

MINNESOTA PUBLIC UTILITIES COMMISSION
Application for a Gas Pipeline Routing Permit
and Partial Exemption from Pipeline Route
Selection Procedures



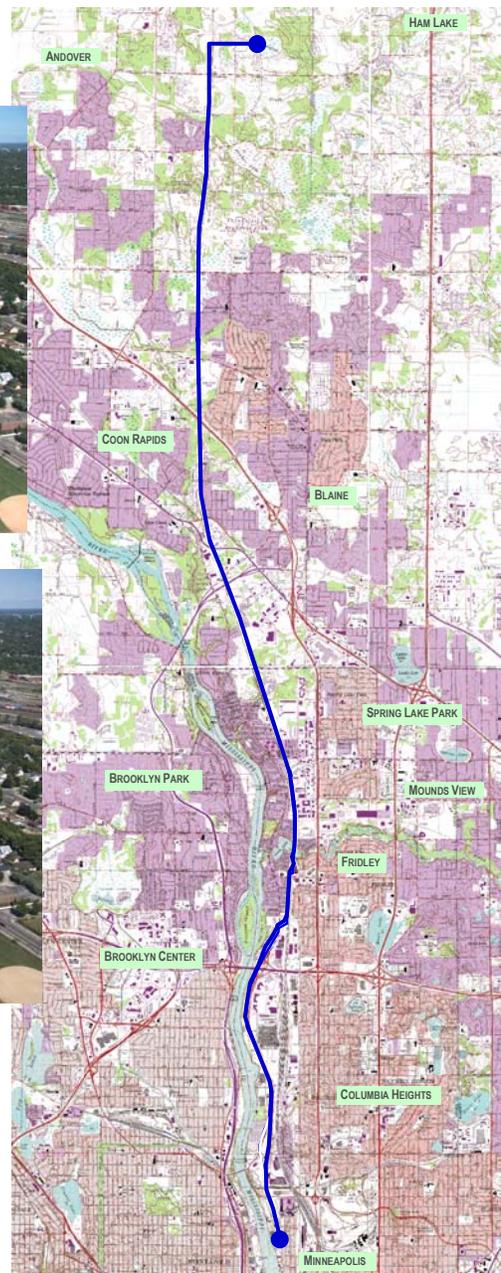
RIVERSIDE
PIPELINE PROJECT



Riverside Power Plant
Before Conversion



Riverside Power Plant
After Conversion



PUC Docket No. G008/GP-06-426

April 6, 2006

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| 4415.0115 GENERAL INFORMATION | | |
| Subp. 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. | |
| Subp. 2 | Title page and table of contents. Each application must contain a title page and a complete table of contents. | |
| Subp. 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. | 1 |
| Subp. 4 | Background information. Each application must contain the following information: | 2 |
| A. | The applicant's complete name, address, and telephone number; | 2 |
| B. | The complete name, title, address, and telephone number of the authorized representative or agent to be contacted concerning the applicant's filing; | 2 |
| 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; and | 2 |
| 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. | 2 |
| 4415.0120 DESCRIPTION OF PROPOSED PIPELINE AND ASSOCIATED FACILITIES | | |
| Subp. 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: | 5 |
| A. | Pipe size (outside diameter) in inches; | 5 |

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| B. | Pipe type; | 5 |
| C. | Nominal wall thickness in inches; | 5 |
| D. | Pipe design factor; | 5 |
| E. | Longitudinal or seam joint factor; | 5 |
| F. | Class location and requirements, where applicable; | 5 |
| G. | Specified minimum yield strength in pounds per square inch; and | 5 |
| H. | Tensile strength in pounds per square inch. | 5 |
| Subp. 2 | Operating pressure. Operating pressure must include: A. operating pressure (psig); and B. maximum allowable operating pressure (psig). | 6 |
| Subp. 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. | 6 |
| Subp. 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 products shipped as defined in part 4415.0010 . | 7 |
| Subp. 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. | 8 |
| Subp. 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. | 8 |
| 4415.0125 LAND REQUIREMENTS | | 9 |
| A. | For the proposed pipeline, the applicant shall provide the following information: permanent right-of-way length, average width, and estimated acreage; | 9 |
| B. | temporary right-of-way (workspace) length, estimated width, and estimated acreage; | 10 |

