

Minnesota Energy Resources Corporation

Rochester Natural Gas Pipeline Project

Docket No. G-011/GP-15-858

November 3, 2015

Project Proposer



Application Developed By





Minnesota Energy Resources Corporation

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Eagan, MN 55122
www.minnesotaenergyresources.com

VIA ELECTRONIC FILING AND HAND DELIVERY

November 3, 2015

Mr. Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
Saint Paul, MN 55101-2147

Re: *Route Permit Application for the Rochester Natural Gas Pipeline Project*

Docket No. G-011/GP-15-858

Dear Mr. Wolf:

Enclosed please find Minnesota Energy Resources Corporation's (MERC) application for a Route Permit for the Rochester Natural Gas Pipeline Project (Project) which has been e-filed today through www.edockets.state.mn.us. This application is being made under the Pipeline Route Selection Procedures of Minn. Rules 7852.0800 to 7852.3100.

The Project will expand the capacity of MERC's natural gas distribution system in and around the city of Rochester and involves construction of a 13.1 mile high pressure distribution pipeline and associated facilities that tie together the northern and southern portions of MERC's existing distribution system.

MERC is requesting a route permit for a 500-foot-wide route. The proposed Project would require a 50-foot-wide permanent right-of-way and an additional 50-foot-wide temporary right-of-way. This wider route width will allow MERC to work with landowners to site the final alignment of the pipeline.

Copies of the application have also been provided to Mr. Larry Hartman of the Minnesota Department of Commerce and to the Minnesota Public Utilities Commission staff. An affidavit of service is attached. Questions and comments can be directed to the Routing Permit Lead, Darrin Johnson, at 715-345-7509. Thank you for your consideration of this application.

Sincerely,

A handwritten signature in black ink that reads "David Kult". The signature is written in a cursive, flowing style.

David Kult, General Manager – Operations and Engineering
Minnesota Energy Resources Corporation
651-322-8903
dgkult@minnesotaenergyresources.com

Cc: Allen Leverett, WEC Energy Group

Attachment: Affidavit of Service

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Appendix D	Phase Ia Literature Search
Appendix E	Draft Agricultural Mitigation Plan

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Acronyms and Abbreviations

AC	alternating current
API	American Petroleum Institute
Applicant	Minnesota Energy Resources Corporation
BMP	best management practice
BP	British Petroleum
City	City of Rochester, Minnesota
CFR	Code of Federal Regulations
CSAH	County State Aid Highway
Commission	Minnesota Public Utilities Commission (also MPUC)
DMC	Destination Medical Center
DNR	Minnesota Department of Natural Resources
DRS	District Regulation Station
EPA	United States Environmental Protection Agency
HDD	horizontal directional drilling
MBS	Minnesota Biological Survey
Mcfd	million cubic feet per day
Mcfh	million cubic feet per hour
MERC	Minnesota Energy Resources Corporation
MDA	Minnesota Department of Agriculture
MLCCS	Minnesota Land Cover Classification System
MnDOT	Minnesota Department of Transportation
MnOPS	Minnesota Office of Pipeline Safety
MPCA	Minnesota Pollution Control Agency
MPUC	Minnesota Public Utilities Commission
NAAQS	National Ambient Air Quality Standards
NACE	National Association of Corrosion Engineers
NNG	Northern Natural Gas
NPDES	National Pollutant Discharge Elimination System

NHIS	Natural Heritage Inventory System
OD	Outside Diameter
PI	Point of inflection
Project	Minnesota Energy Resources Corporation — Rochester Natural Gas Pipeline Project
Psig	pounds per square inch gauge
PWI	Public Waters Inventory
SHPO	State Historic Preservation Office
SDS	State Disposal System
SO ₂	sulfur dioxide
TBS	Town Border Station
US DOT	United States Department of Transportation
WT	Wall thickness

Section 1: Completeness Checklist

Minnesota Rules	Description of Requirement	Page
7852.2100. GENERAL INFORMATION.		
Subpart 1.	Cover letter: Each application must be accompanied by a cover letter signed by an authorized representative or agent of the applicant. The cover letter must specify the type, size, and general characteristics of the pipeline for which an application is submitted.	Cover Letter
Subpart 2.	Title page and table of contents: Each application must contain a title page and a complete table of contents.	Title page, i-v
Subpart 3.	Statement of ownership: Each application must include a statement of proposed ownership of the pipeline as of the day of filing and an affidavit authorizing the applicant to act on behalf of those planning to participate in the pipeline project.	8
Subpart 4.	Background information: Each application must contain the following information: A. The applicant's complete name, address, and telephone number B. The complete, name, title, address, and telephone number of the authorized representative or agent to be contacted concerning the applicant's filing C. The signatures and titles of persons authorized to sign the application, and the signature of the preparer of the application if prepared by an outside representative or agent D. A brief description of the proposed project which includes 1. General location 2. Planned use and purpose 3. Estimated cost 4. Planned in-service date 5. General design and operational specifications for the type of pipeline for which an application is submitted	8-9
7852.2200. PROPOSED PIPELINE AND ASSOCIATED FACILITIES DESCRIPTION.		
Subpart 1.	Pipeline design specifications: The specifications for pipeline design and construction are assumed to be in compliance with all applicable state and federal rules or regulations unless determined otherwise by the state or federal agency having jurisdiction over the enforcement of such rules or regulations. For public information purposes, the anticipated pipeline design specifications must include but are not limited to: A. Pipe size (outside diameter) in inches B. Pipe type C. Nominal wall thickness in inches D. Pipe design factor; E. longitudinal or seam joint factor; F. class location and requirements, where applicable G. Specified minimum yield strength in pounds per square inch H. Tensile strength in pounds per square inch	10

Minnesota Rules	Description of Requirement	Page
Subpart 2.	Operating pressure: Operating pressure must include: A. Operating pressure (pounds per square inch gauge [psig]) B. Maximum allowable operating pressure (psig)	11
Subpart 3.	Description of associated facilities: For public information purposes, the applicant shall provide a general description of all pertinent associated facilities on the right-of-way.	11-14
Subpart 4.	Product capacity information: The applicant shall provide information on planned minimum and maximum design capacity or throughput in the appropriate unit of measure for the types of product shipped as defined in part 7852.0110.	15
Subpart 5.	Product description: The applicant shall provide a complete listing of products the pipeline is intended to ship and a list of products the pipeline is designed to transport, if different from those intended for shipping.	15
Subpart 6.	Material safety data sheet: For each type of product that will be shipped through the pipeline, the applicant shall provide for public information purposes the material identification, ingredients, physical data, fire and explosive data, reactivity data, occupational exposure limits, health information, emergency and first aid procedures, transportation requirements, and other known regulatory controls.	15, App. C
7852.2300. LAND REQUIREMENTS.		
For the proposed pipeline, the applicant shall provide the following information: A. Permanent right-of-way length, average width, and estimated acreage B. Temporary right-of-way (workspace) length, estimated width, and estimated acreage C. Estimated range of minimum trench or ditch dimensions including bottom width, top width, depth, and cubic yards of dirt excavated D. Minimum depth of cover for state and federal requirements E. Right-of-way sharing or paralleling: type of facility in the right-of-way, and the estimated length, width, and acreage of the right-of-way		16-17
7852.2400. PROJECT EXPANSION.		
If the pipeline and associated facilities are designed for expansion in the future, the applicant shall provide a description of how the proposed pipeline and associated facilities may be expanded by looping, by additional compressor and pump stations, or by other available methods.		18
7852.2500. RIGHT-OF-WAY PREPARATION PROCEDURES AND CONSTRUCTION ACTIVITY SEQUENCE.		
Each applicant shall provide a description of the general right-of-way preparation procedures and construction activity sequence anticipated for the proposed pipeline and associated facilities.		51-54

7852.2600. PREFERRED ROUTE LOCATION; ENVIRONMENTAL DESCRIPTION.		
Subpart 1.	Preferred route location: The applicant must identify the Preferred Route for the proposed pipeline and associated facilities on any of the following documents, which must be submitted with the application: A. United States Geological Survey topographical maps to the scale of 24,000, if available B. Minnesota Department of Transportation county highway maps C. Aerial photos or other appropriate maps of equal or greater detail in items A and B. The maps or photos may be reduced for inclusion in the application. One full-sized set shall be provided to the Commission.	19
Subpart 2.	Other route locations: All other route alternatives considered by the applicant must be identified on a separate map or aerial photos or set of maps and photos or identified in correspondence or other documents evidencing consideration of the route by the applicant.	19-20
Subpart 3.	Description of environment: The applicant must provide a description of the existing environment along the Preferred Route.	20-35
7852.2700. ENVIRONMENTAL IMPACT OF PREFERRED ROUTE.		
The applicant must also submit to the Commission along with the application and analysis of the potential human and environmental impacts that may be expected from pipeline right-of-way preparation and construction practices and operation and maintenance procedures. These impacts include but are not limited to the impacts for which criteria are specified in part 7852.0700 or 7852.1900.		36-47
7852.2800. RIGHT-OF-WAY PROTECTION AND RESTORATION MEASURES.		
Subpart 1.	Protection: The applicant must describe what measures will be taken to protect the right-of-way or mitigate the adverse impacts of right-of-way preparation, pipeline construction, and operation and maintenance on the human and natural environment.	55-56
Subpart 2.	Restoration: The applicant must describe what measures will be taken to restore the right-of-way and other areas adversely affected by construction of the pipeline.	57
7852.2900. OPERATION AND MAINTENANCE.		
Pipeline operations and maintenance are assumed to be in compliance with all applicable state and federal rules or regulations, unless determined otherwise by the state or federal agency having jurisdiction over the enforcement of such rules or regulations. For public information purposes, the applicant must provide a general description of the anticipated operation and maintenance practices planned for the proposed pipeline.		58-60
7852.3000. LIST OF GOVERNMENT AGENCIES AND PERMITS.		
Each application must contain a list of all the known federal, state, and local agencies or authorities and titles of the permits they issue that are required for the proposed pipeline and associated facilities.		61
7852.3100. EVIDENCE OF CONSIDERATION OF ALTERNATIVE ROUTES.		
If the applicant is applying for a pipeline routing permit under parts 7852.0800 to 7852.1900, the applicant shall provide a summary discussion of the environmental impact of pipeline construction along the alternative routes consistent with the requirements of part 7852.2600 to 7852.2700 and the rationale for rejection of the routing alternatives.		48-50

Section 2: Introduction

General Background

MERC is the sole provider of natural gas services to the City of Rochester and surrounding local communities. This entire area has experienced continued population growth, including industrial and residential expansion, in large part due to the expanding health care facilities in and around the City. As a result of this growth, MERC has a limited ability to provide firm and reliable natural gas service to new commercial and industrial customers, as well as to existing customers as customer demand increases. For example, on January 6, 2014, MERC utilized nearly 100 percent of its contracted capacity of 551,690 therms¹, in addition to curtailing transport and interruptible customers at both Town Border Station (TBS) 1B and 1D, which included St. Mary's Hospital, Franklin Heating Station, and Rochester Public Utilities.²

In January 2013, the Mayo Clinic announced its \$6 billion plan to become a Destination Medical Center (DMC) for the country and the world. The plan includes construction of new hospital space and the expectation that current staffing will substantially increase over the next twenty years. Projections of the number of new jobs associated with Mayo's DMC plan range from 35,000 to 45,000 over twenty years.³ The Minnesota legislature subsequently adopted legislation creating the Destination Medical Center Corporation (DMCC) to develop its own Destination Medical Center Plan (DMC Plan) for the development and construction of public and private facilities and infrastructure in the City of Rochester that support the Mayo Clinic's DMC goal. The legislation earmarks approximately \$585 million in state and local funds to help pay for the facilities and infrastructure identified in the DMC Plan adopted by the DMCC.⁴

The combined efforts of the Mayo Clinic, City of Rochester, and the Legislature underscore the importance of MERC having adequate utility infrastructure in place to support the anticipated increase in the demand for energy from Rochester area residents and businesses. MERC estimates that its customer count will grow from its current level of 44,062 in 2015 to 53,469 in 2025. This is a total increase of 9,407 customers, which is more than 20 percent of our current customer base, and reflects an annual growth rate of 2.0 percent per year for the ten year period. Customer demand is projected to increase during this same time period from approximately 103.6 million therms in 2015 to 123.7 million therms in 2025, an approximately 20 percent increase in demand that translates to an average annual growth rate just under 2 percent per year.

The main barrier to MERC providing firm and reliable natural gas service is the minimal pipeline capacity reserve that currently exists in the Rochester area. MERC's facilities in the Rochester area are served by Northern Natural Gas (NNG), and NNG is fully subscribed on its pipeline transmission system serving the area with no additional existing capacity available for purchase. The shortages in firm upstream

¹ Therms are units of energy; 1 therm is equal to 100,000 British thermal units (BTU).

² Interruptible customers in nearby communities were also curtailed.

³ See "The \$6.5 billion, 20-Year Plan to Transform an American City" at: <http://www.fastcompany.com/3041355/innovation-agents/the-65-billion-20-year-plan-to-transform-an-american-city>.

⁴ See Minn. Stat. §§ 469.40-469.47.

interstate pipeline capacity results in MERC being unable to accommodate the growth of demand in the area, as well as in curtailments of interruptible customers on MERC's Rochester distribution system during periods of high demand, such as during very cold weather.

To provide firm and reliable natural gas service at increased levels in the Rochester area over the coming years, MERC and NNG are negotiating a 30-year pipeline capacity contract under which NNG will increase the capacity of its existing interstate pipeline transmission infrastructure to provide natural gas at volumes sufficient to meet the projected growth in MERC's customer demand over the contract's term.

To accommodate the increased natural gas supply from NNG, MERC proposes constructing its Rochester Natural Gas Pipeline Project (Rochester Project or Project), which will add a new 13.1-mile long main high pressure distribution pipeline to MERC's distribution system in Rochester. The Project will connect MERC's Town Border Station 1D (TBS 1D) in northwest Rochester to a proposed new town border station (Proposed TBS) located in west Rochester. The pipeline will also connect Proposed TBS to a proposed new District Regulator Station (Proposed DRS), which will be located in the vicinity of MERC's existing TBS 1B in southeast Rochester. Typically, a TBS serves as the custody transfer point for natural gas transmitted via transmission pipeline (usually from a transmission operator to a distribution operator), neither of which is the ultimate consumer of the gas. The TBS is the point where the high pressure transmission pipeline gas (900-1000 pounds per square inch (psig)) is regulated down to the level of high pressure distribution gas (400-500 psig). After the addition of Proposed TBS, MERC will have three TBSs serving its distribution system. Proposed DRS will also be able to take the high pressure distribution gas (400-500 psig), and will regulate the pressure down to standard distribution pressure (60-100 psig) for delivery to MERC's low pressure distribution system that directly serves its customers.

The combination of NNG's increased transmission capacity and MERC's upgraded TBS system gives MERC the ability to shift the supply of gas where it is needed on its high pressure distribution system within the Rochester service area.

In addition to this Route Permit application for the Project, MERC has submitted a petition to the Minnesota Public Utilities Commission (Commission) under the Natural Gas Extension Project (NGEP) Statute, Minn. Stat. § 216B.1638 (Docket No. G-011/M-15-895). The NGEP Statute broadly authorizes out-of-rate-case recovery of a portion of the costs a gas utility incurs for construction of new or upgraded gas infrastructure in unserved or inadequately served areas. Under the statute, the Commission may approve a rider that allows a utility to recover up to 33 percent of the costs of a natural gas extension project.⁵

Project Components

Figure 1 provides an overview of the project area, proposed route, and location of associated facilities. MERC proposes to install a high pressure (constructed to 500 psig) distribution pipeline (5.1 miles of 16-inch and 8.0 miles of 12-inch) that will link TBS 1D to Proposed DRS to be located just southwest of

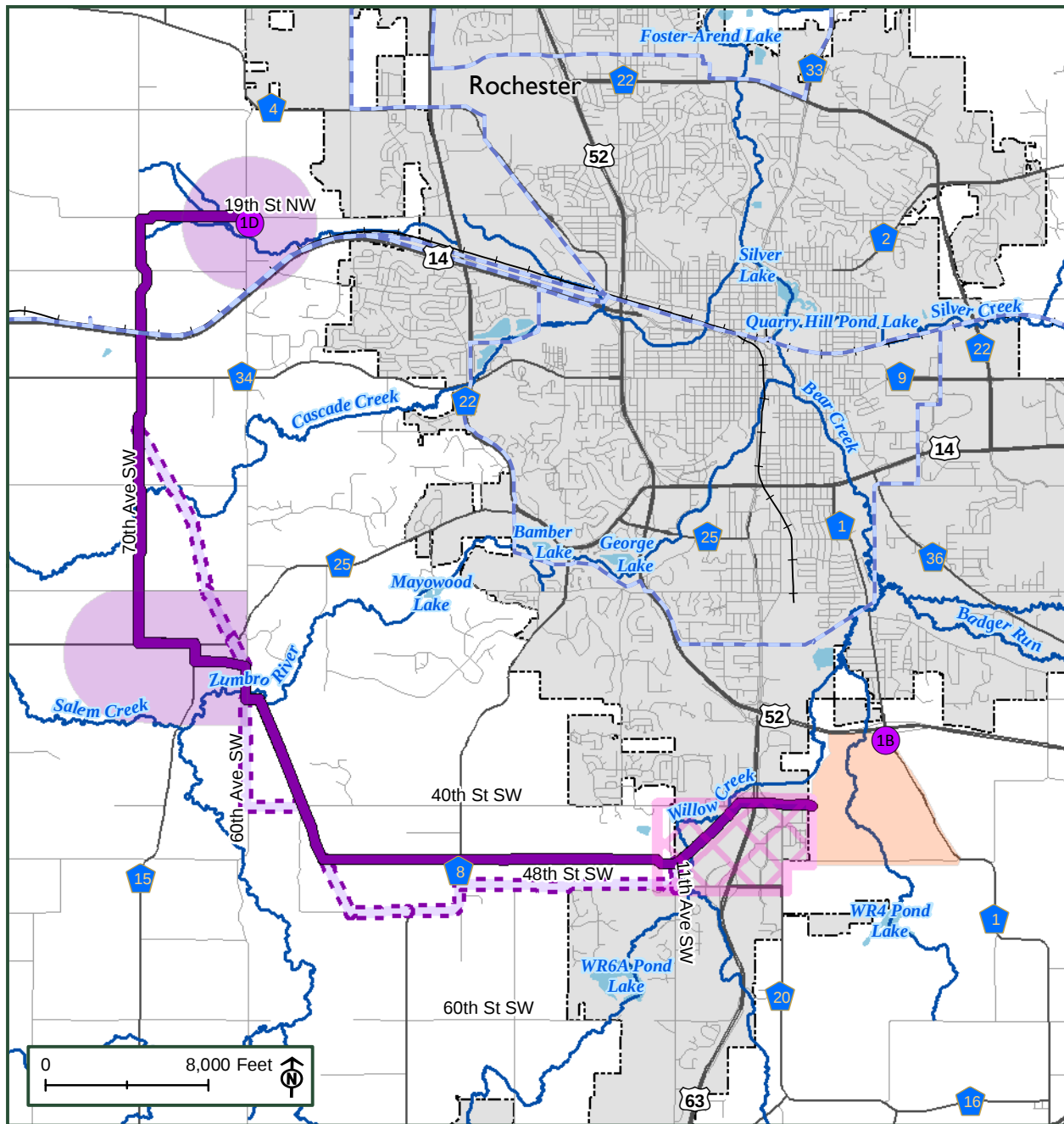
⁵ MERC does not need to obtain a certificate of need for the Project. A certificate of need is required from the Commission for a "large energy facility" (Minn. Stat. § 216B.243, subd. 2), which includes a natural gas pipeline that operates at a pressure in excess of 200 psi, with more than 50 miles of its length located in Minnesota (Minn. Stat. § 216B.2421, subd. 2(5)). While MERC's proposed Project involves the siting and construction of a new pipeline that operates at 400 psi, the line is 13.1 miles long and therefore no certificate of need is required.

