POET would maintain the site inspection documentation for the BMPs specified in the construction and operation SWPPPs, for the duration of the contract with the DOE.

A copy of the construction SWPPP and the revised operation SWPPP would be provided to the DOE.

## 8.0 Natural Gas Pipeline

This section presents the potential impacts, mitigation measures, metrics for defining success or failure of the mitigation measures, and monitoring methods for the potential wetland impacts associated with the NNG natural gas pipeline project.

### 8.1 Potential Impacts

As a backup to the solid fuel boiler and the anaerobic digester system, Project LIBERTY would require a supplemental natural gas system. POET would contract with NNG to provide this backup natural gas supply. NNG is proposing to construct approximately 2 miles of 16 inch pipeline near Welcome, Minnesota and approximately 8.8 miles of 6 inch pipeline near Emmetsburg, Iowa to support Project LIBERTY. This pipeline would be in addition to the pipeline added for the Starch Expansion. The proposed pipelines would be constructed next to the existing NNG natural gas lines in their existing right of way. NNG does not anticipate requiring any new right of way or easements for these lines.

Based on the proposed pipeline route, the 16 inch pipeline would cross one stream, Center Creek (County Ditch No. 2), in Minnesota. The 6 inch pipeline would cross a total of five streams in Iowa. The streams are:

- Pickeral Run (or tributary)
- Tributary to Ditch No. 2
- Unnamed Tributary to the Des Moines River
- Unnamed Tributary to Ditch No. 132
- Unnamed Tributary to Ditch No. 132

NNG's general practice is to horizontally bore under streams to avoid disturbing the stream bed.

The National Wetland Inventory maps for the pipeline routes show that no wetlands are present on the 16 inch pipeline route in Minnesota. Four wetland areas are present on the 6 inch pipeline route. The total amount of wetland impacts that would occur during construction would be approximately 1,190 linear feet by 40 feet wide (1.1 acres). The wetlands are located as follows:

- Wetland 1 – 100 linear feet      Township 98 North, Range 34 West, Section 33
- Wetland 2 – 290 linear feet      Township 97 North, Range 34 West, Section 14
- Wetland 3 – 200 linear feet      Township 97 North, Range 33 West, Section 30
- Wetland 4 – 600 linear feet      Township 97 North, Range 33 West, Section 31

### 8.2 Mitigation Measures

As required by the Federal Energy Regulatory Commission (FERC), NNG would complete a Prior Notice regarding the construction of the gas pipeline project. As part of the Prior Notice, NNG would be required to complete thirteen (13) Resource Reports, one of which would specifically address wetlands, sensitive ecosystems, and threatened and endangered species.

For all wetlands that are under the jurisdiction of the United States Corps of Engineers (USACE), NNG would be required to prepare and submit a permit application under Section 404 of the Clean Water Act. The permit application must include a wetland mitigation plan. Mitigation for impacts to these wetlands would be completed in accordance with the USACE requirements, which typically involves replacing the impacted

wetlands with new wetlands. Normally, the new wetlands must be twice the area as the impacted wetlands or more.

POET would include language in their contract with NNG that would obligate NNG to provide a copy of the following documents to POET:

- The Prior Notice Resource Report for wetlands;
- The USACE 404 permit application and mitigation plan;
- The wetland permit issued by the USACE;
- The notification of completion of wetland mitigation completed and submitted by NNG to the USACE.

### **8.3 Metrics for Determining Success or Failure of the Mitigation Measures**

The metric for success would be receipt of the above documents from NNG. The above documents would be maintained by POET for the duration of the contract with the DOE. A copy of the documents would be provided to the DOE.

### **8.4 Monitoring Techniques for Mitigation Measures**

No monitoring would be required.