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| C. | estimated range of minimum trench or ditch dimensions, including bottom width, top width, depth, and cubic yards of dirt excavated; | 10 |
| D. | minimum depth of cover per state and federal requirements; and | 11 |
| E. | rights-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. | 12 |
| 4415.0130 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. | 13 |
| 4415.0135 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. | 14 |
| 4415.0140 LOCATION OF PREFERRED ROUTE AND DESCRIPTION OF ENVIRONMENT | | |
| Subp. 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: | 20; Append B |
| A. | United States Geological Survey topographical maps to the scale of 1:24,000, if available; | 20; Append B |
| B. | Minnesota Department of Transportation county highway maps; | 20; Append B |
| 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 board. | 20; Append B |
| Subp. 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. | 20 |

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| Subp. 3 | Description of environment. The applicant must provide a description of the existing environment along the preferred route. | 22 |
| 4415.0145 ENVIRONMENTAL IMPACT OF PREFERRED ROUTE | | |
| | The applicant must also submit to the board along with the application an 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 4415.0040 (Criteria for Partial Exemption) or 4415.0100 . | 34 |
| | <p>Chapter 4415.0040 – (Partial Exemption Criteria)</p> <p>Subp. 3. Criteria. In determining whether a proposed pipeline and associated facilities qualify for partial exemption and issuance of a pipeline routing permit, the board shall consider the impact of the pipeline and associated facilities on the following:</p> <p>A. human settlement, existence and density of populated areas, existing and planned future land use, and management plans;</p> <p>B. the natural environment, public and designated lands, including but not limited to natural areas, wildlife habitat, water, and recreational lands;</p> <p>C. lands of historical, archaeological, and cultural significance;</p> <p>D. economies within the route, including agricultural, commercial or industrial, forestry, recreational, and mining operations;</p> <p>E. pipeline cost and accessibility;</p> <p>F. use of existing rights-of-way and right-of-way sharing or paralleling;</p> <p>G. natural resources and features;</p> <p>H. the extent to which human or environmental effects are subject to mitigation by regulatory control and by application of the permit conditions contained in part 4415.0185 (permit</p> | 34-42 |

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| | amendments) for pipeline right-of-way preparation, construction, clean-up, and restoration practices; I. cumulative potential effect of related or anticipated future pipeline construction; and J. relevant policies, rules, and regulations of the state and federal agencies and local government land use laws including ordinances adopted under Minnesota Statutes, section 299J.05 (new development setback ordinance), relating to the location, design, construction, or operation of the proposed pipeline and associated facilities. | |
| 4415.0150 RIGHT-OF-WAY PROTECTION AND RESTORATION MEASURES | | 43 |
| Subp. 1 | <u>Protection.</u> 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. | 43 |
| Subp. 2 | <u>Restoration.</u> 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. | 44 |
| 4415.0160 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. | 46 |
| 4415.0165 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. | 51 |

Acronyms and Abbreviations

ANSI – American National Standards Institute

API – American Petroleum Institute

Army Corps – U.S. Army Corps of Engineers

CFR – Code of Federal Regulations

DNR – Department of Natural Resources

MAOP – Maximum Allowable Operating Pressure

MERP - Metropolitan Emissions Reduction Project

MSDS – Material Safety Data Sheet

Mn/DOT – Minnesota Department of Transportation

MNOPS – Minnesota Office of Pipeline Safety

MPCA – Minnesota Pollution Control Agency

MnSHPO – Minnesota State Historic Preservation Office

Northern Natural – Northern Natural Gas Company

NRCS – Natural Resource Conservation Service

NWI – National Wetlands Inventory

PSI – Pounds Per Square Inch

PSIG – Pounds Per Square Inch Gauge

PUC – Public Utilities Commission

RP – Recommended Practice

SPCC Plan– Spill Prevention Containment and Countermeasure Plan

SWPP Plan – Storm Water Pollution Prevention Plan

TBS – Town Border Station

U.S. DOT – United States Department of Transportation

USFWS – United States Fish and Wildlife Service

USGS – United States Geological Survey

Subpart 3. Statement of Ownership

CenterPoint Energy Resources Corp., d/b/a CenterPoint Energy Minnesota Gas, is a corporation established under the laws of the State of Delaware as a natural gas delivery company. CenterPoint Energy Resources Corp. and its predecessor businesses have been qualified to do business in the State of Minnesota since 1870 and will be as of the date of the filing of the attached application.

CenterPoint Energy Resources Corp. will be the owner and operator of the 20-inch diameter pipeline and associated facilities as proposed in this application as of the day of this submittal.