TBS 1B. TBS 1D is the Project's northern end-point, and Proposed DRS is the Project's southern end-point. Proposed TBS will be built at or around the mid-point between TBS 1D and Proposed DRS.

A breakdown of the annual construction activities and associated costs for the pipeline is provided in Table 1 below.

Table 1: Rochester Gas Extension Project Construction Activities and Costs

Year	Cost	Activities
2014	\$ 127,000	Initial Environmental Review and Consultant Contract
2015	\$ 237,000	Regulatory Review (Rider Petition and Route Permit)
2016	\$ 636,000	Engineering & design for TBS 1D and 5.1 miles of pipe to Proposed TBS, route surveys
2017	\$ 6,019,400	Surveys, easement acquisition, construction of TBS 1D, engineering & design
2018	\$11,252,500	Survey, engineering & design, construction of first 5 miles of pipe from TBS 1D to Proposed TBS
2019	\$ 5,475,500	Survey, engineering & design, construction of Proposed TBS
2020	\$ 6,950,400	Survey, engineering & design, construction of first segment of pipe from Proposed TBS to Proposed DRS in the area of TBS 1B
2021	\$ 6,423,600	Survey, engineering & design, construction of second segment of pipe from Proposed TBS to Proposed DRS
2022	\$ 6,833,600	Survey, engineering & design, construction of last segment of pipe from Proposed TBS to Proposed DRS
2023	\$ 51,600	Project close-out
Total	\$44,006,600	



Legend

- | | | | |
|--|--|--|-----------------------------|
| | Preferred Route | | PWI Stream |
| | Alternate Route | | Waterbody/NWI Wetland |
| | Town Border Station (TBS) | | City / Township Boundary |
| | Route Alternative Buffer | | Railroad |
| | Proposed Town Border Station & Route Buffer | | 161kV AC Transmission Line |
| | Proposed District Regulator Station & Route Buffer | | Road |
| | | | US / State / County Highway |

*Buffer distance is 1.25 miles

Section 3: General Information (Minn. R.7852.2100)

Subpart 1. Cover Letter

The cover letter is included at the beginning of the Route Permit Application.

Subpart 2. Title Page and Table of Contents

The title page and table of contents are both included at the beginning of the Route Permit Application.

Subpart 3. Statement of Ownership

MERC, an operating subsidiary of WEC Energy Group, will own, construct and operate the proposed natural gas pipeline. MERC is an investor-owned utility headquartered in Eagan, Minnesota. MERC provides retail natural gas service to approximately 230,000 customers in 184 communities across Minnesota.

Subpart 4. Background Information

A. Applicant's complete name, address, and telephone number:

Minnesota Energy Resources Corporation
1995 Rahncliff Ct., Suite 200
Eagan, MN 55122-3401
651-322-8965

B. Complete, name, title, address, and telephone number of the authorized representative or agent to be contacted concerning the applicant's filing:

Darrin Johnson
Environmental Consultant- Environmental Services
Minnesota Energy Resources Corporation
2001 Plover Road
Plover, WI 54467
dmjohnson@integrysgroup.com
715-345-7509

Amber Lee
Regulatory and Legislative Affairs Manager
Minnesota Energy Resources Corporation
1995 Rahncliff Court, Suite 200
Eagan, MN 55122
aslee@minnesotaenergyresources.com
651-322-8965

C. Signatures and titles of persons authorized to sign the application, and the signature of the preparer of the application if prepared by an outside representative or agent:



David Kult, General Manager Operations & Engineering
Minnesota Energy Resources Corporation

D. Brief description of the proposed project, which includes:

- 1. General Location:** The Preferred Route originates at interconnection TBS 1D in Section 30, Township 107N, Range 14W in Cascade Township, Olmsted County. The route generally follows 19th St NW to the west and 70th Ave NW to the south to County State Aid Highway (CSAH) 25. The route heads east along CSAH 25 and then proceeds southeast to 60th Ave SW. The route continues south along 60th Ave SW and then east to the existing British Petroleum (BP) refined oil products pipeline. The route follows the existing BP pipeline southeast to about 0.5 mile past 40th St SW. Proposed TBS would be constructed along the alignment, near 40th St SW. The route then heads east along the half section to 11th Ave SW. The route continues to the northeast to 40th St SW. The route crosses US Highway 63 in the 40th St SW interchange before terminating at Proposed DRS on existing agricultural land in Section 24 or 25, Township 106N, Range 14W. See Figure 1 for the general project location and Figure 2 for detailed topographic maps.
- 2. Planned use and purpose:** The Project will expand the capacity of MERC's distribution system in and around the City of Rochester, which currently is at capacity. The Project will enable MERC to meet the projected increase in demand from its existing Rochester area customers, as well as from new customers who will be added to MERC's system as the result of the efforts to develop the Mayo Clinic as a Destination Medical Center. The Project consists of a high pressure (500 psig) distribution line linking TBS 1D, Proposed TBS, and Proposed DRS. See Figure 3 for location of the proposed phases.
- 3. Estimated cost:** Approximately \$44,000,000 (see Table 1 for cost break down)
- 4. Planned in-service date:** The rebuild of TBS 1D is expected to be completed by the end of 2017, and the 16-inch diameter pipeline from TBS 1D to Proposed TBS is expected to be completed by the end of 2019. The 12-inch pipeline from Proposed TBS to Proposed DRS is expected to be completed by the end of 2022.
- 5. General design and operational specifications for the type of pipeline for which an application is submitted:** The Project will include installation of approximately 26,900 feet (5.1 miles) of 16-inch-wide main (0.375 inch wall thickness (wt), X-60⁶) and approximately 42,250 feet (8.0 miles) of 12-inch-wide steel distribution pipe (0.375 inch wt, X-52) for a total of approximately 13.1 miles of pipeline.

⁶ "X-60" refers to the grade of the pipe having a specified minimum yield strength of 60,000 psi.

Section 4: Proposed Pipeline and Associated Facilities Description (Minn. R.7852.2200)

Subpart 1. Pipeline Design Specifications

The United States Department of Transportation (US DOT), Title 49 Code of Federal Regulations (CFR), Part 192, defines minimum federal safety standards for construction, operation and maintenance of natural gas pipelines. MERC will comply with these standards while constructing, operating and maintaining the proposed pipeline. Enforcement of pipeline safety regulations is under the jurisdiction of the Minnesota Office of Pipeline Safety (MnOPS). Anticipated design specifications are provided in Table 2.

Table 2: Pipeline Design Specifications for Two Segments of High Pressure Line

Specification	TBS 1D to Proposed TBS Segment	Proposed TBS to Proposed DRS Segment
Pipe Size (outside diameter)	16 inches	12.75 inches
Pipe Type	Steel pipe manufactured to American Petroleum Institute (API) 6L6 Pipeline System Limited (PSL) 2 - Specifications for Line Pipe	
Nominal Wall Thickness	0.375 inch, X-60	0.375 inch, X-52
Length	26,900 feet (5.1 miles)	42,250 feet (8.0 miles)
Pipe Design Factor	Meet or exceed 0.5 is the design factor included in 49 Code of Federal Regulations (CFR) 192.111	
Longitudinal or Seam Joint Factor	1.0, pipe will be seamless or electrical resistance welded	
Class Location and Requirements ⁷	Pursuant to 49 CFR 192.5, the pipeline will be designed to a minimum of a Class 3 location. The pipeline at roads and facilities will be designed to a minimum of a Class 3 location.	
Specified Minimum Yield Strength	52,000 pounds per square inch gauge (psig) based on current pipeline design	
Tensile Strength	Minimum 75,000 pounds per square inch (psi) for X-60 pipe	Minimum 75,000 pounds per square inch (psi) for X-52 pipe

⁷ Class locations are designated by the number of buildings intended for human occupancy within 660 feet of either side of the pipeline centerline. The following criteria apply to classifications under 49 CFR 192.5:

- 1) Class 1: 0-10 buildings
- 2) Class 2: 10-45 buildings
- 3) Class 3: 46 or more buildings or an area where the pipeline lies within 100 yards (300 feet) of either a building or a small, well-defined outside area (such as a playground, recreation area, outdoor theater, or other place of public assembly) that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period.
- 4) Class 4: Any class location unit where buildings with four or more stories above ground are prevalent.

Subpart 2. Operating Pressure

A. Operating Pressure (psig)

Planned operating pressure will be 400 to 475 psig for the 16-inch pipe and 250 to 275 psig for the 12-inch pipe.

B. Maximum Allowable Operating Pressure (psig)

Maximum allowable operating pressure will be 500 psig for both pipes.

Subpart 3. Description of Associated Facilities

MERC will install associated facilities as part of the proposed Project (e.g., rebuilt TBS 1D), Proposed TBS, Proposed DRS, valves and flanges, cathodic protection, alternating current (AC) mitigation. Meters are owned by NNG upstream of TBS. No meters will be installed by MERC at the TBS or DRS. Pipeline markers will be installed at various locations (e.g., road crossings) in accordance with applicable federal and state regulations. The following briefly describes each associated facility.

A. Town Border Stations

MERC will expand TBS 1D at its current site or rebuild TBS 1D near the current site, depending on the space available at the existing site. MERC proposes to install the Proposed TBS near 70th Avenue SW and Salem Road SW. The TBSs will contain all required valving, odorization, and necessary equipment required for custody transfer of gas. See below for Typical Schematic of a Town Border Station. The actual configuration of the TBSs will depend on the geography of the stations' sites, the design of the stations' equipment and supporting facilities, and the location of the points at which the new pipeline will enter and exit the stations. Each facility will be approximately 200 feet long by 200 feet wide. (See Figure 2)

B. District Regulator Station

Proposed DRS will be constructed at the Project's southern end-point, and will include an above grade structure with pressure regulating, pressure monitoring, line heating and filtering equipment, as well as all required valving to maintain the structure. See below for Typical Schematic of a District Regulator Station. The actual configuration of Proposed DRS will depend on the geography of its site, the design of its equipment and supporting facilities, and the location of the points at which the new pipeline will enter the station. The area around the Proposed DRS will have controlled access such as fencing, and will be approximately 200 feet long by 200 feet wide. (See Figure 2)

C. Valves and Flanges

Ball and or plug valves (American National Standards Institute 600) and flanges will be installed at the metering facilities of TBS 1D, Proposed TBS, and Proposed DRS. The design, construction, testing, and marking of the valves will comply with the requirements of 49 CFR Part 192.145 and Part 192.147.

D. Cathodic Protection

A cathodic protection (CP) system will be installed to prevent corrosion of the pipeline. CP is a technique used to control the corrosion of a metal surface by making it the cathode of an electrochemical cell. This method of protection connects the metal to be protected to a more easily corroded "sacrificial metal" which acts as the anode. The sacrificial metal then corrodes instead of the protected metal. The cathodic protection system will consist of a distributed sacrificial anode

system or an impressed current system. The exact location of above-ground facilities, if required, will be determined at the time of final design by a cathodic protection specialist. The cathodic protection system will be designed in accordance with 49 CFR Part 192, Subpart I.

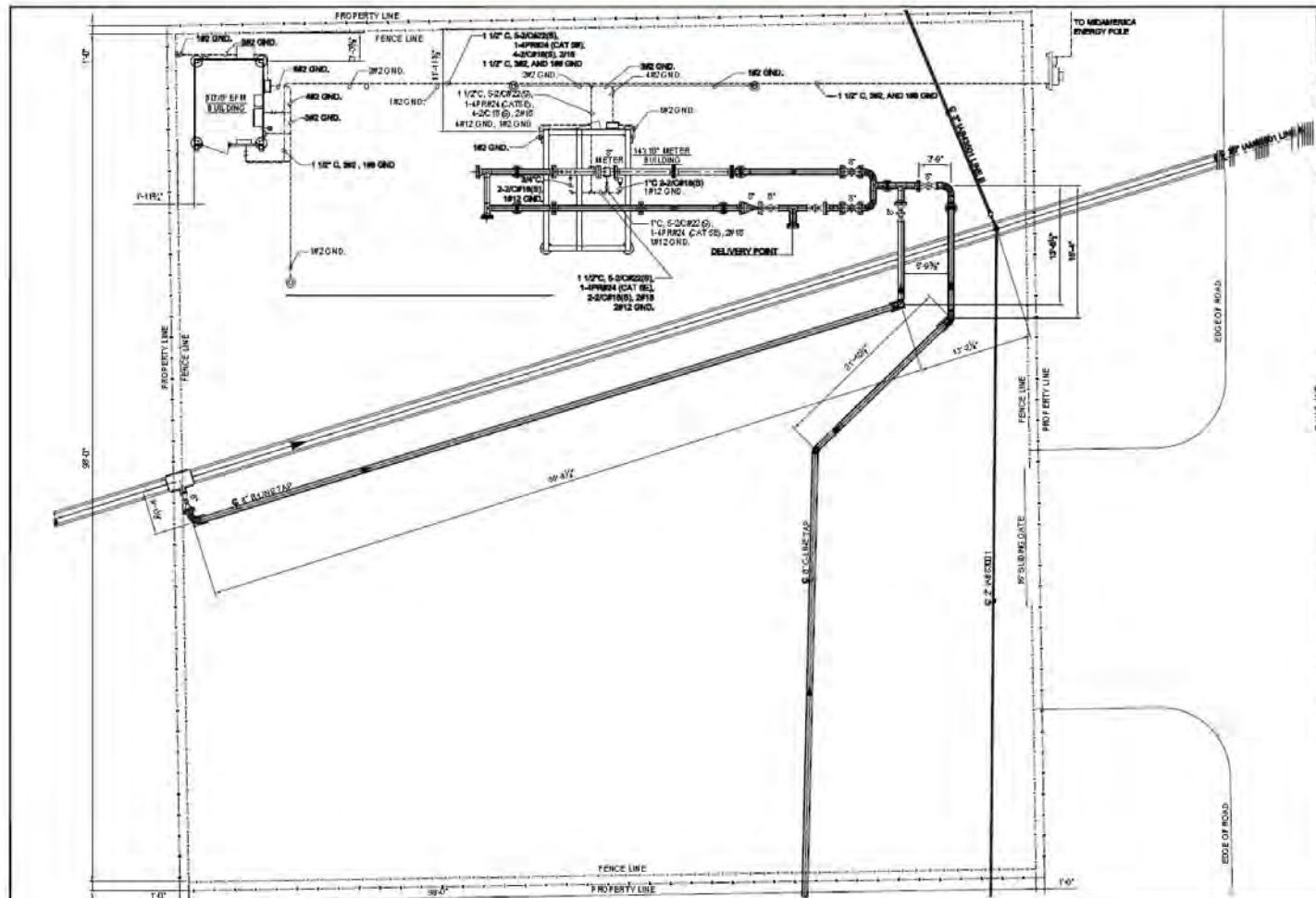
A. Alternating Current Mitigation

Along some portions of the Preferred Route, the pipeline crosses beneath high voltage electric transmission lines that could potentially result in Alternating Current (AC) interference effects. A study to evaluate and mitigate AC interference, to minimize the risk of hazardous touch and step potentials as well as risks associated with power line fault conditions and AC corrosion, will be conducted. AC mitigation procedures will be implemented during construction, with the permanent mitigation measures installed, as required, following appropriate evaluations in accordance with 49 CFR Part 192, Subpart G, and National Association of Corrosion Engineers Standard Practice 0177: Mitigation of Alternating Current and Lightning Effects on Metallic Structures and Corrosion Control Systems. Following construction, these measures will be appropriately tested and a monitoring program will be implemented to ensure continued proper function.

B. Gas Odorizing Station

MERC will install a gas odorizing system at Proposed TBS. MERC currently plans to use ethyl mercaptan to odorize the natural gas. The injection rate will be adequate to achieve detection of natural gas at a concentration equal to 20 percent of the lower explosive limit, or approximately 0.25 to 0.75 pounds per million standard cubic feet. Stroke rate will be optimized to maintain steady odorant concentration in the natural gas pipeline. Regular inspections will be performed to assure the natural gas has the proper concentration of odorant. The pipeline will be new and a process will be followed to properly pre-odorize the pipe upon startup. New gas pipelines absorb odorant until the microscopic voids on the inside wall of the pipe are saturated. The purpose of odorizing the pipe is to detect leaks.

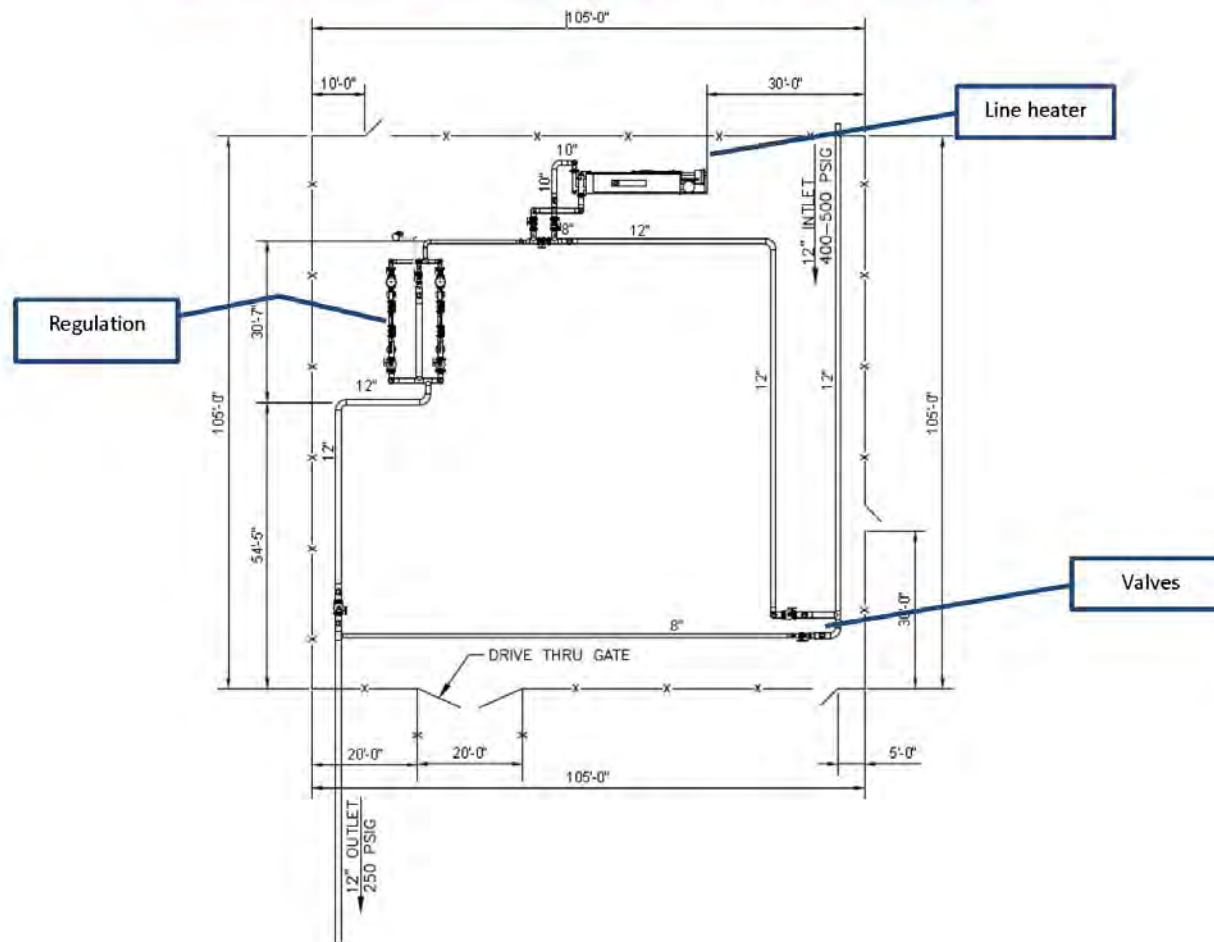
Typical Town Border Station
(Transmission Pipeline provider measurement only)



NOT FOR CONSTRUCTION

Typical District Regulator Station

(can be used at Town Border Stations where Pipeline provider provides metering)



NOT FOR CONSTRUCTION

Subpart 4. Product Capacity Information

Maximum design capacity: 151,000 million cubic feet per day (mcf/d)

Minimum design capacity: 100,000 mcf/d

Approximate hourly flow: 4,600 million cubic feet per hour (mcf/h) in 16-inch diameter pipe; 1700 mcf/h in 12-inch diameter pipe

Subpart 5. Product Description

The proposed pipeline will carry processed natural gas (methane) from the NNG system. Natural gas is a non-hazardous but highly flammable substance.

Subpart 6. Material Safety Data Sheets

The Material Safety Data Sheets for natural gas and ethyl mercaptan are provided in Appendix C.

Section 5: Land Requirements (Minn. R. 7852.2300)

Permanent right-of-way

MERC will require a permanently maintained right-of-way that is 50-feet-wide for the pipeline. The proposed Project is approximately 13.1 miles (69,200 feet) long, requiring an estimated 79.4 acres of permanent right-of-way easement.

For purposes of permitting, MERC is requesting a route width of 500 feet (250 feet to each side of proposed alignment) in which to locate and construct the pipeline. Areas for the route and connections to the rebuilt TBS 1D, Proposed TBS, and Proposed DRS are buffered by up to 1.25 miles (radius or width). The shape of the buffer varies to provide the best options for finding suitable locations for the required facilities (see Figure 3). The larger buffers are in areas where there is more variables and thus uncertainty regarding the final location. For example, the Proposed TBS buffer extends east/west to accommodate potential selection of the route alternative during the route permit process.

Temporary right-of-way

Construction is anticipated to require a 100-foot-wide construction right-of-way/temporary easement, which includes the 50-foot permanent right-of-way and 50 feet of temporary workspace. The construction right-of-way/temporary easement and permanent right-of-way will be 13.1 miles long. The estimated acreage needed for construction is about 158.8 acres; this includes 79.4 acres of permanent right-of-way. Additional temporary workspace will be needed at waterbody, railroad, and road crossings. The additional workspace is needed to house the equipment necessary to directionally bore the pipeline in these areas. The amount of temporary workspace needed has not been determined at this time.

Trench or ditch dimensions

The proposed pipeline will be installed using boring, horizontal directional drilling (HDD) and open cut trench construction techniques. HDD segments account for 0.4 miles of the Preferred Route. HDD will be used at road, wetland, and waterway crossings. The open cut trench segments account for approximately 12.7 miles of the Preferred Route. The trench will generally have a depth of 6.5 feet, a bottom width of about 3.5 feet, and variable top width greater than 7 feet (to be determined based on soil and slope characteristics). Depth of cover above the pipeline will generally be 4.5 feet or more, unless rock is encountered. The excavated material balance is estimated to be approximately 91,000 cubic yards.

Minimum depth of cover

MERC will bury the pipe to at least 4.5 feet below the surface in accordance with Olmsted County Zoning Ordinance Article X, Section 10.40. This depth exceeds the minimum depth identified in US DOT pipeline standards (49 CFR Part 192.327) and is consistent with Minnesota Statutes Section 216G.07, Subdivision 1, which requires the proposed pipeline to be buried at least to a depth of 4.5 feet in all areas where the pipeline alignment crosses public drainage facilities, county or highway rights-of-way, and actively cultivated agricultural lands. A depth of 5.0 feet will be used for all state highway crossings, as required by Minnesota Department of Transportation (MnDOT 2013). With respect to railroad crossings, MERC will bury the pipe to a depth in accordance with the requirements of the affected railroad company. If shallow rock is encountered during drilling, the rock will be bored and the pipe inserted through the rock. If encountered during excavation, the rock will be “ripped” or shattered using mechanical means, no blasting will be used.

Right-of-way sharing or paralleling

The 13.1 mile pipeline will parallel existing rights-of-way where appropriate. All parallel segments are planned to be on proposed right-of-way, that is, the preferred alignment will not be sharing rights-of-way with existing infrastructure. The proposed right-of-way will be immediately adjacent to the existing infrastructure rights-of-way. The preferred alignment parallels 0.64 miles of existing electric distribution lines, 1.61 miles of existing oil product pipeline, and 5.55 miles of existing roadway, for a total of 7.8 miles (41,192 feet) of paralleling, or 59.5 percent of the entire Project length (see Figure 4).

Section 6: Project Expansion (Minn. R. 7852.2400)

MERC's existing natural gas system is fed from two TBS locations off of NNG's pipelines (TBS 1D and TBS 1B). The two take points are at different delivery pressures, 72 psig at TBS 1B, and 400 psig at TBS 1D. MERC will install an approximately 13.1-mile long 500 psig pipeline to link TBS 1D, Proposed TBS, and Proposed DRS (located near TBS 1B). The interconnection of MERC's existing TBS 1D and TBS 1B to NNG's pipeline laterals in the Rochester area are shown in Figure 2, pages 1 and 4, respectively. MERC's proposed 13.1-mile high distribution pipeline interconnecting TBS 1D, Proposed TBS, and Proposed DRS is shown in Figure 2, pages 1 through 4.

The pipeline will consist of approximately 5.1 miles of 16-inch pipe that will operate at 400-475 psig, and approximately 8 miles of 12-inch pipe that will operate at 200-275 psig. The pipeline will be constructed and pressure tested for operation at its maximum design capacity of 500 psig to accommodate handling customer demand that grows beyond that currently forecasted by MERC.

Section 7: Preferred Route Location and Environmental Description (Minn. R. 7852.2600)

Subpart 1. Preferred Route Location

The proposed project area and the Preferred Route are shown in Figure 1, and illustrated in more detail in Figures 2 and 5. The route begins at TBS 1D on the southeast corner of 19th Street NW and 60th Avenue NW. TBS 1D will be either expanded at its current location or relocated nearby if the existing site cannot accommodate the expansion. The route then heads west for one mile to 70th Avenue NW. The route follows 70th Avenue SW for 4 miles to CSAH 25 and proposed TBS. The route then heads east for 0.5 mile, then south along CSAH 15 for 890 feet, then east (cross country) for 0.5 mile to 60th Avenue SW. The route follows 60th Avenue SW for 1,635 feet, and then heads east to the BP pipeline. The route then follows the BP pipeline southeast for just over 1.5 miles, then heads east (cross country) for approximately 3.25 miles. After crossing Willow Creek, the route heads north then northeast (cross country) for about 0.5 mile to 40th Street SW. The route then heads east, crossing US Highway 63, for about 0.75 mile to its eastern terminus at Proposed DRS.

A. United States Geological Survey topographical maps to the scale of 24,000, if available

Figure 2 illustrates the location of the Preferred Route and associated facilities on United States Geological Survey topographical maps.

B. MnDOT county highway maps

Figure 5 illustrates the state highways crossed by the Preferred Route. The Preferred Route crosses US Highway 14 just south of TBS 1D and state Trunk Highway 63 just west of the Proposed DRS.

C. Aerial photos or other appropriate maps of equal or greater detail in items A and B. The maps or photos may be reduced for inclusion in the application. One full-sized set shall be provided to the Commission

Figure 5 illustrates the Preferred Route using aerial photography as background data.

Subpart 2. Other Route Locations

Two route segment alternatives were identified by MERC during routing and are included in this permit application. These alternatives provide options to the Preferred Route at specific locations, as shown in Figure 6. The BP Pipeline Alternative Route Segment (Page 2 of Figure 6) follows an existing oil product pipeline through an agricultural/rural residential area. The 50th Street SW/48th Street SW Alternative Route Segment (Pages 3 and 4 of Figure 6) follows the BP pipeline, then 50th Street SW, then CR 8, then 48th Street SW. This route segment traverses through agricultural, rural residential, and residential areas. These route segment alternatives were developed because they provide additional opportunities to parallel existing infrastructure, consistent with Minnesota Rules 7852.1900, Subpart 3.

One route segment alternative was identified by MERC as a result of public comments. The 60th Avenue SW Alternative Route Segment (Page 3 of Figure 6) follows 60th Avenue SW (going south) then 40th Street SW (going east) where it then joins the Preferred Route. The route segment is adjacent to an existing sand/gravel mine, and traverses agricultural land and rural residential properties. This route segment was developed because it provides opportunity to avoid going cross country over agricultural land and a potential gravel mining operation. It also minimizes potential construction conflicts with the existing BP pipeline, which landowners indicated was extremely shallow in this location.

One route alternative was expanded by the addition of a buffer area as a result of public comments. The buffer was developed to provide flexibility in locating the Project's alignment within the route alternative to accommodate potential future development plans in the area. The Route Alternative Buffer (Page 4 of Figure6) begins at 11th Avenue SW and extends north to 40th Street SW, south to 48th Street SW and east to the City/Township boundary.

Subpart 3. Description of Existing Environment

The proposed project area is located principally in the western portion of the Rochester Plateau Subsection of the Paleozoic Plateau Ecological Section of southeastern Minnesota. This region of the state was not affected by the most recent glaciation, so land forms are highly influenced by erosion. This process has created the region's distinctive landscape of bluffs and dissected stream valleys. Watersheds generally begin in the western portion of this section, where the elevation is higher with level to gently rolling landscapes, descending east to the Mississippi River, where the landscape transitions to steep bluffs and river valleys.

The Project will cross the Chester Ridge, Stewartville Plain, and Lewiston Plain Land Type Associations. The Chester Ridge generally occupies higher elevations marked by moderately sloped bluffs and river valleys, with the Lewiston and Stewartville Plains occupying generally flat areas to the north and south of Chester Ridge, respectively (see Figure 7).

The built environment is principally rural and agricultural. Residential subdivisions, and light industrial and commercial developments are located on the fringes of and within the City of Rochester.

The following sections summarize the existing conditions within the project area, including the Preferred Route and Route Alternatives. Some of the existing conditions for the Preferred Route have been quantified. In general, the existing conditions for the route alternatives are anticipated to be very similar to those for the Preferred Route, since all the alternatives are very near the Preferred Route.

A. Socioeconomics

Olmsted County population levels in 2010 and 2014 were 144,260 and 150,287, respectively, with a growth rate of 4.2 percent (as compared to the statewide growth rate of 2.9 percent). Population levels and densities in the county are highest within the Rochester city limits, where population levels in 2010 and 2014 were 106,769 and 111,402, respectively, with a growth rate of 4.4 percent (US Census). From its northern endpoint, the proposed Project will parallel the western and southwestern edges of the City of Rochester, and will cross through City limits for 1.5 miles (11.2 percent) along the southern edge of the City to terminate at the Project's southern endpoint. Population levels based on the Olmsted County General Land Use Plan (Olmsted County 2014) are expected to continue to increase, primarily in the Rochester, Byron, and Pine Island areas.

Employment is concentrated in the healthcare field at 37.2 percent of employment in the county in 2010 (Rochester-Olmsted Council of Governments, Planning & Analysis Division 2014). The City and State recently provided additional public funding in support of Mayo Clinic's plan to become a Destination Medical Center, which it is estimated will create 26,800 to 32,200 direct jobs, and 10,000 to 15,000 indirect jobs (DMC 2014). After healthcare, trade (10.7 percent) and hospitality (5.5 percent) account for the second and fifth largest employment sectors in the county.

Income is slightly higher in Olmsted County than the State of Minnesota. Median household income for Olmsted County was \$51,316 (\$47,111 in Minnesota), and per capita income was \$24,939 (\$23,198 in Minnesota). Poverty levels were also lower for Olmsted County than the State of Minnesota. For families, 3.8 percent were below the state poverty level (5.1 percent in Minnesota), 16.0 percent of

families with a female household and no husband present were below the state level (19.3 percent in Minnesota) and for individuals, 6.4 percent were below the state level (7.9 percent in Minnesota) (2000 US Census).

Olmstead County's ethnicity is 85.7 percent white, 5.4 percent Asian, 4.8 percent black or African American, and 4.1 percent other ethnicities, including two or more ethnicities. Just over four percent identified with being Hispanic or Latino. These numbers are approximately equivalent to the State of Minnesota's ethnicity which is, respectively, 85.3 percent white, 4.0 percent Asian, 5.2 percent black/African American, and 2.6 percent other ethnicities, with 4.7 percent identifying as Hispanic or Latino (2010 US Census).

B. Land Cover and Zoning

Olmsted County and the City of Rochester each have land use plans. The County Plan was updated in 2011. The City's plan is currently being revised. Both plans provide the framework for identifying future growth and development within the project area.

The project area includes land that has undergone significant development, including agricultural farming, as well as rights-of-way for road, railroad, pipeline, and an electrical transmission line. Most of the Preferred Route crosses agricultural land (42.9 acres; 54 percent) as shown on Figures 8A and 8B (zoning categories A1, A2 and A3), with minor crossings of a special district off of 40th Street SW that aerial photos indicate is a residential subdivision area outside of the City. The southern portion of the Preferred Route crosses through the City of Rochester, for a length of 1.47 miles (11.2 percent of the route). These areas are primarily zoned as general commercial (B-4), mixed commercial-industrial (M-1), and mixed redevelopment (MRD), with minor crossings over high density residential (R-4) and mixed single family residential (R-1).

The BP Pipeline Alternative, 60th Avenue SW Alternative and 50th Street/48th Street SW Alternative cross mostly agricultural and rural residential lands. Zoning for the alternatives includes mostly agricultural and rural residential categories.

Land cover categories and zoning for the anticipated alignment are listed in Table 3 (see Figures 8A, 8B and 9), using the Minnesota Land Cover Classification System (MLCCS) and land cover data provided to MERC by Olmsted County.

Table 3: Land and Zoning Classifications along the Preferred Route and Anticipated Alignment/Permanent Right-of-way

Category	Acres within the Preferred Route (Acres)	Anticipated Alignment/Permanent Right-of-way (Acres)	Anticipated Alignment/Permanent Right-of-way (Percent)
Minnesota Land Cover Classification System			
Agricultural Land	398.2	42.9	54.0
Maintained Tall Grasses	8.6	1.5	1.8
Forest	52.5	3.4	4.2
Shrubland	1.0	0.1	0.1
Old Field - Grassland with scattered trees and shrubs	78.7	8.3	10.4
Wetland Emergent	12.3	0.7	0.8

Category	Acres within the Preferred Route (Acres)	Anticipated Alignment/Permanent Right-of-way (Acres)	Anticipated Alignment/Permanent Right-of-way (Percent)
Vegetation			
Dry Tall Grasses	155.1	17.3	21.8
Open Water/Riverine	0.7	0.1	0.1
Impervious Lands	88.6	5.2	6.6
TOTAL	795.7	79.5	99.8
City and County Zoning Classification			
Agricultural/Resource Commercial District - Aggregate Extraction and Reuse (A/RC AER)	1.8	0.1	0.2
Agricultural Protection District (A1/A2)	529.9	53.8	67.8
Agricultural District (A3)	94.2	9.3	11.7
Agricultural Urban Expansion District (A4)	66.1	6.4	8.0
Rural Residential District (RA)	9.0	0.4	0.5
Special District (other) (SD)	5.5	0.4	0.5
Restricted Commercial District (B1)	1.5	0.0	0.0
General Commercial (B4)	28.9	3.6	4.6
Mixed Commercial-Industrial (M1)	39.0	3.3	4.2
Mixed Single Family (R1)	14.9	1.5	1.9
Low Density Residential (R2)	3.9	0.4	0.5
Medium Density Residential District (R3)	0.4	0.0	0.0
Unknown (other) (U)	0.4	0.1	0.1
TOTAL	795.5	79.4	100

Source: MLCCS and Olmsted County/Rochester Planning and Zoning.

None of the agricultural land crossed by the Project is listed as organic farmland (Minnesota Department of Agriculture, see Figure 5).

The anticipated alignment runs adjacent to registered school land near County Road 8 and between 42nd Street SW and 48th Street SW, which is identified as “Von Wald Group Home,” an Olmsted County Sheriff’s Youth Program of Minnesota licensed by the Minnesota Department of Corrections.

Mining of St. Peter Sandstone is prominent in the project area, although it is not a prominent sector in Olmsted County’s socioeconomics. Some quarry areas for aggregate and other mining resources are located near the Preferred Route and 60th Avenue SW Alternative (see Figure 5). While avoidance of

active mine areas was a priority in alignment selection, there may be some locations where the pipeline may interfere with mining expansion. MERC will coordinate with mining companies should future expansions be identified.

C. Recreation Areas

Recreational activities in the project area are illustrated in Figure 10. In the proposed project area, snowmobile trails traverse mostly agricultural areas outside of city limits, and a private golf course is located off Willow Creek south of 48th Street SW. The Zumbro River is a Minnesota Department of Natural Resources (DNR) canoe trail.