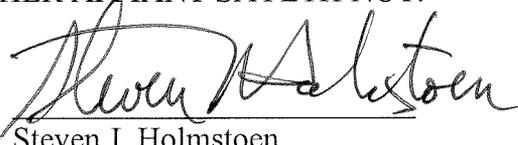
AFFIDAVIT

STATE OF MINNESOTA

COUNTY OF HENNEPIN

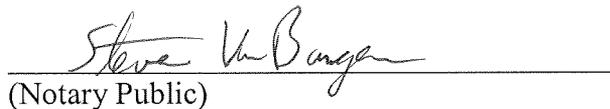
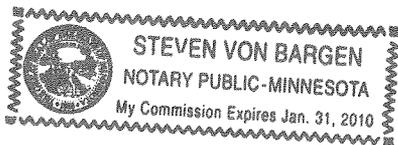
I, Steven J. Holmstoen, being first duly sworn, do hereby state that I am the Division Senior Vice President, Delivery Services of CenterPoint Energy Resources Corp. and that I am aware of the plans for construction of the Riverside Pipeline for which CenterPoint Energy Resources Corp. has filed a Pipeline Routing Permit; that CenterPoint Energy Resources Corp. will own the proposed pipeline and associated facilities; and that the elected officers of CenterPoint Energy Resources Corp., as well as its attorneys and other authorized agents, are authorized to act on behalf of CenterPoint Energy Resources Corp. in association with the Riverside Pipeline Project.

FURTHER AFFIANT SAYETH NOT.



Steven J. Holmstoen
Division Senior Vice President
Delivery Services
CenterPoint Energy Resources Corp.

Signed and sworn to before me on April 4, 2006, by Steven J. Holmstoen.



(Notary Public)

My commission expires:

1-31-2010

General Information - 4415.0115

Subpart 4. Background Information

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

CenterPoint Energy Resources Corp., d/b/a CenterPoint Energy Minnesota Gas
800 LaSalle Avenue, 11th Floor
Minneapolis, MN 55402
612-321-5448

B. *The complete name, title, address, and telephone number of the official or agent to be contacted concerning the Applicant's filing:*

Mr. Tom Olinger
Project Manager
CenterPoint Energy
800 LaSalle Avenue, 11th Floor
Minneapolis, MN 55402
612-321-5448

C. *The signature and title of the person authorized to sign the application is:*



Steven J. Holmstoen
Division Senior Vice President
Delivery Services
CenterPoint Energy

D. *A brief description of the proposed project:*

General Location

CenterPoint Energy proposes to construct an approximately 16.3-mile long, 20-inch diameter natural gas pipeline in Anoka County and Hennepin County, Minnesota. The pipeline will originate at a new Northern Natural Gas Company (Northern Natural) Town Border Station (TBS) located in the City of Andover near the intersection of 148th Street and Prairie Road. The TBS is currently intended to be located adjacent to an existing Northern Natural facility. The pipeline will terminate at the Xcel Energy Riverside Power Plant located in northeast Minneapolis, near the intersection of Marshall Street NE and 30th Street. Project location maps are included in Appendix B of this application.

The proposed pipeline will traverse north to south adjacent to existing corridors including railroads, natural gas pipeline corridors, electric transmission lines and road corridors located within the cities of Andover, Coon Rapids and Fridley in Anoka County, and with approximately one mile located in Minneapolis, Hennepin County. The proposed pipeline will traverse approximately 11.5 miles adjacent to existing railroad right-of-way in Andover, Coon Rapids and Fridley, and 4.5 miles of existing road right of way in Fridley and Minneapolis. The portions of the pipeline that will parallel the railroad right-of-way will be adjacent to existing natural gas pipelines, including pipelines owned by CenterPoint Energy; Minnesota Intrastate Pipeline Company, a CenterPoint Energy subsidiary; and Northern Natural. CenterPoint Energy will acquire easements where necessary. CenterPoint Energy will also request temporary extra workspace in most areas to ensure a safe construction right-of-way. Associated facilities along the pipeline route will include valves and cathodic protection equipment. Valves will be located in accordance with applicable federal and state pipeline regulations. Northern Natural will install a new TBS adjacent to their existing facility at the interconnect location in Andover. CenterPoint Energy will install a TBS header, in-line inspection device equipment and an odorizer. The facilities at the terminus of the project will include a gas delivery station. These associated facilities are discussed further in 4415.120, subp. 3. Open trench as well as directional drill construction methods will be utilized during construction.

Planned Use and Purpose

The purpose of the proposed Riverside Pipeline Project is to provide a source of natural gas to the Xcel Energy Riverside Power Plant located in northeast Minneapolis. This pipeline project is part of the Metropolitan Emissions Reduction Project or MERP, which is a project that has been previously approved by the PUC and is intended to reduce air emissions from three Xcel Energy power plants including the Riverside Plant, Highbridge Plant and King Plant facilities. The emissions reduction at the Riverside Plant will be accomplished by converting the power plant from coal to natural gas and will substantially reduce air emissions. According to the *Public Utilities Commission Staff Briefing Papers for Docket No. E-002/M-02-633 on December 18, 2003*, the conversion of the Riverside Plant will eliminate coal related air emissions from the site while providing about 439 MW of creditable capacity. Furthermore, the conversion of the Riverside Plant will result in a 100% reduction in SO₂, a 99% reduction in NO_x, and a 100% reduction in particulate matter. CO₂ will be reduced by 57%, CO by 41% and virtually all mercury and lead emissions will be eliminated. The proposed Riverside Pipeline Project will provide the natural gas required to operate the Riverside Power Plant and is therefore an essential component to the conversion of the power plant from a coal to a natural gas powered generating facility.

Estimated Cost

The proposed project is estimated to cost: Approximately \$25 Million

Planned In-Service Date

December 1, 2008

General Design and Operational Specifications

The proposed pipeline will be a 20-inch outside diameter, welded steel, fusion bond epoxy-coated pipe. The Maximum Allowable Operating Pressure (MAOP) will be 650 pounds per square inch gauge (psig). The pipeline is planned to deliver natural gas at an approximate rate of 100 million cubic feet per day and is planned to operate at 550 psig.

Description of Proposed Pipeline and Associated Facilities - 4415.0120

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 the following:

- A. pipe size;
- 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; and
- H. tensile strength in pounds per square inch.

The United States Department of Transportation (U.S. DOT), Title 49 Code of Federal Regulations (CFR), Part 192, defines minimum federal safety standards for construction, operation and maintenance of natural gas pipelines. CenterPoint Energy will comply with 49 CFR Part 192 in constructing, operating and maintaining the proposed line. Enforcement of pipeline safety regulations are under the jurisdiction of the Minnesota Office of Pipeline Safety (MNOPS). CenterPoint Energy will comply with all applicable safety regulations and will work with MNOPS to ensure safety plans meet or exceed the applicable requirements. Anticipated design specifications are:

- A. Pipe size (outside diameter): 20 inches
- B. Pipe type: API Standard 5L
- C. Nominal wall thickness (in inches): 0.250 inches (greater at crossings & bores)
- D. Pipe Design Factor: 0.50
- E. Longitudinal or Seam Joint Factor: 1.0
- F. Class location and requirements (where applicable): Class 3
- G. Specified minimum yield strength in pounds per square inch: 60,000 psig
- H. Tensile strength in pounds per square inch: 75,000 psig (corrected value)

Subpart 2. Operating Pressure

Operating pressure must include:

- A. operating pressure (psig); and**
- B. maximum allowable operating pressure.**

- A. The planned operating pressure of the proposed pipeline will be approximately 550 psig.
- B. The maximum allowable operating pressure will be 650 psig. Internal design pressure of a pipeline is determined in accordance with 49 CFR Part 192.105.

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.

The majority of the proposed Riverside Pipeline will be buried adjacent to existing railroad and road corridors and parallel to existing natural gas pipelines. Additional right-of-way will be obtained through negotiations with landowners by permanent easement and temporary workspace agreements. In addition to the 20-inch diameter pipe, CenterPoint Energy will install a TBS header, in-line inspection tool launcher/receiver, mid-line valves, odorizer, cathodic protection and a gas delivery station, as discussed below. Pipeline markers will also be installed at various locations in accordance with applicable federal and state regulations.

Valves and Flanges

The design, construction, testing and marking of the valves will comply with the requirements of 49 CFR Part 192.145 Valves and 192.147 Flanges. All valves and flanges will be rated as American National Standards Institute (ANSI) Class 300. Valves are governed by ANSI B16.34, Steel Valves, Flanged and Butt-welding End. Flanges are governed by ANSI B16.5, Pipe Flanges and Flanged Fittings.

CenterPoint Energy will install two mid-line valve assemblies along the proposed pipeline in accordance with the Minimum Federal Safety Standards for Gas Lines as established in 49 CFR Part 192.179 Transmission Line Valves. The valve assemblies will also meet the requirements of 49 CFR Part 192.145, Valves and 49 CFR Part 192.147, Flanges and Flange Accessories.