The Rochester State Game Refuge does not include any state owned land, and is a designation used to restrict certain hunting activities. No known federal, state, or county parks, forests, or recreational areas will be affected by the Project. While the City of Rochester offers several recreational opportunities and public infrastructure, the Project is located away from these facilities (see Figure 10).

D. Geology

Olmsted County lies close to the edge of continental glaciers that covered much of Minnesota. The entire county is covered by loamy glacial till that is described as an unsorted, unstratified drift that contains a mixture of sand, silt, and clay (typically loam to clay loam). The till contains subangular and rounded clasts of local and erratic rocks. It is gray and calcareous where unweathered, and grayish brown to brown with carbonate leached when oxidized. The till in the northern-most portion of the Preferred Route (3- to 4-mile section) is capped with loess deposits. These windblown sediments are uniformly bedded silt with some clay and fine sand, and are greater than 5 feet thick in this area, but may occur throughout the county in thinner layers.

The City of Rochester is located in a low-lying area that is heavily dissected by streams and rivers. In the vicinity of the Zumbro River and Willow Creek, alluvium from modern streams and terrace deposits from glacial streams can be found. The alluvium consists of channel sand and gravel that is overlain by silt and clay. The terrace deposits are mainly clean calcareous sand and gravel that contains minor beds of silt and clay in places (Hobbs 1988).

Bedrock exposures and shallow bedrock are common in the Rochester area, including along the southern half of the project area. Depth to bedrock is generally less than 25 feet throughout the route, but may be up to 150 feet in the northern-most two miles, which abuts a narrow, northeast-southwest trending bedrock valley located to the west (Olsen 1988b). Bedrock within the project area is described as sedimentary units from the Middle to Lower Ordovician Period. The stratigraphy of the bedrock units (from youngest to oldest) includes the Galena Group (limestone), Decorah Shale, Platteville Formation (limestone), Glenwood Formation (sandy shale), St. Peter Sandstone, and Prairie du Chien (dolomite). The uppermost bedrock along the majority of the project area includes limestone and shale from the Galena Group and Decorah, Platteville, and Glenwood Formations. Small segments near the end and beginning of the project area are underlain by the older St. Peter and Prairie du Chien units (Olsen 1988a).

Karst features, such as sinkholes, caves, and springs, are commonly found in Olmsted County, where a thin cover of glacial material overlies carbonate bedrock that is subject to dissolution. Much of the project area lies in a low probability or low to moderate probability area for sinkholes, which are surface expressions of underlying dissolved bedrock. A segment of the Preferred Route and 50th Street SW/48th Street SW Alternative crosses an area of high-probability for sinkholes. Several sinkholes were identified in Section 29 (T106N, R14W) (Alexander and Maki 1988) (see Figure 5).

The geologic resources in the high probability sinkhole area include sand and gravel deposits and carbonate bedrock. The sand and gravel resources are found along the Zumbro River and a small portion of Willow Creek. Sand and gravel mines associated with these deposits are shown in Figure 5. The terrace deposits are classified as a primary resource, while the alluvium is considered a secondary resource. Carbonate bedrock from the Galena Group (Stewartville Formation and Prosser Limestone) is mined for use as crushed rock (aggregate) (Kuhns 1988). This resource is present in Sections 28, 29, and 30 (Township 106N, Range 14W) (see Figure 5). The depth to bedrock along most of the project area is 0 to 25 feet, with depths varying from 26 feet to 125 feet along waterways.

E. Soils

The project area is located in the Northern Mississippi Valley Loess Hills and the Eastern Iowa and Minnesota Till Prairies, Major Land Resource Areas (Natural Resources Conservation Service 2006). The dominant soil orders in these areas are Alfisols, Entisols, and Mollisols. Soils in the project area are generally loamy, moderately deep to very deep, well drained to very poorly drained soils formed in loess, which can vary from 30 feet thick on ridge tops to less than one foot thick along valley walls. Five soil associations are identified along within the project area: Mt. Carroll-Otter-Joy, Mt. Carroll-Marlean-Arenzville, Racine-Floyd-Maxfield, Rockton-Channahon-Atkinson, and Waukeee-Radford-Kalmarville (see Figure 11).

Soils of the Mt. Carroll-Otter-Joy Association and Mt. Carroll-Marlean-Arenzville Association are located along the Preferred Route west of the City of Rochester. Areas south of the City of Rochester are comprised of soils of the Racine-Floyd-Maxfield Association and the Rockton-Channahon-Atkinson Association. Waukeee-Radford-Kalmarville Association soils are dominant along the waterways of the area.

Fifty-three percent of the soils along the Preferred Route are designated Prime Farmland, which is defined by the best combination of physical and chemical characteristics for the production of crops (see Figure 12). Fifteen percent of the soils along the Preferred Route are designated Farmland of Statewide Importance, which is defined as land other than Prime Farmland that has a good combination of physical and chemical characteristics for the production of crops. Thirty-three percent of all soils along the Preferred Route are hydric soils, and 21 percent are highly erodible lands.

Soils along the BP Pipeline Alternative, 60th Avenue SW Alternative, and 50th Street/48th Street SW Alternative also contain a high percentage of Prime Farmland, with lesser amounts of soils designated as Farmland of Statewide Importance and Prime Farmland if drained.

F. Cultural Resources

The proposed project area falls within the western portion of the Southeast Riverine Archaeological Region of Minnesota. The following discussion of the archaeological region is summarized from A Predictive Model of Precontact Archaeological Site Location for the State of Minnesota (Gibbon et al. 2005).

The Southeast Riverine Archaeological Region covers the southeast portion of Minnesota and also extends into adjacent corners of Wisconsin and Iowa. This region was not glaciated during the Wisconsin Glacial Period, and the area is characterized by stream-dissected, level to gently rolling loess covered Pre-Wisconsinan till plains, with a notable absence of natural lakes. The major river systems in the region extend west from the Mississippi River and include the Cannon, Cedar, Root, and Zumbro Rivers.

The Southeast Riverine region contains extensive rock outcroppings of high quality flaking materials suitable for manufacturing stone implements. Chert concentrations are found along the Mississippi River Valley and also just below the surface of less-dissected areas in the western part of the region.

During the late Holocene epoch, elm, ash, and cottonwood forests lined the river lowlands, with maple, elm, and basswood occupying the uplands near the Mississippi River. Oak barrens and patches of oak groves were scattered across the western portion of the region in the prairie.

Subsistence resources during the late Holocene epoch would have included deer, elk, and bison in the uplands, and mussels, fish, and waterfowl in the rich bottom lands. Edible plants would have included water lilies and other aquatic flora, as well as plants like prairie turnips in the uplands. The Southeast Riverine Archaeological Region would have provided a favorable climate and extensive bottomlands for Woodland horticulture.

G. Vegetation

Pre-settlement vegetation in the proposed project area was influenced by slope, flooding, and fire. Prairies dominated the flatter portions and bluff tops of the Rochester Plateau, where fires were more frequent. Mesic hardwood forests occupied steeply sloped valleys and wet/floodplain forests occupied valley bottoms and riparian floodplains.

Prairie communities were made up of species such as big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), prairie cordgrass (*Spartina pectinata*), side-oats grama (*Bouteloua curtipendula*), gray-headed coneflower (*Ratibida pinnata*), valerian (*Valeria spp*), purple prairie clover (*Dalea purpurea*), stiff sunflower (*Helianthus pauciflorus*), goldenrod (*Solidago spp*) and aster (*Symphyotrichum spp*).

Common pre-settlement species occurring in the woodlands generally were influenced by elevation, with bur oak (*Quercus macrocarpa*) and northern pin oak (*Quercus ellipsoidalis*) occupying higher elevations, while basswood and sugar maple become more prevalent downslope. Floodplain forests were made up of eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), and swamp white oak (*Quercus bicolor*).

As the area became settled, the vegetation has transitioned to farming resulting in alterations to the landscape. Human activities have converted nearly all native pre-settlement prairie and woodland communities present along the Preferred Route to agricultural row crops. Fire suppression has allowed woodland canopies to become complete and woody species to encroach into areas historically dominated by grasses. Human influence has also allowed for non-native or disturbance species, such as smooth brome (*Bromus inermis*) and reed canarygrass (*Phalaris arundinacea*) to become widely established in road ditches and remnant grasslands. Invasive or undesirable woodland species have also become established within the study area, and include common buckthorn (*Rhamnus cathartica*), boxelder (*Acer negundo*), and garlic mustard (*Alliaria petiolata*).

A review of MLCCS data along the Preferred Route determined that approximately 50 percent of the route will be located in fields used for agricultural row crops, representing very little ecological value in terms of the vegetation community because the native plant community has been completely replaced by agricultural row crops and non-native or disturbance species.

Another significant land cover community along the Preferred Route is old field/dry tall grasslands (approximately 29 percent of the length), which are mostly associated with agricultural drainage ways, existing road rights-of-way, and hayfields. Grasslands associated with these areas are typically dominated by non-native smooth brome or reed canary grass, and are of poor ecological quality.

However, the Preferred Route does cross a grassland/wet meadow community in the southwest quarter of Section 24, Range 14 N, Township 24 W, which is mapped as a sedge meadow of moderate quality by the Minnesota Biological Survey (MBS) (DNR 2000). The Preferred Route across this MBS feature was selected based on consultation with DNR staff. Appendix A contains a record of this consultation.

Woodland crossings were minimized to the extent practicable, representing approximately 7 percent of the total length of the Preferred Route.

Vegetation types along the BP Pipeline Alternative, 60th Avenue SW Alternative, and 50th Street/48th Street SW Alternative also cross mostly agricultural or rural residential landscapes. Ecological values for the alternatives would be similar to the values of the Preferred Route.

H. Wildlife and Fisheries

Wildlife species occupying habitats in the project area are typical of agricultural, grassland, wetland, riparian, woods edge, and human development areas in the Upper Midwest. A list of mammal species likely to occur in the project area is included in Table 4 (DNR 2014). This group of species is fairly common, although big and little brown bat populations are suffering significant declines due to white nose syndrome (DNR 2014). Bats are discussed in more detail in the Threatened and Endangered Species section.

The Minnesota Breeding Bird Atlas (2014) has documented 104 breeding avian species in Olmsted County. Table 4 includes a selection of common avian species occurring in Olmsted County that typically use habitat types found within the project area.

Reptilian and amphibian species occurring in Olmsted County (DNR 2012; Herpnet 2014) are listed in Table 5. Northern leopard frog, American toad, painted turtle, snapping turtle, and garter snakes are the most common reptile and amphibian species found in the project area.

Table 4: Wildlife Species Commonly Occurring in Olmsted County

Species Group	Common Name	Scientific Name
Mammals	meadow vole	<i>Microtus pennsylvanicus</i>
	raccoon	<i>Procyon lotor</i>
	white-tailed deer	<i>Odocoileus virginianus</i>
	stripped skunk	<i>Mephitis mephitis</i>
	little brown bat	<i>Myotis lucifugus</i>
	big brown bat	<i>Eptesicus fuscus</i>
	eastern cottontail	<i>Sylvilagus floridanus</i>
	eastern gray squirrel	<i>Sciurus carolinensis</i>
	thirteen-lined ground squirrel	<i>Ictidomys tridecemlineatus</i>
	Virginia opossum	<i>Didelphis virginiana</i>
	coyote	<i>Canis latrans</i>
Birds	great blue heron	<i>Ardea herodias</i>
	Canada goose	<i>Branta canadensis</i>
	mallard	<i>Anas platyrhynchos</i>
	red-tailed hawk	<i>Buteo jamaicensis</i>
	wild turkey	<i>Meleagris gallopavo</i>

Species Group	Common Name	Scientific Name
	killdeer	<i>Charadrius vociferous</i>
	rock pigeon	<i>Columba livia</i>
	mourning dove	<i>Zenaida macroura</i>
	great horned owl	<i>Bubo virginianus</i>
	chimney swift	<i>Chaetura pelagica</i>
	belted kingfisher	<i>Megaceryle alcyon</i>
	eastern kingbird	<i>Tyrannus tyrannus</i>
	American crow	<i>Corvus brachyrhynchos</i>
	horned lark	<i>Eremophila alpestris</i>
	tree swallow	<i>Tachycineta bicolor</i>
	barn swallow	<i>Hirundo rustica</i>
	black-capped chickadee	<i>Poecile atricapillus</i>
	eastern bluebird	<i>Sialia sialis</i>
	house wren	<i>Troglodytes aedon</i>
	American robin	<i>Turdus migratorius</i>
	European starling	<i>Sturnus vulgaris</i>
	vesper sparrow	<i>Pooecetes gramineus</i>
	song sparrow	<i>Melospiza melodia</i>
	red-winged blackbird	<i>Agelaius phoeniceus</i>
	eastern meadowlark	<i>Sturnella magna</i>
	American goldfinch	<i>Spinus tristis</i>
	house sparrow	<i>Passer domesticus</i>
Amphibians and Reptiles	mudpuppy	<i>Necturus maculosus</i>
	eastern tiger salamander	<i>Ambystoma tigrinum</i>
	spring peeper	<i>Pseudacris crucifer</i>
	eastern gray treefrog	<i>Hyla versicolor</i>
	American toad	<i>Bufo americanus</i>
	northern leopard frog	<i>Rana pipiens</i>
	green frog	<i>Lithobates clamitans</i>
	northern map turtle	<i>Graptemys geographica</i>
	wood turtle	<i>Glyptemys insculpta</i>
	Blanding's turtle	<i>Emydoidea blandingii</i>
	painted turtle	<i>Chrysemys picta</i>
	snapping turtle	<i>Chelydra serpentina</i>
	pond slider	<i>Trachemys scripta</i>
	eastern musk turtle	<i>Sternotherus odoratus</i>
	eastern garter snake	<i>Thamnophis sirtalis</i>
	plains garter snake	<i>Thamnophis radix</i>
	redbelly snake	<i>Storeria occipitomaculata</i>

Species Group	Common Name	Scientific Name
	western fox snake	<i>Mintonius ramspotti</i>
	northern water snake	<i>Nerodia sipedon</i>
	milk snake	<i>Lampropeltis triangulum</i>
	North American racer	<i>Coluber constrictor</i>

The Preferred Route crosses 27 waterways as identified by MnDOT (2014). These waterways consist of 22 linear excavated agricultural ditches and intermittent streams, two perennial streams (two crossings each) and one river, which provide year-round habitat for fish and other aquatic species. Most notably, Cascade Creek, Willow Creek, and the Zumbro River are perennial, free flowing watercourses and provide the most natural fishery habitats of the waterways crossed by the Preferred Route. Other waterways crossed by the Preferred Route offer less habitat due to erosion, lack of year-round flow, or channelization. No designated trout streams are crossed by the Preferred Route (DNR 2006).

The BP Pipeline Alternative crosses Cascade Creek, while the 60th Avenue SW Alternative crosses Salem Creek. The 48th Street/50th Street SW Alternative does not cross any named waterways.

Table 5 displays a list of fish species found in Zumbro Lake, an impoundment located downstream from the project area in Olmsted County (DNR 2011). This species list likely represents a similar composition to the fish species found in rivers and streams in the project area.

In addition to fishes, the Zumbro River and its tributaries provide habitat for mollusks, crayfish, and other aquatic invertebrates.

Table 5: Fish Species Occurring in Zumbro Lake

Common Name	Scientific Name
black crappie	<i>Pomoxis nigromaculatus</i>
bluegill	<i>Lepomis macrochirus</i>
channel catfish	<i>Ictalurus punctatus</i>
common carp	<i>Cyprinus carpio</i>
freshwater drum	<i>Aplodinotus grunniens</i>
golden redhorse	<i>Moxostoma erythrurum</i>
highfin carpsucker	<i>Carpionodes velifer</i>
largemouth bass	<i>Micropterus salmoides</i>
northern pike	<i>Esox lucius</i>
quillback	<i>Carpionodes cyprinus</i>
river carpsucker	<i>Carpionodes carpio</i>
shorthead redhorse	<i>Moxostoma macrolepidotum</i>
silver redhorse	<i>Moxostoma anisurum</i>
walleye	<i>Sander vitreus</i>
white bass	<i>Morone chrysops</i>
white crappie	<i>Pomoxis annularis</i>
white sucker	<i>Catostomus commersonii</i>
yellow perch	<i>Perca flavescens</i>

Source: DNR 2011

I. Threatened and Endangered Species

Three federally listed species are documented as occurring in Olmsted County. Table 6 lists the species and their preferred habitat (United States Fish and Wildlife Service 2014). MERC will consult with the USFWS on appropriate construction mitigation measures for the species once the Route Permit is issued. At this time, MERC intends to complete all tree clearing activities for the Project during the winter months to minimize the likelihood of impacts on these federally-listed species.

Table 6: Federally Listed Species Occurring in Olmsted County

Species Name	Federal Status	Type of Species	Habitat
Northern long-eared bat (<i>Myotis septentrionalis</i>)	Threatened	Insectivorous Bat	Hibernates in mines and caves; roosts in upland forests in spring and summer
Leedy's roseroot (<i>Rhodiola integrifolia</i> ssp <i>leedyi</i>)	Threatened	Vascular Plant	Cool, wet and groundwater-fed limestone cliffs
Prairie bush clover (<i>Lespedeza leptostachya</i>)	Threatened	Vascular Plant	Native prairie with well-drained soils

A review of DNR Natural Heritage Information System (NHIS) Data (DNR LA-717) for Olmsted County determined that five state-listed species occur within 1 mile of the project area. Table 7 lists those species.

Table 7: Minnesota State Endangered and Threatened Species Occurrences within 1 mile of the Project Area

Species Name	State Status	Type of Species	Habitat
Glade mallow (<i>Napaea dioica</i>)	Threatened	Vascular Plant	River shore, floodplain forest, wet meadow/carr marsh
Valerian (<i>Valeriana edulis</i> var. <i>ciliate</i>)	Threatened	Vascular Plant	Cliff, rock outcrop, upland prairie, lowland prairie, non-forested rich peatland, wet meadow/carr marsh
Elktoe (<i>Alasmodonta marginata</i>)	Threatened	Aquatic Mussel	Rivers and streams of all sizes
Ellipse (<i>Venustaconcha ellipsiformis</i>)	Threatened	Aquatic Mussel	Small rivers and streams
Loggerhead shrike* (<i>Lanius ludovicianus</i>)	Endangered	Bird	Upland prairie

*Two records of this species are within 1 mile of the preferred right-of-way.

Notes included in these NHIS records provide more details about these species occurrences. For example, the elktoe observation noted that only dead individuals were observed at this location. The last observation of loggerhead shrike occurred in 1992; no shrikes were observed during 1995 shrike surveys. The other shrike observation indicates this species has only been verified at this location once, but unverified observations did occur in 2009.

Threatened plant occurrences within 1 mile of the project area were observed in 1994. Notes indicate glade mallow was observed in a floodplain forest, and valerian was observed in a bluff prairie. No other data are available on surveys after 1994, or on whether the previously-observed threatened plant occurrences still exist.