In-Line Inspection Devices

CenterPoint Energy will design and construct the new pipeline to accommodate the passage of in-line inspection tools (“smart pigs”) as required by 49 CFR Part 192.150 (Passage of Internal Inspection Devices). Above-ground appurtenances, called launchers and receivers, will be installed to facilitate the passage of the in-line inspection tools. The launcher will be installed at the north end of the route and the receiver will be installed at the south end of the route.

Cathodic Protection

A cathodic protection system will be installed to prevent corrosion on the pipeline. Cathodic protection systems consist of above-ground rectifiers and anodes. The exact location of the above-ground facilities 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.

Alternating Current Mitigation

Along some portions of the proposed route, the pipeline is in proximity to high voltage electric transmission lines that are installed parallel with the railroad corridor. Alternating current (AC) interference effects could be induced onto the pipeline due to high voltage and current that are present near electric transmission facilities. CenterPoint Energy will contract with an outside firm that specializes in the evaluation and mitigation of AC interference. The process involves site visits to determine the physical configuration of the electrical facilities and the location of the pipeline, a computer simulation of the proposed route, and a report on any actions that should be taken to mitigate AC interference. CenterPoint Energy has previously employed outside firms to assist in AC interference and has successfully managed AC interference affecting its pipelines.

TBS Header and Odorizer Station

CenterPoint Energy will receive the natural gas from Northern Natural at a point within a new Northern Natural-operated TBS located adjacent to their existing facility in the City of Andover, Anoka County, Minnesota. At the TBS, CenterPoint Energy will install a TBS header, odorization equipment and an in-line inspection tool launcher.

Gas Delivery Station

CenterPoint Energy will install a delivery station at the Riverside Power Plant facility. The delivery station will include valves, regulators, over pressure protection, a filter and an in-line inspection tool receiver. This equipment will be located on a gravel pad within the Riverside Power Plant facility property.

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 4415.0010.

The planned minimum design capacity is 0.0 million cubic feet per day. Since the pipeline will be dedicated to the power plant facility, there may be occasional times throughout the year when the power plant will not require natural gas. In these instances, there will be no gas moving through the pipeline. The maximum design capacity is approximately 100 million cubic feet per day at 550 psig operating pressure.

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.

The proposed pipeline will carry transmission quality natural gas to the existing Xcel Energy Riverside Power Plant located in northeast Minneapolis. Natural gas is primarily made up of methane (>90%), with some ethane and lesser quantities of other, mostly aliphatic hydrocarbons. Its primary hazard is the same property that makes it a useful commodity: its flammability. Natural gas is essentially non-toxic, meaning it has no significant short-term or long-term toxic effects on humans when breathed in, as long as there is sufficient oxygen in the atmosphere.

The detection of leaks is an important procedure due to the flammable nature of natural gas. One common procedure used to detect leaks is the odorizing of the gas. During this process, an odorant consisting of a mixture of sulfur-containing compounds is added to the natural gas (which otherwise has very little odor). This process produces an extremely strong odor, which is not harmful in the low concentrations present in natural gas pipelines.

Subpart 6. Material Safety Data Sheets (MSDS)

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.

The MSDS for natural gas and the odorant (RP Captan) are included in Appendix A of this application.

Land Requirements - 4415.0125

For the proposed pipeline, the applicant shall provide the following information:

A. Permanent right-of-way length, average width, and estimated acreage.

The length of the proposed Riverside Pipeline corridor is approximately 16.3 miles. The majority of this route will be adjacent to existing corridors including railroad, overhead electric transmission lines, roads, and existing natural gas pipelines. The purpose of locating the proposed pipeline adjacent to existing pipelines is to reduce the impact to current and future land uses and to minimize landowner and environmental impacts. Approximately 11.5 miles of the proposed route will be located adjacent to the Burlington Northern Santa Fe Railroad right-of-way through the Cities of Andover, Coon Rapids and Fridley. The proposed Riverside Pipeline will be located adjacent to existing natural gas pipelines for the entire distance that follows the railroad corridor. This corridor also includes overhead electric transmission lines that run parallel to the railroad tracks in various locations. Approximately 4 miles of the proposed pipeline will be located adjacent to East River Road/Marshall Street NE in the Cities of Fridley and Minneapolis. The proposed Riverside Pipeline will be located adjacent to an existing CenterPoint Energy pipeline along the west side of the East River Road/Marshall Street NE right-of-way.

CenterPoint Energy will utilize as much existing pipeline right-of-way as practical, and will acquire easements where necessary. CenterPoint Energy will also be requesting temporary extra workspace in most areas to facilitate a safe construction corridor.

The pipeline will originate at the existing Northern Natural facility located on Prairie Road in Andover. The pipeline will traverse north approximately 200 feet to 148th Street. The pipeline will then go west along the 148th Street right-of-way for approximately 2,500 feet. The pipeline will continue west for approximately 600 feet until reaching the Burlington Northern Santa Fe Railroad right-of-way. The pipeline will then traverse south generally outside but adjacent to the railroad right-of-way for approximately 11.4 miles. Next, the pipeline will go west approximately 600 feet to the intersection of Island Park Drive NE and East River Road. The pipeline will continue south along the west side of East River Road for approximately 4.1 miles until reaching the Xcel Energy Riverside Power Plant facility. Refer to the project route maps in Appendix B of this application.

In general, the width of the permanent right-of-way along the proposed Riverside Pipeline route will be 50 feet. It is important to note that the 50 feet of permanent right-of-way will include the right-of-way of the existing natural gas pipelines. In areas where the existing right-of-way is 50 feet wide, no additional permanent right-of-way will be required, unless site-specific conditions dictate otherwise. The estimated right-of-way acreage is approximately 99 acres based on a 50 foot wide permanent right-of-way along the entire route corridor. It is estimated that existing natural gas pipeline right-of-way already encompasses approximately 45 acres. Thus, only approximately 54 acres of new permanent right-of-way will be necessary.

B. Temporary right-of-way (workspace) length, estimated width, and estimated acreage.

Temporary Right-of-Way

CenterPoint Energy proposes to obtain an additional ten feet of temporary extra workspace along the route adjacent to the permanent right-of-way. This temporary workspace is needed to facilitate safe working conditions during the construction and restoration phases of the project. The permanent right-of-way and temporary extra workspace will provide construction crews with 60 feet of working space along the pipeline corridor. The estimated acreage of temporary workspace will be approximately 20 acres, assuming ten feet of temporary workspace. Typical right-of-way dimensions for areas adjacent to existing natural gas pipelines are depicted in Appendix C. These figures illustrate the area required for construction when adjacent to a railroad corridor and a road corridor.

Staging Areas

Site specific conditions will require additional temporary workspace at crossings of features such as highways, railroads, streams, ditches, wetlands and roads. CenterPoint Energy will request additional 40 foot wide by 200 foot long workspaces adjacent to the right-of-way at these crossing locations. This additional workspace is necessary for staging equipment, storage of temporary spoil and to ensure a safe work area. Permission to utilize additional temporary workspace will be obtained from landowners along the route as required by site specific conditions. CenterPoint Energy has identified approximately 60 crossing locations where staging areas may be required. Assuming sites averaging 40 feet wide by 200 feet long, approximately 11 acres of additional temporary workspace will be required.

C. Estimated range of minimum trench or ditch dimensions, including bottom width, top width, depth, and cubic yards of dirt excavated.

The depth of the pipe will vary with surface conditions, but will primarily be three feet from the surface. The depth of the trench will be four feet, eight inches (allowing for a 20-inch pipe). The top and bottom trench width will be three feet. The total dirt excavated will be approximately 39,700 cubic yards (assuming two miles of directional boring will be performed). The depth of the portion of the pipeline that will be directionally drilled will vary depending on site specific conditions. In areas requiring personnel to work/inspect inside the trench, OSHA regulations regarding trenching and excavating dimensions will be followed.

Below are the typical dimensions for the trenched portion of the project:

Typical Trench Dimensions

Estimated Bottom Width: 36 inches

Estimated Top Width: 36 inches

Estimated Depth of Trench: 56 inches

Estimated Depth of Cover: 36 inches; 54 inches in right-of-way of any public drainage facility or any county town or municipal street or highway and where the pipeline crosses cultivated agricultural land.

D. Minimum Depth of Cover per State and Federal Guidelines.

Minnesota Statute 116.06, subd. 1, requires that the pipeline shall be buried with a minimum level of cover not less than 4 ½ feet (54 inches) in all areas where the pipeline crosses the right-of-way of any public drainage facility or any county town or municipal street or highway and where the pipeline crosses cultivated agricultural land. The landowner may waive the minimum depth of cover requirement. The waiver of the minimum depth of cover requirement is effective only if the waiver: (a) is separately and expressly stated in the easement agreement and includes an express statement by the landowner acknowledging that he has read and understood the waiver; (b) is printed in capital letters in a language understandable to an average person not learned in the law; and (c) is separately signed or initialed by the landowner. Government subdivisions also have the right to waive the minimum depth of cover requirement or to adopt and enforce by ordinance or resolution, rules requiring a greater depth of cover for the protection of public roads and drainage facilities under their jurisdiction.