J. Water Resources—Groundwater

Wells used for drinking water and water supply in project area are mainly completed in the upper carbonate aquifer (where present) and the St. Peter-Prairie du Chien-Jordan aquifer. Sand and gravel lenses found in the glacial till and deeper bedrock units are also sources of groundwater, but occur locally.

The upper carbonate aquifer includes members of the Galena Group and only occurs in the southern portion of the project area. The aquifer consists of karst limestone and dolomite, and groundwater is stored in and moves rapidly through features such as solution-widened fractures and caverns. Where dissolution features are less common, groundwater moves more slowly through smaller fractures in the bedrock. Groundwater flow in this unit is north to northeast towards the City of Rochester.

The Decorah-Platteville-Glenwood units act as a confining layer that hydraulically separates the upper carbonate aquifer from the underlying St. Peter-Prairie du Chien-Jordan aquifer. This sequence of rocks

is 80 feet thick. Though the Platteville is a limestone with dissolution features, it is “sandwiched” by the Decorah and Glenwood shale, which are low permeability units.

The St. Peter-Prairie du Chien-Jordan aquifer is heavily pumped and supplies most of the groundwater for domestic and municipal supply. The aquifer consists of three hydraulically connected geologic units of sandstone and dolomite. Groundwater flow in this unit is similar to the upper carbonate aquifer and is north to northeast towards the City of Rochester (Kanivetsky 1988).

With the exception of the northern portion of the project area, which is underlain with a thick sequence of glacial till, the majority of the project area is classified as having high to very high sensitivity to pollution. High sensitivity to pollution means that contaminants at the surface can take anywhere from weeks to years to reach the underlying aquifer, whereas a very high sensitivity means contaminants can take anywhere from hours to months to reach the underlying aquifer. A thin cover of glacial till and a network of dissolved fractures and voids in the underlying carbonate bedrock results in faster travel times (residence time) for contaminants to impact drinking water (Olsen and Hobbs 1988).

K. Water Resources—Surface Waters and Wetlands

The project area includes portions of five minor watersheds, which include (generally listed from north to south) an unnamed agricultural drainage way, Cascade Creek, two Zumbro River sub-watersheds (which contain the Zumbro River itself, but no other major tributaries), and Willow Creek. The project area generally includes the upper portions of these watersheds, which are generally flat to rolling. Downstream and to the east of the project area, the topography of these watersheds transitions to small stream valleys as the waterways descend through the watershed towards the pronounced bluff country east of the study area. The process of erosion has formed somewhat prominent bluff lines, which delineate the boundaries between watersheds. Waterways draining these watersheds are ditched or sinuous and generally occupy flat, low-lying riparian corridors. All five minor watersheds are located within the Zumbro River major watershed, which drains into the Mississippi River to the east of the proposed Project.

The project area crosses 27 MnDOT 2014-identified waterways, five of which are mapped on the Public Waters Inventory (PWI) by the DNR (see Figure 2). These PWI streams, from north to southeast, are two unnamed intermittent streams, Cascade Creek, the Zumbro River, and Willow Creek. Crossing locations for the Preferred Route and route alternatives were generally selected to minimize impacts on riparian habitats, such as wetlands and floodplain forests. These crossing locations for the Project are discussed in detail below, following their orientation from north to southeast.

The Preferred Route crosses the northern unnamed intermittent stream, which is mapped as a PWI, in the northeast quarter of Section 25, Kalmar Township (Township 107 N, Range 15 W), at the northwest corner of 19th Street NW and an access road to an unnamed impoundment north of 19th Street. This intermittent stream originates at the impoundment that is located approximately 2,000 feet upstream from the crossing area, and follows a channelized ditch until it reaches a point south of 19th Street NW. The proposed pipeline crossing will be within the channelized segment.

The second unnamed intermittent stream that is mapped as a PWI associated with the Kalmar Impoundment is crossed by the anticipated alignment in the southwest quarter of Section 25 of Kalmar Township (Township 107 N, Range 15 W). This stream originates at the culvert outlet on the east side of 70th Avenue NW, and the crossing will occur approximately 45 feet downstream. On aerial photography, the stream channel in this location appears undefined within an emergent wetland.

The Preferred Route and BP Pipeline Alternative cross Cascade Creek in the northwest quarter of Section 12 of Salem Township (Township 106 N, Range 15 W). This crossing occurs immediately to the east of

70th Avenue NW in a location that has been mostly cleared of woody vegetation. Cascade Creek follows a natural course upstream and downstream from the crossing; no MBS sites of biological significance are associated with the riparian corridor in the vicinity of the crossing.

The Preferred Route crosses the Zumbro River in the southwest quarter of Section 13 of Salem Township. This crossing will occur immediately west of 60th Avenue NW in a location where the forested riparian corridor is narrow when compared to the extent of riparian forests up and downstream from the crossing location. The entire width of riparian corridor, including the river channel, is 205 feet. The crossing location has not been identified as a site of biological significance by the MBS, although sites of moderate and high biological significance are located east of the crossing location. The closest site is designated as medium quality, and is located approximately 1/3 mile east and 1/2 mile downstream from the crossing location due to the natural meander of the Zumbro River in this location. The closest high quality MBS site is located approximately 1 mile northeast of the crossing location (see Figure 5).

The Preferred Route and 60th Avenue SW Alternative cross Willow Creek in the northwest quarter of Section 26 of Rochester Township (Township 106 N, Range 14 W). This crossing occurs in a location where the anticipated alignment does not parallel a road right-of-way. A narrow floodplain forest occupies the riparian corridor at the crossing location, which is approximately 270 feet wide, including the width of the stream channel. The crossing location has not been identified as a site of biological significance by the MBS, although sites of moderate significance are located downstream from the crossing location.

All PWI stream crossings, with the exception of Willow Creek, will be adjacent to existing road crossings of the streams. No PWI lakes or wetlands are crossed by the Project.

The rolling topography and highly developed network of bluffs and stream valleys have mostly restricted wetlands to the low elevations of stream valleys and riparian corridors. As a result, most National Wetlands Inventory wetland crossings are associated with PWI or MnDOT water crossings. Most wetlands are relatively narrow and restricted to the immediate vicinity of the waterway. Table 8 summarizes the wetland types crossed by the anticipated alignment (United States Fish and Wildlife Service 2003). Similar wetlands are expected to be crossed by the route alternatives.

Table 8: National Wetlands Inventory Wetlands Crossed by the Preferred Route

Wetland Type	Area Within Route (acres)	Crossing Length (feet)	Anticipated Right-of-way (acres)
Emergent Wetland	18.5	1,814	2.0
Forested, Scrub/Shrub Wetland	6.5	55	0.1
Freshwater Pond	0.5	0	0.0
Total	25.5	1,869	2.1

The longest wetland crossed by the anticipated alignment is approximately 1,500 feet, and is located at southern end of the proposed Project near the Proposed DRS. A relatively broad and flat depressional wetland immediately south of Willow Creek is present at this location. This wetland is the same sedge meadow mapped as moderate quality by the MBS. The Preferred Route across this MBS feature was selected based on consultation with the DNR. Appendix A contains a record of this consultation. The vegetation section contains a more detailed discussion of the plant community in this area.

Two calcareous fens were identified in the vicinity of the project area. The Rochester 23 and Marrion 30 fens are more than 0.5 mile from the Preferred Route. However, the Marrion 30 fen is located north of 45th Street SE and west of County Road 1, in the buffer area for Proposed DRS at the southern end of the Project. Direct and potential indirect impacts to this fen would be avoided by siting Proposed DRS within the buffer area. Any future distribution line construction in this area in the 2022 time frame would also avoid impacts to the fen.

L. Air Quality

The project area is entirely within Olmsted County, which is designated as in attainment with all National Ambient Air Quality Standards (NAAQS). A portion of the county, namely the City of Rochester, is a maintenance area for sulfur dioxide (SO₂), meaning that it was previously (within the past 20 years) a nonattainment area for SO₂ (original 1971 SO₂ NAAQS). While SO₂ monitoring data have not been collected in Rochester for nearly two decades, United States Environmental Protection Agency (EPA) and state regulations have significantly reduced SO₂ emissions from both stationary and mobile sources, such that the area is expected to be in compliance with even the newer, more stringent 2010 SO₂ NAAQS.

M. Existing Infrastructure

In an effort to reduce impacts, MERC selected routes that parallel other rights-of-way. The Preferred Route parallels existing infrastructure for a total of 7.8 miles (59.5 percent), including existing electric distribution lines (0.64 miles), the BP pipeline (1.61 miles) and road rights-of-way (5.55 miles) (see Figure 4). Table 9 lists the infrastructure that is adjacent to or crossed by the Preferred Route.

The route alternatives also were selected because they parallel existing infrastructure, including the BP Pipeline, 60th Avenue SW, 40th Street SW, and 50th Street SW.

Table 9: Existing Roads, Railroads, and Pipelines Crossed or Adjacent to the Preferred Route

Mile Post	Type	Name
0.07	Crossing	60th Street NW
0.14-0.96; 0.96; 0.96-1.08	Parallel/Crossing	19th Avenue NW
1.29	Crossing	Northern Natural Gas Company
1.08-1.51; 1.8-2.17; 2.45-5.11	Parallel/Crossing	70th Avenue NW
1.57	Crossing	14th Street NW
2.18	Crossing	DM&E (Dakota, Minnesota and Eastern) Railroad
2.20	Crossing	Trunk Highway 14
2.44-5.10	Parallel	70 th Avenue SW
2.60	Crossing	CR 34/Country Club Road W
3.1	Crossing	BP Pipeline
3.60	Crossing	10th Street SW
4.61	Crossing	20th Street SW
5.11-5.63	Parallel/Crossing	CR 25/Salem Road SW
5.63-5.78	Parallel	CR 15

Mile Post	Type	Name
6.07	Crossing	Heather Drive SW
6.25-6.58	Parallel/Crossing	60th Avenue SW
6.70-8.30	Parallel/Crossing	BP Pipeline
7.76	Crossing	40th Street SW/55 th Avenue SW
9.58	Crossing	CR 8/Bamber Valley Road SW
11.57	Crossing	11th Avenue SW
12.36-12.82	Parallel/Crossing	40th Street SW
12.50-12.68	Crossing	Trunk Highway 63
12.83	Crossing	Fern Avenue SE
13.02	Crossing	Maine Avenue SE

N. Hazardous Waste and Regulated Materials

Properties where hazardous waste or other regulated materials have been stored can present a risk if spills or leaks have occurred or may occur. Contaminated or potentially contaminated properties are of concern for pipeline projects because of the liability associated with acquiring such property through right-of-way purchase, potential cleanup costs, and safety concerns during construction related to exposure to contaminated soil, surface water, or groundwater.

The use, storage, and clean-up of hazardous wastes and petroleum products are regulated by EPA and Minnesota Pollution Control Agency (MPCA). The MPCA's "What's in my neighborhood?" database identifies information about air quality, hazardous waste, remediation, solid waste, tanks and leak sites, and water quality for regulated facilities and sites in Minnesota. The database was searched for sites located within 500 feet of the anticipated alignment. Table 10 summarizes the listings that were identified in the search area.

The majority of the identified sites were categorized under the following activities: feedlot, small to minimal hazardous waste generator, or construction stormwater permit.

There are no records of contaminated soils or groundwater in the project area.

Table 10: Minnesota Pollution Control Agency Listing of Regulated Facilities and Sites within the Project Area

Name	Address	Minnesota Pollution Control Agency ID	Activity
Merc Rochester 1D TBD	1836 NW 60th Ave Rochester	MNS000176628	Hazardous Waste, Small to Minimal QG
Bauer Built Tire	3901 Commercial Dr SW Rochester	MND985666726	Hazardous Waste, Small to Minimal QG
Twin City Test & Eng Lab In	3908 Commerce Ct SW Rochester	148207491	Hazardous Waste, Small to Minimal QG
Meyer Farms Inc	1814 70th Ave SW Byron	109114976	Feedlot

Name	Address	Minnesota Pollution Control Agency ID	Activity
L & S Services	303 40th St SW Rochester	PW5103028481	Hazardous Waste, Small to Minimal QG
Spruce Meadows - CSW	See location description Rochester	C00006458	Construction Stormwater Permit
Toden Farms	6225 19th St NW Rochester	10979011	Feedlot
S Zumbro WS Flood Control Structure KR-3	1901 70th Ave NW Byron	C00001358	Construction Stormwater Permit
Health East Transportation	303 C 40th St SW Rochester	MNR000061812	Hazardous Waste, Small to Minimal QG
Neil Rabehl Farm	7041 14th St NW Byron	10978982	Feedlot
Brake Station The	3903 Commercial Dr SW Rochester	MND985764869	Hazardous Waste, Small to Minimal QG
Rhino Lining	3906 Commerce Ct SW Rochester	ENF257	Hazardous Waste, Small to Minimal QG
Mobile Construction Service	3902 Commerce Ct SW Rochester	148198781	Hazardous Waste, Small to Minimal QG
Orchard Hills S 1st Subdivision -CSW	See PLS Rochester	C00006763	Construction Stormwater Permit
Louis Seifert Farm	6990 19th St NW Rochester	10978980	Feedlot
Project 7803-8-94 Innsbruck Eight	Innsbruck Eight Area Rochester	C00001319	Construction Stormwater Permit
Donovan Bodyworks	3701 60th Ave SW, Rochester	MND985686518	Hazardous Waste, Small to Minimal QG
MNDOT District 6 HQ	2900 48th St, Rochester	COM00386	Solid Waste, Permit By Rule
Scenic Oaks 1st Addition	Not provided	C00005735	Construction Stormwater Permit
Scenic Oaks 1st Addition	Not provided	C00005735	Construction Stormwater Permit
Willow Creek Golf Course	1700 48th St SW, Rochester	Multiple Activities	Multiple Activities

Section 8: Environmental Impact of Preferred Route (Minn. R. 7852.2700)

For the purposes of impact analysis, the applicant has identified an anticipated alignment (that is, right-of-way) for the pipeline that is located within the Preferred Route. The following sections identify potential impacts for the anticipated alignment.

Human Settlement

A. Human Environment

The principal long-term impact of the pipeline is its support of the expected growth in population and energy demand due to the development of the Mayo Clinic as a Destination Medical Center. The additional capacity that the pipeline adds to MERC's Rochester distribution system will allow MERC to meet the needs of an additional 9,407 customers that it projects will become customers in the next ten years as a result of the DMC Plan.

As illustrated in Figure 2, the proposed Project will traverse an area of active sand and gravel mining between MP 5.8 and 6.7. While the active portions of the mining sites have been avoided, there is potential that future expansion of the mining sites could be affected by the proposed Project. MERC will coordinate with mining companies should future expansions be identified.

Near the southern end of the Project (MP 11.6 to 13.07), the anticipated alignment crosses a portion of the City of Rochester that is zoned for commercial development. MERC will work with the City to identify the best location for the anticipated alignment as it crosses these parcels.

The Project's construction will have short-term impacts on the human environment. Construction of the pipeline may temporarily affect transportation systems. MERC will construct the pipeline across paved roadways using boring or HDD methods to avoid disruptions to vehicular traffic and physical impacts on road beds. Unpaved roadways will be crossed by boring. Table 10 provides a list of the roads that will be crossed.

Movement of workers, equipment, and materials from contractor and pipe storage yards to the work sites also could result in short-term impacts on transportation systems. Locations for storage yards have not been identified; MERC will work with local road authorities to identify sites that minimize impacts. MERC anticipates that road congestion associated with construction will increase during peak hours, but congestion is not expected to be significant.

Construction activities and equipment will generate short-term and intermittent noise, affecting nearby residences on a short-term basis while construction equipment is operating. Additionally, temporary impacts to the visual environment will occur during construction when residents and travelers view large construction equipment, tree and vegetation clearing, and exposed soil areas.

The temporary increase in traffic from construction equipment and employees, potential dust and soil on the roads from construction, and noise levels from construction will result in some increased risk to the public on the roads. Best Management Practices (BMPs) will be implemented to minimize noise, and dust and soil on the roads.

B. Land Cover and Land Use

Land within the construction right-of-way/temporary easement and extra temporary workspaces will be impacted during construction. The construction is expected to last about 12 to 16 months.

Table 11 below presents the land cover categories that will be temporarily impacted by project construction, as well as the land cover categories within the permanent right-of-way. Figure 3 identifies the project phases.

Table 11: Land Cover Classification within the Preferred Route Construction Right-of-way/Temporary Easement and the Permanent Right-of-way

Land Cover Category	Construction Right-of-way/Temporary Easement		Permanent Right-of-way	
	Acres	Percent	Acres	Percent
Agricultural Land	76.6	48	42.9	54.0
Maintained Tall Grasses	2.9	2	1.5	1.8
Forest	8.2	5	3.4	4.2
Shrubland	0.2	<1	0.1	0.1
Old Field - Grassland with scattered trees and shrubs	16.3	10.	8.3	10.4
Wetland - Emergent Vegetation	1.3	1	0.7	0.8
Dry Tall Grasses	31.2	20	17.3	21.8
Open Water	0.1	<1	0.1	0.1
Impervious Lands	22.0	14	5.2	6.6
Totals	158.8	100	79.5	99.8

Source: Minnesota Land Cover Classification System

The primary permanent impact of construction will be the removal of trees and shrubs from the construction right-of-way/temporary easement and extra temporary workspaces. Trees and shrubs within temporary construction areas will regenerate over time. The permanent right-of-way will generally be maintained in an herbaceous land cover. Some of the land cover types in the permanent right-of-way will be permanently altered, whereas others will be only temporarily affected.

Pipeline construction will temporarily disturb about 76.6 acres of agricultural lands, or 48 percent of the total land affected. Impacts to agriculture are further discussed in the Agriculture Mitigation Plan included in Appendix E. Following construction and restoration, agricultural activities will be allowed to resume along the permanent right-of-way, therefore the impacts on the agricultural land use will be temporary.

Approximately 1.3 acres of wetland with emergent vegetation and 0.1 acres of open water will be crossed by pipeline construction. Impacts on these wetlands will be minimized by implementation of BMPs. Impacts on surface waters and wetlands are discussed in the next section.

Approximately 50.4 acres of grasslands will be disturbed by pipeline construction. Open grasslands will be temporarily disturbed during grading, trenching, and backfilling. Once construction is complete, these lands will be restored and revegetated.

During construction, approximately 8.4 acres of forest and shrubland will be impacted. The impacts on 3.5 of those acres will be permanent. Following construction, the construction right-of-way/temporary easement and extra temporary workspace will be revegetated with a native seed mix. The permanent right-of-way will be maintained as grassland or cultivated land.

Approximately 22.0 acres of impervious lands (mostly roads) will be crossed by the Project. Construction will avoid direct impact on roads by using boring or HDD construction methods.

Both short-term and long-term impacts on residential and commercial areas may result from construction and operation of the Project. These include temporary disturbances associated with construction, and encumbrance of property for future uses within the permanent right-of-way. Temporary construction impacts on residences and buildings could result from increased noise levels or dust generated by construction equipment and personnel. Every effort will be made to bore or HDD roadways and driveways to minimize construction impacts. New permanent structures will be precluded from the permanent right-of-way during operation of the proposed Project. Table 12 provides a summary of residences and commercial properties proximate to the proposed Project.