Pursuant to 49 CFR Part 192.327, except as provided in paragraphs (c) and (e) of this section, the U.S. Department of Transportation (U.S. DOT) requires that each buried transmission line be installed with a minimum cover as follows so that the cover between the top of the pipe and the ground level, road bed and river bottom, as applicable, complies with the following:

| <u>Location</u> | <u>Depth of Cover – Normal Soil Conditions</u> |
|---|--|
| Class 1 | 30 inches |
| Class 2, 3, 4 | 36 inches |
| Drainage ditches of public roads and railroad crossings | 36 inches |

- (c) Where an underground structure prevents the installation of a transmission line or main with the minimum cover, the transmission line or main may be provided with additional protection to withstand anticipated external loads.
- (e) Except as provided in paragraph (c), all pipe installed in a navigable river, stream, or harbor must be installed with a minimum cover of 48 inches in soil or 24 inches in consolidated rock between the top of the pipe and the underwater natural bottom (as determined by recognized and generally accepted practices).

Class locations are designated by the number of buildings intended for human occupancy within 220 yards (660 feet) of either side of the pipeline centerline.

- Class 1: 0-10 buildings
- Class 2: 10-45 buildings

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. (The days and weeks need not be consecutive.)

Class 4: Any class location unit where buildings with four or more stories above ground are prevalent.

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.

As previously discussed, the proposed pipeline will be constructed adjacent to existing railroad and road corridors. In addition, existing natural gas pipelines are located adjacent to the Burlington Northern Santa Fe Railroad and East River Road/Marshall Street NE corridors. Electric transmission lines are also located adjacent to the proposed corridor in various locations. Utilization of these existing corridors will significantly reduce the impact to landowners, the environment and future land use along the route. The utilization of existing natural gas pipeline right-of-way will reduce the amount of “new” right-of-way that would be needed for construction by approximately 45 acres. In addition, the project route as proposed, will co-occupy approximately 30 acres of existing electric transmission line right-of-way. After construction is completed, CenterPoint Energy generally plans on maintaining a total of 50 feet of right-of-way for the proposed pipeline. Therefore, the proposed project will only affect approximately 54 acres of additional new pipeline right-of-way.

The proposed pipeline will parallel the Burlington Northern Santa Fe Railroad and existing natural gas pipelines for approximately 11 miles. The railroad right-of-way varies from 100 to 125 feet wide, and the adjacent existing natural gas pipeline right-of-way varies from 20 feet to 50 feet wide. The total acreage of the existing natural gas pipeline right-of-way for the 11 miles is approximately 45 acres, as stated above.

The proposed pipeline will parallel East River Road/Marshall Street NE for approximately four miles. The width of the road right-of-way is 200 feet. An existing CenterPoint Energy pipeline is located within the road right-of-way. The proposed pipeline location is adjacent to, but outside of the existing road right-of-way.

The proposed pipeline route will have less than one mile which will not be adjacent to existing natural gas pipelines. All but one-half mile will follow existing railroad or road corridors. Following existing pipelines will allow CenterPoint Energy to use approximately 45% less right-of-way.

Project Expansion - 4415.0130

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.

The proposed gas pipeline is designed to meet the future natural gas supply needs for the Xcel Energy Riverside Power Plant. The pipeline will be operated at approximately 550 psig, but will have an established MAOP of 650 psig. In the future, if the pressure is increased to its MAOP of 650 psig, this change will not require the installation of additional facilities. No other project expansion is planned.

Right-of-Way Preparation Procedures and Construction Activity Sequence - 4415.0135

Each applicant shall provide a description of the general right-of-way preparation procedures and construction activity sequence anticipated for the proposed pipeline and related facilities.

The construction sequence along the right-of-way of the proposed pipeline will generally proceed in the progression of the activities provided below. (See also Typical Stages of Construction drawing in Appendix C.) Construction of the pipeline is scheduled to commence in the spring of 2007 and be completed by November 2008.

Environmental Inspection

CenterPoint Energy will utilize Environmental Inspector(s) to monitor construction activities and ensure environmental compliance throughout the duration of the project. The Environmental Inspector(s) will have a variety of responsibilities, including monitoring compliance with mitigative measures required by environmental permits and approvals; inspecting the environmental mitigation measures implemented by the contractor as required by permitting agencies; and recommending corrective measures when non-compliance with permit conditions is observed. The Environmental Inspector(s) will be given the authority to issue stop-activity orders and corrective actions to maintain environmental compliance. The Environmental Inspector(s) will have peer status with all other activity inspectors.