Table 12: Residences and Commercial Buildings Located near the Preferred Route

Mile Post	Type (Residence or Commercial)	Within 50 feet of Construction Right-of-way/Temporary Easement	Within 100 feet of Construction Right-of-way/Temporary Easement
9.5	Group Home	2	3
11.5	Residence	0	1
4.5	Residence	0	1
1.1	Residence	0	1

It is not anticipated that any homes or businesses would be displaced by the Project.

Natural Environment, Public and Designated Lands

Impacts on the natural environment will be associated with construction of the proposed Project. In most instances, this process involves digging a trench using heavy earthmoving equipment, storing spoils temporarily onsite, installing pipeline segments within the trench, backfilling the trench, and using an appropriate seed mix to revegetate disturbed soils where appropriate. Along some portions of the anticipated alignment, however, HDD or bores will be used to avoid surface impacts.

A. Geology

Construction may encounter shallow bedrock. Depth to bedrock is generally less than 50 feet throughout the proposed project area. Impacts on the underlying bedrock may occur when drilling is required to install the pipeline between MP 11.4 and 11.6, where bedrock may be at or near the surface.

Karst features are well documented within Olmsted County and the proposed project area. The anticipated alignment is located adjacent to an area of mapped sinkholes. It is likely in this area, Section 29 (T106N, R14W), that unmapped sinkholes and underground cavities may exist. Subsurface excavation in this area and potentially any area within the proposed project area with shallow carbonate bedrock may uncover or exacerbate karst features. If a sinkhole is encountered, MERC will reroute the pipeline within the approved route buffer to avoid crossing the sinkhole.

B. Soils

Temporary impacts on soils resulting from the construction can include soil compaction, soil erosion, introduction of rock into the top soil, poor vegetative regrowth following construction, and loss of soil productivity resulting from the mixing of topsoil. MERC will minimize these potential impacts through the implementation of BMPs. Erosion control plans will be developed in compliance with the MPCA Construction Storm Water Discharge Permit. Mitigation measures will include but are not limited to:

temporary and permanent erosion controls, topsoil segregation, compaction alleviation, removal of excess rock from topsoil, and restoration of agricultural drainage systems. Following construction, MERC will, to the extent possible, revegetate uncultivated areas disturbed by the Project to their preconstruction condition in accordance with applicable permit requirements and landowner agreements.

C. Vegetation

In most instances, permanent impacts on vegetation will be minimized or completely avoided by locating the anticipated alignment in existing agricultural fields (approximately 54 percent of the overall length of the anticipated alignment). Permanent impacts on vegetation will mostly be restricted to the forested portions of the anticipated alignment and to the sedge meadow located between MP 12.8 and 13.0. Permanent impacts on this sedge meadow will be avoided by directional drilling underneath this feature.

Permanent impacts on the forested portion of the anticipated alignment, approximately 3.4 acres, will result from tree clearing and conversion to an open habitat type. The potential for tree clearing impacts was minimized by locating the anticipated alignment along existing rights-of-way and generally avoiding forested areas. After construction, newly established woody vegetation will be periodically cleared from the permanent right-of-way as part of regular maintenance activities.

Because naturally occurring vegetation (native or invasive) in agricultural fields is removed in the course of crop cultivation, there will be no impacts on such vegetation as a result of locating the anticipated alignment in existing agricultural fields. Impacts on naturally occurring vegetation in grassland habitats will be temporary in nature. Disturbed areas will be reseeded upon completion of construction using a MnDOT approved seed mix. If vegetation is disturbed in a wetland or other regulated habitat, then the revegetation seed mix will be approved by the appropriate agency.

D. Wildlife Habitat

Wildlife habitat is defined as the natural environment in which a species or group of species lives. Wildlife habitat along the Preferred Route is divided into three categories: aquatic, woodland and grassland. These categories are defined by the land cover classifications listed in Table 12. Aquatic wildlife habitat consists of the open water and wetland land cover classifications. Woodland wildlife habitat consists of the forest and shrub land cover classifications. Grassland wildlife habitat consists of the maintained tall grasses, old field and dry tall grasses land cover classifications. Both agricultural land and impervious lands were not included as wildlife habitat as both provide limited habitat for wildlife. Permanent impacts to wildlife habitat will result from tree clearing and the loss of forested wildlife habitat, although these impacts would be minimal (approximately 3.5 acres). Impacts to aquatic and grassland wildlife habitats will be the result of construction activities and temporary in nature.

E. Wildlife and Fisheries

Impacts on wildlife and fisheries will be associated with construction activities and mostly temporary in nature. These impacts have been minimized by locating the anticipated alignment along existing rights-of-way and/or in agricultural fields. Permanent impacts on wildlife will be associated with forested habitat loss and restricted to those species that depend on arboreal habitats, such as some species of birds, squirrels, and bats. Permanent impacts on wildlife will be restricted to individual members of a species and not cause a trend towards state or federal listing of the species. In addition, tree clearing will be conducted between October 1 and March 15. Conducting tree clearing during this time frame will avoid disturbance of arboreal habitats during the breeding season, which could lead to takings of

breeding migratory birds or northern long-eared bat maternity colonies, which are protected by federal law.

Impacts on fisheries and other aquatic species will be avoided by using HDD in conjunction with erosion and sediment control BMPs to prevent sediment from reaching waterbodies at all stream crossings.

F. Threatened and Endangered Species

Impacts on federally listed species will be avoided because the anticipated alignment will not cross over habitat for prairie bush clover and Leedy's roseroot. Impacts on individual northern long-eared bats will be avoided by completing tree clearing activities during the winter months when this species is in hibernacula. But individual northern long-eared bats may experience habitat loss as a result of forest habitat removal. Approximately 3.4 acres of forest will be converted to open habitat.

Impacts on valerian, elktoe, and ellipse will be avoided because native prairies are not crossed by the anticipated alignment, and all waterbodies will be crossed by HDD. Additionally, erosion and sediment control BMPs will prevent sediment from reaching waterbodies.

Although no records of glade mallow occur within the anticipated alignment, a narrow band of floodplain forest is present at the Zumbro River crossing which could serve as suitable habitat for this species. Other areas of potential habitat for this species would be at the Cascade Creek crossing and the Willow Creek crossing. To ensure direct impacts on this species are avoided, field surveys for this species will be conducted by a qualified biologist at the Cascade Creek Crossing, the Zumbro River Crossing, and the Willow Creek Crossing. Surveys will be conducted prior to construction and in consultation with DNR. Impacts on the contour of the streambanks and stream/river channels will be avoided by using HDD to install the pipeline beneath these features. HDD installation would also mitigate indirect impacts on glade mallow that could result from removing the floodplain or riparian forest at these crossing locations and replacing them with an open habitat and sunnier growing conditions.

Loggerhead shrikes have been documented in grassland habitats in the vicinity of the proposed Project. Although upland prairies are avoided, this species may occur along the anticipated alignment. To ensure impacts on this species are avoided, a qualified biologist will conduct surveys for loggerhead shrikes in late May or June prior to construction, using a transect method similar to those utilized during the 1995 Loggerhead Shrike Survey conducted by the DNR (Etter 1996).

G. Water Resources – Groundwater

The majority of the anticipated alignment is located in areas classified as having high to very high sensitivity to water pollution. Travel times for surface contaminants to reach a drinking water aquifer may range from hours to years. A prevalence of karst features speeds up travel times, since enlarged fractures and conduits allow for faster movement than through open pore space. Spills or leaks of fuels or hazardous materials associated with construction or maintenance equipment are more likely to impact the groundwater due to these faster travel times. MERC will implement a Spill Prevention, Containment and Countermeasures Plan to prevent spills, and minimize impacts in the event of a spill.

H. Water Resources – Surface Waters and Wetlands

Direct impacts on streams and waterbodies will be avoided by using HDD to cross these features, or by routing the proposed Project to completely avoid them, if possible.

While the HDD method will avoid many direct impacts on a waterbody (i.e., bank clearing, bed disturbances), there is the possibility that an inadvertent release (a "frac-out") of drilling fluids could occur within the waterbody. This occurs when the drilling fluid (composed mostly of water and

bentonite clay) finds pathways through natural fissures in the soil and rock along the drill path. Impacts on waterbodies from a frac-out are primarily limited to increased turbidity. Soil borings will be conducted at each HDD stream crossing site to determine the suitability and design parameters for the HDD. If these investigations determine that there could potentially be a problem using the HDD method, an alternate environmentally acceptable method will be specifically designed for the crossing. In addition, containment, response, and clean-up equipment will be available at the HDD location for an appropriate response to a frac-out.

According to National Wetland Inventory data, approximately 2.0 acres of emergent wetland and 0.1 acre (approximately 2,614 square feet) of forested wetland occur within the permanent right-of-way (Table 9). To the extent practical, impacts on wetlands will be avoided by using HDD to install the pipeline underneath wetlands, developing access paths around wetlands, and/or using matting for travelling over wetlands during construction. If wetland vegetation is disturbed, it will be reseeded using a seed mix approved by the permitting agencies. The wetland located between MP 12.8 and 13.0 will be crossed with HDD and thus no impacts are anticipated. The hydrology of wetlands will remain intact upon completion of the proposed Project. Further evaluation of potential wetland impacts will be conducted as the design moves forward, and if impacts are unavoidable MERC will work with regulatory agencies to obtain the necessary wetland permits.

Two fens were identified over 0.5 mile away from the anticipated alignment and the route alternates. However, one fen is located within the buffer identified for the Proposed DRS (see Figure 5). The Marrion 30 fen is located just north of 45th Street SE and west of County Road 1. MERC will work with Minnesota Department of Natural Resources staff to identify an appropriate location for the DRS so that direct and indirect impacts to the fen will be avoided.

I. Federal, State, and County Recreational Areas

The Rochester Game Refuge will be temporarily impacted during construction of the pipeline. The right-of-way will cross about 12.0 acres of the game refuge listed for small game hunting, including geese during the designated season. Temporary impacts will be localized disturbances including noise, dust, and visual intrusions associated with construction activities that may result in wildlife avoidance of the area within the Rochester Game Refuge.

The proposed Project is located about 0.5 mile from Willow Creek Golf Course and users may experience a temporary increase in traffic during construction. No long-term impacts on golf courses and snowmobile trails are anticipated from pipeline construction or operation as the Project does not cross the nearest golf course and is about 1.5 miles from the nearest snowmobile trail.

Recreational activities on rivers and creeks (that is, fishing and boating) may be affected during pipeline construction. Impacts on river users will include construction noise, which will be temporary and short-term. MERC will coordinate with the DNR and local governments to minimize potential recreational impacts at the river crossings.

Permanent impacts on existing recreational opportunities within and near the proposed Project will be avoided because the anticipated alignment will not cross these areas.

J. Air Quality

During the construction phase there would be intermittent and scattered exhaust emissions from construction equipment, both on-road and non-road. These types of emissions occur routinely in metropolitan areas and do not cause air quality problems. During excavation, trenching, and other earthmoving operations, there is a potential for windblown fugitive dust emissions. Such emissions can

be effectively mitigated by watering exposed soils, especially unpaved driving surfaces, on an as-needed basis.

There will be no significant impact on air quality during operation of the pipeline. Minor emissions will occur due to exhaust from vehicles used during occasional routine inspections and maintenance activities. An air quality permit is not required for the proposed Project.

K. Hazardous Wastes

A desktop review of listed sites located within 500 feet of the anticipated alignment was conducted using the MPCA's "What's in my neighborhood?" online database. No listings were identified in the search area that would likely impact construction or operation of the proposed Project.

Lands of Historical, Archaeological, and Cultural Significance

A Phase Ia Report was completed to provide a general overview of the environmental and cultural contexts and includes 1) resources identified during the file search and map review; 2) precontact and historic site potential; 3) site types that may be encountered; and 4) survey recommendations. The purpose of the Phase Ia was to determine the location of previously recorded historic properties and surveys (archaeological surveys, archaeological sites, and architectural structures), and to assess the potential for the presence of as yet unrecorded archaeological resources. The Phase Ia report is included in Appendix D. The Phase 1a Study Area focused on the preferred and alternative routes and included a 1-mile buffer. The following provides a summary of potential impacts of the Project.

A. Precontact Site – Potential Impacts

The Phase Ia Literature Search revealed one previously identified archaeological site (21OL0023) within the Phase 1a Study Area. Site 21OL0023 consists of a single Durst Stemmed projectile point associated with the Prairie Archaic Tradition. The site has not been evaluated for National Register of Historic Places eligibility and it does not intersect the anticipated alignment.

The report *2010 Archaeological Reconnaissance Survey of Olmsted County, Minnesota* provides an overview of all precontact sites identified in the county (as of 2010), additional site types that may be encountered, and probable site locations (Constance and Kolb 2011). According to the report, information and predictive modeling were compiled using existing Olmsted County site files, pedestrian survey, and shovel testing in specific locations throughout the county (MnDOT Mn/Model, and a geomorphological study). While field survey of the proposed project area was not completed for this Route Application, the information presented in the report provides valuable information about potential precontact site types that may be encountered and their probable locations.

Previously recorded precontact archaeological sites within Olmsted County range from the Paleoindian Period to the Woodland Period. Paleoindian sites within Olmsted County include a single Clovis point with additional lithic materials (21OL0039), a cache of bifaces and flakes likely associated with Clovis (21OL0044), and an isolated lanceolate point (21OL0043). These three sites are situated on terraces along three different drainages and in proximity to waterway junctions. In addition, geomorphological testing suggests that archaeological deposits may be identified on low terraces, in vertical accretion alluvium on the floodplains, and in organic sediment in wetlands (Constance and Kolb 2011).

Previously identified Archaic sites within the county are also found along drainages and waterways. Available data also suggests that in addition to being proximal to water, Archaic sites appear to lie within areas that may not have experienced regular prairie fires. These sheltered areas would have supported trees, edible plants, and attracted wildlife; resources that would have provided raw materials and food

sources, thereby attracting people. It is suggested that sheltered areas are situated to the east of landforms and waterways and, as the wind typically blows from west to east, the landform/water would provide a natural firebreak, thereby protecting areas to the east (Constance and Kolb 2011). The previously recorded Woodland sites within Olmsted County are also located adjacent to waterways. In similar fashion to the previously recorded Archaic sites, the previously identified Woodland sites are also near junctions with another stream or creek. While mounds have been recorded within Olmsted County, none have been field verified by a qualified archaeologist (Constance and Kolb 2011).

Based on the Olmsted County report, previously identified precontact sites are relatively small and many consist of single artifacts. Artifact counts appear generally low, with no site containing more than 200 artifacts and most having less than 20. This suggests that precontact sites within Olmsted County may be associated with resource procurement and temporary encampment as opposed to long-term habitation. As the Southeast Riverine Archaeological Region contains outcrops of high quality flaking materials, it is not surprising that most raw materials identified at sites in Olmsted County are local. In adjacent counties, large village sites have been identified and recorded suggesting that precontact peoples may have entered the Olmsted County area to retrieve raw materials and resources, but did not necessarily stay to set up long term habitation areas (Constance and Kolb 2011).

Based on the available data, Paleoindian, Archaic, and/or Woodland sites may be encountered within the Phase 1a Study Area. Site types may include lithic scatters and artifact scatters that may be associated with raw material procurement and short-term habitation. Sites in Olmsted County appear to be concentrated along drainages, and as the anticipated alignment transects multiple drainages, streams, and rivers there is a high probability of encountering precontact archaeological sites in these areas. In addition, the alluvial settings of these stream/river crossings may be conducive to burying and preserving archaeological deposits, indicating there is potential for encountering deeply buried archaeological sites. Finally, precontact sites may be identified along uplands in areas with steep topography and deeply incised rivers.

B. Historic Site – Potential Impacts

The Phase 1a Literature Search did not reveal any previously recorded historic period archaeological sites. The General Land Office maps revealed many natural features, but did not reveal any cultural resources. A review of early plat maps (1896 and 1914) identified trails, roads, rail lines, and multiple structures. Structures included individual residences and farmsteads as well as commercial properties, religious facilities, and educational facilities.

Historic archaeological properties tend not to follow the same patterns of distribution as other resources since environmental, engineering, and/or socio-cultural values that restrict other properties do not apply to these properties. In general, these types of properties tend to be located along water, railroad, or road transportation routes. Their documented presence along existing railroad or transportation routes may be coincidental, as this is where most historic resource surveys have been conducted. Historic archaeology properties mainly include abandoned farmsteads, abandoned homes, abandoned businesses, and facilities related to railroads. The time periods represented by these properties may run from the Contact period through the modern industrial development period of the 1940s, 1950s, and 1960s. Although no previously identified historic archaeological sites have been identified and the number of previously identified architectural properties is relatively low, there is a moderate to high potential to encounter historic resources. MERC will conduct a cultural resource survey of the selected route to identify any unknown resources, and will work with the Minnesota State Historic Preservation Office to address avoidance and possible mitigation requirements.

C. Architectural Property – Potential Impacts

The Phase Ia Literature Search identified 14 previously inventoried architectural structures. Structures include farmsteads and individual buildings associated with farmsteads and homesteads. None of the previously inventoried architectural structures have been evaluated for National Register of Historic Places eligibility, and none intersect the anticipated alignment.

Architectural properties, also known as historic standing buildings and built structures, can be found wherever conditions are suitable (as in the case of houses and homesteads on higher elevation sites and sites suitable for agriculture), or in areas where structures were necessary (such as a bridge crossing a river or stream, or a road through a swamp). As such, the abundance of architectural properties can only be broadly described. In general, these types of properties tend to be located in areas that have a built environment already, and/or are located adjacent to road, railroad, and water transportation routes. Architectural properties mainly include farmsteads, homes, businesses, civic facilities, religious facilities, and industrial facilities. The time periods represented by these properties run from the early Euro-American settlement period through the modern industrial development period.

Resources of concern that may be encountered within the Phase 1a Study Area include:

- Archaeological sites on river terraces, the interfluvium between major drainage systems, and near springs and spring fed streams
- Archaeological sites correlated with lithic resource procurement
- Archaeological sites on uplands in areas with steep topography and deeply incised rivers
- Deeply buried archaeological deposits
- Historic sites and/or structures associated with the railroad
- Historic sites and/or structures associated with early settlement of the area
- Historic and/or structures associated with the City of Rochester

Once an Area of Potential Effects is formally defined, the applicant will complete a Phase I archaeological survey and standing structures survey of the Area of Potential Effect, along with evaluation of archaeological resources or standing structures receiving impacts, and possible mitigation, if applicable, of significant resources that are adversely affected.

As the proposed Project transects several streams and rivers, the alluvial settings of the stream/river crossings may be conducive to burying and preserving archaeological deposits, indicating there is potential for encountering buried archaeological sites at these locations. A geomorphological assessment may be necessary to identify these sites.

All work would be conducted in accordance with *the SHPO Manual for Archaeological Projects in Minnesota* (Anfinson 2001), and the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (National Park Service 1983).

Economics

Economic benefits to the local economy will be realized during construction resulting from the influx of labor workforce. These benefits include material expenditures, workforce lodging, fuel sales, grocery sales and restaurant expenditures. Demand for housing and public services from the non-local workers will be incremental and small. Additional local benefits include easement payments, permit fees, and property tax revenues. Construction will create temporary jobs for both local and non-local workers. Operation of the pipeline is not expected to employ any additional permanent staff.

Over 76 acres of agricultural land will be temporarily impacted by the proposed Project. No organic farms will be crossed. Land along the right-of-way and construction workspace will not be able to be cultivated during construction. MERC will negotiate easements with affected landowners along the anticipated alignment to mitigate any temporary impacts on agricultural production. Following construction, agricultural land can resume cultivation along the right-of-way and no permanent impacts are expected. The draft Agricultural Mitigation Plan is included in Appendix E.

The permanent right-of-way will cross areas in Olmsted County with unique geological features that contain St. Peter Sandstone that is mined as a resource. Mining will not be able to occur within the permanent right-of-way. The proposed Project is not expected to have negative impacts on other portions of the local economy.

Pipeline Cost and Accessibility

MERC estimates the total Project cost to be about \$44,000,000 (see Table 1 for more information on costs). Operation and maintenance costs for the Project will be nominal for several years, since the pipeline will be new and minimal vegetation maintenance will be required. The annual operating and maintenance cost for the Project is expected initially to be approximately \$5,000 per year.

Pipeline access will be required for typical operation and maintenance activities, which will include pipeline patrols, cathodic protection reads, and location requests through Gopher State One-Call system. MERC will use existing roads to access the right-of-way during construction and operation of the pipeline.

Use of Existing Rights-of-ways

Existing rights-of-way will be paralleled where appropriate. The anticipated alignment will parallel 0.64 miles feet of existing electric distribution lines, 1.61 miles of existing oil product pipeline, and 5.55 miles of existing roadway, for a total of 7.8 miles of paralleling.

The exact extent of right-of-way sharing has not been determined and will depend on negotiations with adjacent utilities.

Mitigation of Environmental Effects

Sections 10 and 11 provide a summary of actions MERC will undertake to minimize and mitigate Project impacts. Right-of-way preparation, construction, cleanup, and restoration have been designed in accordance with the requirements outlined in Minnesota Rule 7852.3600.

MERC believes that the proposed construction and operation methods, along with the regulatory oversight of the Commission through its Route Permit for the Project, as well as requirements of the local, state and federal agencies listed in Section 13 of this application, will mitigate the effects of the proposed Project on the human and natural environments.

Cumulative Potential Effects

MERC has designed the proposed Project to accommodate the City of Rochester's need for increased natural gas service because of projected growth in customer demand. The proposed Project has been designed for a maximum design capacity of 151,000 mcf/d. The pipeline will be constructed and pressure tested for operation at the maximum design capacity.

MERC is not aware of any plans for interstate pipeline expansion other than NNG's expansion of the capacity of its interstate transmission pipeline in the Rochester area. The NNG project will be under

FERC jurisdiction, and it is MERC's understanding that NNG will complete an environmental analysis of its pipeline expansion project as required by federal regulations. At this time, the impacts for the potential NNG project have not been identified.

Applicable Policies, Rules and Regulations

The City of Rochester does not have any applicable policies, rules and regulations applicable to natural gas pipelines. Olmsted County land use regulations (Article X, Section 10.40), which include ordinances adopted under Minnesota Statutes, section 299J.05, are listed below. Permits will be needed from Cascade Township, City of Rochester, Olmsted County and MnDOT.

A list of known federal, state, and local approvals for construction of the proposed Project is presented in Section 7852.3000 of this application. MERC will work with all regulatory agencies with permitting authority over the proposed Project, and will satisfy all permit requirements of those agencies. MERC anticipates that compliance with those permits will be a condition of any permit issued by the MPUC.

Olmsted County Land Use laws (Article X, Section 10.40):

- **Pipeline Depth Requirements:** Any pipeline constructed or operated in this County shall be buried to meet the following minimum level cover requirements, unless waived according to the procedure of Section 10.40(G) of this zoning ordinance.
 - Four and one-half (4 1/2) feet minimum beneath the authorized depth of the right-of-way or any drainage facilities under the jurisdiction of this County.
 - Four and one-half (4 1/2) feet minimum beneath the right-of-way of any street, road, or highway under the jurisdiction of any political subdivision.
 - Four and one-half (4 1/2) feet minimum beneath cultivated agricultural land in this County.
 - Vertical distance between field drainage tile and the pipeline shall be at least one (1) foot.
 - Five (5) feet minimum beneath state highway right-of-way.
- **Pipeline Construction Practices:** The following construction practices shall be observed by any person constructing a pipeline in this County:
 - Storage of Equipment and Material During Construction: All materials and equipment must be stored and parked within the bounds of pipeline right-of-way so as to minimize interference with on-going agricultural operations or as set forth in the "Landowner's Grants of Easement".
 - Preservation of Top Soil: As set forth in "Landowners Grant of Easement".
 - Prevention of Erosion: As set forth in "Landowners Grant of Easement".
 - Protection of Tile Lines: As set forth in "Landowners Grant of Easement".
- **Location of Associated Facilities:** Location of all above ground facilities associated with the operation of a pipeline, including but not limited to pump stations, shall be consistent with the following criteria:
 - Associated facilities such as pump stations, check valves, and access points shall be required to be located so as to minimize interference with productive use of cultivated agricultural land, irrigation, etc., by placing in corners of fields, on fence lines, etc.;
 - To minimize interference with existing roads, highways.
- **Waiver of Depth Requirements:** Waiver of depth requirements shall be permitted consistent with Minnesota Statutes Section 116, I.06, Subdivisions 2 and 3.

- o Minnesota Statue 216G.07 (updated from 116 in 1999), Subdivision 2, a waiver of the minimum depth of cover requirement of subdivision 1 shall be effective only if the waiver:
 - (a) is separately and expressly stated in the easement agreement and includes an express statement by the grantor acknowledging that the grantor has read and understood the waiver;
 - (b) is printed in capital letters and in language understandable to an average person not learned in law; and
 - (c) is separately signed or initialed by the grantor.
- o Minnesota Statue 216G.07 (updated from 116 in 1999), Subdivision 3 Any political subdivision authorized by law to approve the use of the right-of-way of any public drainage facility or any public street or highway for a pipeline may:
 - (1) waive the minimum depth of cover requirement of subdivision 1 if the depth of cover or other means approved for the use of the right-of-way adequately protects the health and safety of the public; or
 - (2) adopt and enforce by ordinance or resolution reasonable rules or regulations establishing a greater depth of cover than the minimum required in subdivision 1 and other measures for protection of public roads and drainage facilities under their jurisdiction.

Section 9: Evidence of Consideration of Alternative Routes (Minn. R. 7852.3100)

MERC evaluated system options as well as route alternatives prior to identifying the Preferred Route. Project need, economic feasibility, and environmental impacts were all considered. The primary system option considered was the “no action alternative,” i.e., to maintain MERC’s TBS system as it currently exists. The system could continue to operate for the short-term, with scattered improvements that would only meet marginal increases in customer demand. This option cannot, however, provide firm reliable service to meet MERC’s projected increase in demand over the mid- to long-term. The proposed Project was chosen as the best solution because it increases the capacity of MERC’s distribution system to meet a projected 19 percent increase in demand over the next ten years (which translates to a 1.8 percent average annual increase in demand), while improving MERC’s management of the supply and balance of natural gas on its TBS system.

As illustrated in Figures 13 and 14, MERC reviewed a large number of potential route segments. The analyses considered potential social and environment impacts for each segment, consistent with Minnesota Rules 7852.1900 Subpart 3. Many route segments were considered and rejected because they resulted in greater impacts than those chosen to be carried forward.

In addition to the Preferred Route, the routing process identified two alternative route segments that MERC considered viable. The alternative routes are shown on Figure 15. A third route segment alternative, 60th Avenue SW, and a Route Alternative Buffer were identified as a result of public input. Alternatives are shown in Figure 13 (detailed view in Figure 6). Environmental impacts for the Preferred Route and alternative route segments were quantified and compared, and summarized in Table 13. While the alternative segments provide viable opportunities for routing the pipeline, they were not chosen as the Preferred Route because they result in greater environmental impact, proximity to homes and businesses, and construction constraints.

BP Pipeline Alternative Route Segment

The BP Pipeline Alternative is depicted on Figure 6, pages 1 and 2. This alternative departs from the Preferred Route and follows the existing BP pipeline beginning at MP 3.0 (Section 1 T106N-R15W), and follows it southeast to 60th Ave SW where it rejoins the Preferred Route at MP 6.7. The alternative route is shorter, but would have more impacts on wetlands and forested land than the equivalent portion of the Preferred Route.

50th St SW/48th St SW Alternative Route Segment

The 50th St SW / 48th St SW Alternative is depicted on Figure 6, pages 3 and 4. This alternative continues following the existing BP pipeline southeast at MP 8.3 (Section 30 T106N-R14W) to 50th St SW. The alternative then follows 50th St SW to the east, CSAH 8 to the north, 48th St SW to the east, and 11th Ave SW to the north where it rejoins the Preferred Route at MP 11.6. The alternative route segment is longer, is near more homes, and would require more tree clearing than the equivalent portion of the Preferred Route.

60th Avenue SW Alternative Route Segment

The 60th Avenue SW Alternative is depicted on Figure 6, page 3. This alternative departs the Preferred Route at MP 6.6 (Section 19, T106N, R14W and Section 24, T106N-R15W) and follows 60th Avenue SW south, and then 40th Street SW east where it rejoins the Preferred Route at MP 8.3. The alternative route is longer, but would reduce the length of private/agricultural land crossing. The alternative route

would cross more parcels, is located closer to more residences, and have greater impacts to agricultural land and forest land than the equivalent portion of the Preferred Route.

Route Alternative Buffer

The Route Alternative Buffer is depicted on Figure 6, page 4. The buffer begins at MP 11.4 and extends to MP 13.0, including portions of Township 106 North, Range 14 West, Sections 22 through 27. This segment of the project would be constructed between 2019 and 2022. As a result, there is some uncertainty about potential development that may need to be accommodated by the Project. MERC will work with the City and local landowners to identify the final route within the Route Alternative Buffer.

Table 13: Comparison of Alternative Route Segments to the Preferred Route based on anticipated 50 foot Right-of-way

	BP Pipeline Alternative	Preferred Route	50th St/ 48th St Alternative	Preferred Route	60th Avenue SW Alternative	Preferred Route
Length (feet)	12,847	16,583	21,411	17,299	8,109	6,322
All Structures or Residences within 200 feet of anticipated right-of-way	2	5	37	5	10	1
Parcels Crossed	16	17	29	34	15	8
National Wetland Inventory Wetlands Crossed (feet)	611	227	28	0	123	171
Agricultural Land Crossed (feet)	10,133	9,646	8,298	9,819	4,746	510
Forest Land Crossed (feet)	440	104	4,227	931	1,284	559

After reviewing environmental impacts as well as construction constraints, following 70th Ave SW along the Preferred Route was chosen over paralleling the existing BP Pipeline to avoid additional impacts to forest lands and wetlands and proximity to homes southeast of CSAH 25.

For the second alternative, MERC concluded that crossing a greenfield area along the Preferred Route was chosen over following 50th/48th St SW to reduce impacts to forest lands and wetlands and proximity of homes on 48th St SW and 11th Ave SW.

For the 60th Avenue SW alternative, MERC believes either alternative would be acceptable. The Preferred Alternative has less impact, but may be more difficult to construct and maintain because of its proximity to the BP pipeline.

Additional Alternative Route Segments Considered

MERC followed an intensive routing process to identify the best practical route for the proposed Project. First, a study area was developed that included an approximate 61-square-mile area to the west and south of the City of Rochester (see Figures 13 and 14). Available electronic data and consultation with local, state, and federal agencies were used to identify opportunities and constraints within the study area. Opportunities include land uses that are compatible with pipelines, such as existing utilities or roads that can be paralleled. Constraints include land uses that are less compatible with pipelines, such as environmentally sensitive areas and residential development. Route segments were then developed that maximized colocation with compatible land uses and avoided constraints. Route segments were linked together to identify potential routes. MERC then conducted a windshield review to identify potential engineering and other undocumented environmental constraints. The Preferred Route maximizes the use of ROW sharing or paralleling while avoiding constraints to the extent practicable. In some instances, the Preferred Route follows section lines rather than existing utilities in order to avoid impacting residential properties.

Section 10: Right-of-way Preparation Procedures and Construction Activity Sequence (Minn. R. 7852.2500)

The standard procedures used to construct a natural gas pipeline are described below, as well as illustrated in Appendix B, Open House Meeting Handout Factsheet. These procedures are typically implemented as part of a single construction train or “spread” that moves in assembly-line fashion over the pipeline alignment. Specialized construction procedures are also described below. MnOPS will monitor compliance with federal pipeline regulations during construction.

MERC estimates that approximately 50 construction employees will be required to complete each segment of the project. Typical equipment used during construction will include, but not be limited to, trackhoes, bulldozers, dump trucks, pick-up trucks, front-end loaders, and roller/compactors.

Marking the Right-of-way

The pipeline alignment and workspace limits will be identified prior to any construction activity. Alignment identification will include marking the centerline of the pipeline at about 100-foot intervals and at points of inflection (PI), that is, points where the route changes direction. MERC will also mark the edges of the construction right-of-way/temporary easement and temporary extra workspaces, sensitive environmental feature boundaries or setback limits, and all known underground facilities. Pipeline locators and other appropriate means, including the state “Gopher one-call” system, will be used to locate underground facilities. Existing permanent survey monuments and reference monuments, if identified within the pipeline construction right-of-way/temporary easement, will be protected against disturbance during construction.

Clearing and Grading

The construction right-of-way/temporary easement will be cleared and graded to provide a relatively flat surface to accommodate construction equipment, while preserving natural drainage to the extent possible. The temporary easement is needed to provide room for maneuvering equipment during pipeline construction. Clearing will be limited to the area that is necessary for installation of the facilities. Vegetation buffers will be left between temporary extra workspace and waterbodies to minimize waterbody impacts (identified on alignment sheets and site-specific stream crossing drawings, if needed). Soil, brush, roots, and rocks removed from the construction right-of-way/temporary easement will be typically windrowed on the outer edge of the construction right-of-way/temporary easement and some may be used for reclamation. Large (merchantable) timber will be salvaged or used for reclamation. Smaller trees and brush may be chipped for use as mulch. Burning of slash, brush, stumps, or other project debris is prohibited.

During grading, topsoil will be stripped and segregated from subsoil that is excavated by placing it in a discrete location within the construction right-of-way/temporary easement. Stripped topsoil will be used after construction to help restore the disturbed areas.

To minimize the potential for erosion from wind and water, MERC will install temporary erosion control devices as specified in the Storm Water Pollution Prevention Plan and as required by applicable National Pollution Discharge Elimination System construction stormwater permit requirements. Temporary erosion control measures will include sediment barriers (e.g., silt fence and straw bale structures) and slope breakers. Temporary erosion control measures will be installed downstream of planned work areas prior to initiating ground disturbing activities. The temporary easement will be restored to its preconstruction condition after construction is complete.

Trenching

Trackhoes and rippers will be used as necessary to excavate a trench to provide the depth of cover requirements of US DOT, MnDOT, and Olmsted County. Where areas of solid rock or rocky soil are encountered, rock saws may be used. Trench spoil will typically be deposited on the non-working side of the right-of-way. Trenching will provide a minimum of 4.5 feet of cover over the pipeline and a minimum of 5.0 feet of cover over the pipeline where it crosses state highways. Pipeline burial depths in areas of surface bedrock will be a minimum of 1.5 feet. Crossing a foreign pipeline will generally require the installed pipeline to be buried at greater depths; a minimum of 1.0 foot of clearance, as required by MERC standard operating and maintenance procedures, when crossing foreign pipelines, drain tile, cables, underground wires (electrical, fiber optic or telephone), or other similar facilities. MERC will also install its pipeline a minimum of 4.5 feet beneath the beds of waterbodies and county drainage facilities.

Pipe Laying

Stringing, bending, welding, and lowering-in the pipeline will typically occur on the working side of the trench. Pre-coated pipe segments will be strung along the right-of-way parallel to the trench, bent to conform to the trench contour, aligned, welded together, and lowered into the trench. The pipe coating typically consists of one coat of epoxy approximately 14-22 millimeters thick. For areas where rock is present, 2 coats are typically specified. For weld joints, the factory epoxy are removed, the pipe welded, and then a layer of epoxy is painted on 20-22 mils thick. For directional drilling and pulling/dragging the pipe through the hole, the pipe is dual coated with a polymer/concrete coating. Welds will be visually and radiographically inspected, and then wrapped to protect against corrosion. Prior to being lowered into the trench, the entire pipeline will be inspected to locate and repair any faults, voids, or anomalies in the pipeline coating, and the trench will be inspected to ensure it does not contain rocks that could damage the pipeline or its coating. If rock conditions are encountered, the trench bottom will first be padded with a layer of rock-free soil (e.g., sand). Padding is not necessary along the entire pipeline and only occurs where rock is encountered. Padding material will be generated on site or will be imported from a local borrow pit or commercial source. No topsoil will be used to pad the pipeline.

Backfilling and Rough Grading

After any required padding of the pipe, the trench will be backfilled using previously excavated materials. The remaining right-of-way will be backfilled to its approximate pre-construction contour, topsoil replaced, seeded, fertilized, and mulched as appropriate to facilitate revegetation of disturbed areas. Permanent erosion control measures will include trench breakers, slope breakers, and revegetation.

Testing

After the trench is backfilled, the pipeline will be pressure-tested to ensure structural integrity in accordance with US DOT pressure testing requirements under Part 192 Subpart J. Hydrostatic, air or intergas, or natural gas are all approved methods of testing. If Hydrostatic testing is used, municipal water from the City of Rochester will be the test water source. MERC will follow Minnesota Pollution Control Agency rules for discharge of hydrostatic test water. Once the hydrostatic test is completed, the test water will be discharged into a straw bale and silt fence dewatering structure placed on the ground surface. The discharge rate of test water will be regulated using valves and energy dissipation devices to prevent erosion. No chemicals will be used during hydrostatic testing or dewatering of the pipeline.

MERC anticipates evaluating the quality of 100 percent of the pipeline's welds. Radiography is the most commonly used non-destructive testing method for such inspection. The principle is that a source of radiation is directed toward the inspected object. A sheet of radiographic film is placed behind the object. The setup usually takes a few minutes, the exposure 1-10 minutes, and film processing about 10 minutes.

Cleanup and Restoration

Litter would be removed from the construction site on a daily basis.

After the pipeline has been installed, backfilled, and successfully tested, the right-of-way, extra workspaces, and other disturbed areas will be graded to its approximate pre-construction contour, topsoil replaced, seeded, fertilized, and mulched as appropriate to facilitate revegetation. Construction debris and any remaining trash will be taken to an approved disposal area. Work areas will be restored as nearly as practicable to their preconstruction condition, and erosion control measures such as installation of permanent slope breakers, seeding, and/or mulching, will be implemented.

Aboveground Pipeline Facility Procedures

Pipeline markers and cathodic protection test lead stations will be located along the length of the pipeline. These markers and stations will generally be located at regular intervals and at road crossings within the permanent right-of-way. According to Olmsted County Zoning Ordinances in Article X, Section 10.40, these markings should be located in corners of fields and on fence lines. MERC will work with the City of Rochester to determine if they have different requirements than those outlined for Olmsted County.

Construction of aboveground pipeline facilities, such as the associated facilities listed in Section 4, will generally occur at the same time as construction of the pipeline. Aboveground facilities will be fenced or otherwise protected and will be maintained to allow permanent access for operation and maintenance. The only visible portion of the cathodic protection facilities after construction will be the cathodic protection test leads, which appear similar to pipeline markers (e.g., posts in the ground) and are often attached to pipeline markers. The test leads will not need to be fenced. Landscape improvements will be installed at the endpoints, as appropriate for the surrounding land use and location.

Road and Railroad Crossings

Road crossings will be completed by bore or HDD in accordance with the requirements of MnDOT and/or Olmsted County, and in compliance with any road crossing permit requirements. Railroad crossings will also be completed by bore or HDD in accordance with the requirements of the affected railroad company, MnDOT, and Olmsted County (where applicable).

Boring will require excavation of a pit on each side of the feature to be crossed, placement of boring equipment in the pit, then boring a straight line hole under the feature that is at least as large as the diameter of the pipe. Once the hole is bored, a prefabricated pipe section will be pushed through the borehole. For long crossings, sections may be welded onto the pipe string just before being pushed through the borehole.

HDD will require two temporary extra workspaces; one on either side of the crossing. The approximate temporary work space needed is not known at this time and will vary depending on the type of equipment needed to construct the pipeline. A prefabricated pipe section will be placed in one workspace on one side of the crossing and a drill rig will be located in the second workspace on the opposite side of the crossing. The drill rig will be used to create a pilot hole under the crossing towards

the prefabricated pipe section, and then larger barrel reams will be used to increase the diameter of the pilot hole to the desired pipeline diameter. The prefabricated pipe section will then be pulled through the hole by the drill rig and welded to the sections on either side of the crossing. Drilling mud, to be supplied by the contractor, will be used to maintain the integrity of the hole, and will be contained in a tank or earthen berm within the workspace so that it does not migrate offsite. No surface water will be used for the drilling mud.

Where roads are crossed, proper barricades, lights, or warning signs will be in place. During road construction, at least one passing lane will be maintained at all times. Roads will not be open-cut. The final depth for each crossing will vary depending on the terrain, length of crossing, and other factors, but will meet MnDOT and/or Olmsted County requirements. Additional workspaces will be determined on a site-specific basis, but in general they will be located adjacent to the road or railroad crossing, and sized to contain the amount of spoil from the boring or HDD operation. Following pipe placement, the trench will be backfilled and the road ditch will be returned to original or better condition. Any damaged culverts will be replaced.

Water Body Crossings

To avoid and minimize impacts on surface waters, all streams and wetlands will be crossed using the HDD or bore method, as described in the section above on road and railroad crossings. Typically the boring occurs 10 feet below the stream bed. All temporary extra workspaces to accommodate the HDD method will be located away from the wetland or waterbody.

Temporary Storage Yard

The Project will require at least one storage yard for equipment and material storage and construction staging. The yard will be approximately 10 acres in size and will be placed on a disturbed site, such as in an agricultural field. The location of the yard site has not been determined. It is anticipated that the location will be identified during right-of-way discussions with affected landowners. The contractor will be responsible for securing the location for the temporary storage yard and securing any necessary permits. The contractor will restore the area to preconstruction conditions.

Section 11: Right-of-way Protection and Restoration Measures (Minn. R 7852.2800)

Subpart 1. Protection

MERC has integrated right-of-way protection measures and adverse impact mitigation strategies into the routing phase of the proposed Project. As the proposed Project moves forward, MERC will continue to work with applicable local, state, and federal agencies and landowners to minimize adverse impacts on the human and natural environment, as indicated in the following sections. Various measures will be implemented to protect the right-of-way and minimize adverse impacts on the human and natural environment. These measures may include but are not limited to: using low impact construction techniques in sensitive areas (HDD); installation of erosion and sediment controls; and restoring the right-of-way to pre-construction conditions to the extent possible. MERC will work closely with landowners and applicable agencies on clean-up and restoration of the right-of-way.

MERC will use inspectors during the construction and restoration phases of the Project to evaluate environmental compliance. Inspection activities will include monitoring compliance with permit requirements; inspection of erosion control and sediment control methods, inspection of topsoil segregation procedures, compliance with wetland construction and mitigation procedures and permits, inspection of dewatering activities, spill response activities, and implementation of restoration plans. Project contract documents will address environmental compliance requirements. The construction contractor will be held responsible for mitigating any adverse impacts as identified by MERC, applicable agencies, and landowners.

A. Human Environment

Prior to the commencement of construction survey activities, all affected landowners will be contacted to obtain access permission. During construction, necessary protection will be provided by limiting construction activities to the designated areas; marking avoidance areas with signs or lath and ribbon; utilizing approved access to the right-of-way; and following permit conditions. Consistent communication with affected stakeholders during construction, restoration, and operations and maintenance will be provided. Impacts on existing roads will be minimized by installing the pipeline underneath these features by using boring or HDD methods. Traffic control will be implemented, as necessary, to ensure safety of the general public and construction workers. Work will be conducted during daylight hours, or as specified by City and County regulations.

B. Erosion Control

Adverse impacts on soils will be minimized by implementing BMPs. Erosion control plans will be developed pursuant to the MPCA National Pollutant Discharge System (NPDES) Construction Storm Water Discharge Permit and Minnesota Rules 7852.3600. Temporary erosion controls, including slope breakers, trench breakers, mulching, straw bales, and silt fence, will be installed as necessary to minimize soil erosion and sedimentation. Temporary measures will be properly maintained throughout construction, as necessary, until permanent measures (as described below) are established per the permit conditions. Track-out of soil onto public roads will be cleaned up to ensure the road surface is clear of soil.

Trench breakers will be installed in areas deemed necessary by MERC. They are typically installed at the entry and exit locations of wetlands to maintain wetland hydrology, and on steep slopes to minimize subsurface erosion within the trench along the pipe. In general, trench breakers consist of foam or bags

filled with sand or subsoil. They would be constructed from the bottom of the trench to the near surface. Trench breaker spacing will be based upon the slope grade.

MERC may use slope breakers as a permanent erosion control measure identified in the National Pollution Discharge Elimination System construction stormwater discharge permit and landowner agreements. Permanent slope breakers are intended to reduce runoff and divert water off of the right-of-way to a stable area. Slope breaker spacing will be based upon the slope grade.

Following construction, application of seed, fertilizer and mulch will commence in accordance with permit requirements and landowner agreements. Inspector(s) will monitor contractor compliance with these procedures.

C. Wetlands and Stream Protection

To reduce impacts on wetlands and streams, MERC proposes to construct the pipeline across all streams and wetlands using HDD as described in Section 10, above.

If wetlands cannot be directionally drilled, MERC will reduce the construction right-of-way/temporary easement width to 75 feet and will not place extra temporary workspaces within a wetland boundary. The pipe will be assembled in an upland area and pushed and pulled or floated to place within the trench, unless the wetland is dry enough to support skids and the pipe. If vehicle access across a wetland crossing is necessary, the crossing will be constructed utilizing timber or composite matting or low-ground-weight equipment to minimize rutting and disturbance. If dewatering is necessary proximate to streams or wetlands, the discharge will not be returned directly to the stream or wetland without prior treatment.

D. Dewatering

Dewatering may be necessary for construction in areas where the water table is at or near the surface. Dewatering is not anticipated to be necessary in wetlands or streams. However, it may be necessary on the uphill side of the directional drill section.

Dewatering water will be discharged to a filter bag or dewatering structure placed in a well vegetated upland area, not discharged within the wetland or stream. Temporary erosion control measures such as silt fence or straw bales will be used as necessary per the NPDES Construction Storm Water Discharge Permit.

E. Spill Prevention, Containment and Countermeasure Plan

A Spill Prevention, Containment and Countermeasures Plan will be developed and implemented during the Project. Specific requirements for reporting and responding to fuel spills and other accidental releases will be specified in the construction contract documents.

F. Vegetation Management Plan

MERC will develop a Vegetation Management Plan as part of construction documents. The plan will specify contractor requirements to minimize the spread of invasive weeds.

G. Agricultural Mitigation Plan

A draft Agricultural Mitigation Plan is included in Appendix E. The final plan will outline how construction activities will be carried out on agricultural lands. The plan will include, among other things, requirements for weed management, segregation of topsoil, and measures to be taken should drain tile be encountered.

Subpart 2. Restoration

Clean-up and restoration of the construction right-of-way/temporary easement will commence after the trench is backfilled, subject to weather and soil conditions. Construction related debris and surplus materials will be removed, with debris disposed of at a licensed waste management facility. The Project site impacted by construction will be returned as closely as possible to pre-construction conditions. Restoration will be done in accordance with permit requirements, landowner agreements, and Minnesota Rule 7852.3600 "Permit Conditions for Right-of Way Preparation, Construction, Cleanup, and Restoration." Restoration efforts may involve but are not limited to: ground stabilization using erosion control devices; restoration of pre-construction contours; installation of permanent slope breakers; repair of drain tiles damaged during construction; and re-vegetation of areas disturbed by construction through the application of seed, mulch, fertilizer, and/or erosion control matting in accordance with permit requirements and landowner agreements.

Following construction the proposed Project site will be monitored in accordance with the MPCA NPDES Construction Storm Water Discharge Permit until the proposed Project has been stabilized and vegetation has been reestablished. Temporary erosion control measures will be removed after successful ground stabilization and re-vegetation. After restoration is complete MERC will coordinate with affected landowners to obtain a signed damage release form indicating that clean-up and restoration has been satisfactorily completed.

Section 12: Operation and Maintenance (Minn. R. 7852.2900)

MERC will own and operate the pipeline under the jurisdiction of the US DOT Pipeline and Hazardous Materials Safety Administration, MnOPS, and MPUC. The minimum Federal Safety Standards for Gas Lines are contained in 49 CFR Part 192. Subpart L (Operations) specifies minimum requirements for the utility's operations and maintenance plan. Under these rules, MERC is required to have the following:

- operation and maintenance plan;
- procedures for continuing surveillance of its facilities to determine and take appropriate action concerning changes in class location, failures, leakage history, corrosion, substantial changes in cathodic protection requirements, and other unusual operation and maintenance conditions;
- damage prevention programs;
- emergency plans; and
- procedures for investigation of failures.

The purpose of the regulations defined in 49 CFR Part 192, Minimum Federal Safety Standards, is to ensure safe operation of pipeline and associated facilities. The safety standards in Part 192 require each pipeline operator to:

- develop an emergency plan, working with local fire departments and other agencies to identify personnel to be contacted, equipment to be mobilized, and procedures to be followed to respond to a hazardous condition caused by the pipeline or associated facilities;
- establish and maintain a liaison with the appropriate fire, police, and public officials in order to coordinate mutual assistance when responding to emergencies;
- establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a natural gas pipeline emergency and report it to appropriate public officials;
- use only qualified personnel to operate and maintain the pipeline in accordance with an approved Operator Qualification Plan;
- have, maintain, and implement a Pipeline Integrity Management Plan for gas pipelines in High Consequence Areas (HCA); and
- ensure that personnel working on these facilities are part of a random drug and alcohol testing program.

The Project will be operated and maintained pursuant to a Gas Operations and Maintenance Manual developed by MERC and filed with MnOPS. All personnel involved with operating and maintenance responsibilities for the pipeline facilities will be certified under an Operator Qualification Plan and will participate in a Drug and Alcohol Program in compliance with the US DOT regulations.

A brief description of the operations activities required for the Project is provided below.

Patrolling and Leak Surveys

The pipeline will be monitored periodically to determine and take appropriate action concerning changes in class locations, gas leakage, erosion, cathodic protection requirements, and other conditions affecting safe pipeline operation in accordance with 49 CFR Part 192. Patrolling and leak survey is dependent on Class location and type of line (transmission vs. distribution). In business districts, pipelines are surveyed annually; outside of business districts they are surveyed every 5 years. Patrols are completed at railroad and bridge crossings four times per year in business districts and two

times per year outside of business districts. Patrolling and leak survey will be incorporated into the overall inspection schedule for the Rochester distribution system.

Natural Gas Pipeline Markers

Natural gas pipeline markers will be installed and maintained over the buried pipeline at road crossings and other locations necessary to identify the location of the pipeline facilities and reduce the risk of inadvertent third-party damage or interference. The markers will identify the owner of the pipeline and convey emergency information in accordance with applicable governmental regulations, including US DOT safety requirements.

Corrosion Control

The gas pipeline will be externally coated and cathodically protected to prevent corrosion as required by 49 CFR Part 192, Subpart I—Requirements for Corrosion Control (192.451 through 192.491).

Gas Odorizing

A gas odorizing system will be installed at Proposed TBS at the connection between the NNG pipeline and the MERC pipeline. The odorizing system will control odorant flow based on the gas flow rate input signal.

Pipeline Valves

Valves will be installed at TBS 1D, Proposed TBS, and Proposed DRS. Other potential locations will be determined during final design phase or prior to construction. Each valve will be secured with a locking device to prevent operation by unauthorized personnel and will be checked and serviced as required by applicable regulations.

Record Keeping and Maps

Records and maps are maintained and updated to indicate the location and identification of all primary components of the pipeline system. Project alignment sheets and other system maps are provided to public agencies to assist in identifying the presence of the pipeline and/or in preparing for potential emergencies.

Safety Considerations

Safety is a prime consideration for employees and contractors who will be operating and maintaining the pipeline system, and also for the general public. Safety code compliance will be achieved through adherence to 49 CFR Part 192 as defined by the US DOT.

General Safety Procedures:

- Strict adherence to Operations and Maintenance Plans;
- the pipeline maximum allowable operating pressure will be assured through the use of over pressure protection equipment;
- company signs, with emergency numbers, will be posted along the pipeline;
- ignition sources will be minimized;
- smoking will be prohibited in and around any structure or area containing gas facilities;
- “No Smoking” signs will be posted where appropriate; and
- aboveground facilities will be painted or coated to prevent atmospheric corrosion.

Emergency Response

Federal rules require pipeline companies to prepare a procedural manual for operations, maintenance, and emergency plans. The MnOPS in the Department of Public Safety has the authority to inspect the proposed pipeline (Minnesota Statutes Section 299F.63) to ensure compliance with safety requirements pursuant to Minnesota Statutes Section 299F.57. MERC follows a manual of written procedures for conducting normal operations and maintenance activities and handling abnormal operations and emergencies. The emergency plans include procedures for:

- receiving, identifying, and classifying notices of events which require immediate response by the operator;
- establishing and maintaining adequate means of communication with appropriate fire, police, and other public officials;
- prompt and effective response to a notice of each type of emergency;
- the availability of personnel, equipment, tools and material, as needed at the scene of an emergency;
- actions directed toward protecting people first, followed by property;
- emergency shutdown and pressure reduction in any section of the operator's pipeline system necessary to minimize hazards to life or property;
- making safe any actual or potential hazard to life or property;
- notifying appropriate fire, police, and other public officials of gas pipeline emergencies and coordinating with them planned responses and actual responses during emergencies;
- safely restoring any service outage; and
- training of personnel, liaison with appropriate fire, police and other public officials and continuing public education programs.

Training

MERC has developed and implemented an Operator Qualification program in accordance with 49 CFR Part 192, Subpart N. The program provides training, testing and record keeping for individuals performing operating or maintenance tasks on pipelines or tasks that affect the operation or integrity of the proposed pipeline.

Public Awareness Program

MERC has developed a public awareness program in accordance with federal safety standards and API RP 1162. A successful public awareness program will increase the safety and security of the proposed pipeline facilities. The program will raise public awareness of company facilities, increase the public's understanding of the role of pipelines in transporting energy, inform the public how to recognize and respond to a pipeline emergency, notify the public who to contact in the event of an emergency, and stress the importance of using the state's one-call system before excavating. MERC's program typically includes bi-annual notifications which provide information regarding pipeline damage prevention, pipeline location information and potential hazards. This information is distributed through public service announcements on the radio, paid advertising and bill stuffers to customers through the local electric company.

One-Call

MERC is committed to pipeline safety and is a member of the "Gopher One-Call" system. The purpose of the One-Call notification center is to reduce third-party damage to underground facilities.

Section 13: List of Government Agencies and Permits (Minn. R. 7852.3000)

Table 14 identifies the federal, state and local permits and approvals that may be required for the project.

Table 14: Required Permits and Approvals

Name of Agency	Title of Permit/Approval
Federal	
Army Corps of Engineers	Section 404 Permit
State	
Department of Natural Resources	License to Cross Public Waters
Department of Natural Resources	Dewater Permit (hydrostatic test water(if used) and trench dewatering)
Minnesota Office of Pipeline Safety	Construction Monitoring and Testing
Minnesota Department of Transportation	Utility Crossing Permit
Minnesota Department of Agriculture	Review of the Agriculture Mitigation Plan
Pollution Control Agency	National Pollutant Discharge System Construction Permit and Stormwater Pollution Prevention Plan
Pollution Control Agency	Section 401 Water Quality Certification (given with the Section 404 Permit)
Public Utilities Commission	Route Permit
Local	
Minnesota Board of Water and Soil Resources /Local Government Unit	Wetlands Conservation Act Permit (to be determined) ⁸
Olmsted County	Oversize/Overweight Vehicle Permit
City of Rochester	Water Appropriation Permit (to be determined - if water needed from a municipal water source)
Olmsted County or City of Rochester	Permit pertaining to an off-right-of-way yard use (jurisdiction depends on the location of the yard)

⁸ The Project may be exempt from developing a replacement plan under the Wetland Conservation Act under Minn. R. 8420.0420, Subp. 6, if it will not modify or alter less than one-half acre of wetlands and the impacts have been avoided to the extent possible. Should more than one-half acre of wetlands require modification or alteration because of the Project, it may be exempt from a replacement plan if notices are provided to the local government units with jurisdiction over the project prior to or concurrent with the application to the Corps of Engineers per the Federal Exemption under Minn. Stat. § 103G.2241, subd. 3 and Minn. R. 8420.0420, Subp. 4. 40 State Reg. 58 (July 20, 2015).

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