Environmental Training

CenterPoint Energy will require the contractor supervisory personnel to have environmental training prior to commencement of construction. The Environmental Inspector or other qualified personnel will provide environmental training to construction personnel, which will focus on the PUC permit conditions, other environmental permit requirements, and project specific mitigation plans.

Enforcement of Environmental Requirements

Environmental compliance will be enforced through contract provisions, inspection, documentation and communication. If a contractor is deemed in non-compliance with an environmental requirement, CenterPoint Energy may invoke penalties against the contractor to obtain environmental compliance. The contractor will be informed during contract negotiations that environmental compliance is as important as any other contract requirement, and that non-compliance with an environmental requirement is deemed a material breach of the contract.

Sequence of Events – Pipeline Construction

Pipeline construction generally involves various sequential operations as detailed below. The proposed pipeline will comply with Minnesota Rules Chapter 4415, Minnesota Statutes 116I.015, as well as the U.S. DOT pipeline safety regulations as set forth in 49 CFR Part 192, “Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards” and other applicable regulations.

Route Planning

During the route selection process, CenterPoint Energy and its consultants spent several months reviewing various maps and data and performing many site inspections. In addition, CenterPoint Energy met with numerous stakeholders along the route including Cities, Counties, State agencies and railroad authorities. The intent of the stakeholder meetings was to provide information regarding the proposed routes and solicit input relating to any issues or concerns that should be considered by CenterPoint Energy during the route selection process.

Several factors were involved in the selection of the preferred route, including stakeholder feedback, length of route, minimizing impacts to landowners, paralleling existing corridors, environmental conditions, long-term operations and maintenance concerns and constructability. A detailed discussion of the preferred route is included in Sections 4415.0125 and 4415.0140.

Survey and Staking of the Right-of-Way

CenterPoint Energy will conduct a centerline land survey to accurately depict the location and layout of the pipeline, followed by staking of the pipeline centerline. This survey will also identify the extent of approved work areas. Prior to the commencement of any survey activities, CenterPoint Energy will contact all landowners to obtain any necessary survey permission. In addition, CenterPoint Energy will comply with Minnesota Rules Chapter 4415.0035 regarding public notice and distribution of application materials. CenterPoint Energy is committed to providing affected landowners with complete information about the project, and keeping them informed throughout the survey, right-of-way acquisition, construction and restoration stages of the project.

Clearing and Topsoil Separation

Preparation of the right-of-way is the initial step in the construction of the project. Clearing and grading will commence along the right-of-way after the center-line survey and staking has been completed. Clearing of the right-of-way will take place in accordance with all regulatory permit conditions, as well as agreed upon landowner considerations. Clearing of vegetation and obstacles will be limited to the extent necessary to allow safe and effective use of construction equipment. In areas where timbering is required, the trees will be cut in uniform lengths and stacked along the right-of-way based on the landowner’s preferences. Stumps will only be removed when necessitated by pipeline installation or at the request of a landowner. Debris created from preparation of the right-of-way will be disposed of at a licensed facility, mulched or

otherwise handled using methods approved by the landowner and in accordance with applicable regulations. Fences encountered along the proposed route will be cut and braced on each side of the right-of-way to prevent damage to the remaining fence. Temporary gates will be installed as needed to prohibit public access to the right-of-way during construction.

Following clearing activities, grading will be conducted as necessary in certain areas to create level working surfaces across the right-of-way in order to allow for the safe operation and travel of equipment. Grading will also be utilized to reduce grade along the right-of-way and to segregate topsoil in accordance with permit regulations. Grading activities may be more extensive in areas of steep terrain. After construction is completed, graded areas will be restored as close as possible to pre-construction contours.

The project will require a Storm Water Pollution Prevention Plan (SWPP) that includes temporary erosion control measures such as silt fences and temporary slope breakers, which will be installed as necessary during clearing and grading activities to contain disturbed soils on the construction right-of-way. These erosion control methods will help minimize the potential for upland soils to enter wetlands or waterbodies. Temporary erosion control measures will be regularly inspected and maintained throughout the duration of construction until the right-of-way has been stabilized. Typical erosion control drawings are included in Appendix C of this application.

Topsoil will be separated from sub-soil in accordance with permit requirements and in areas at the landowner's or permitting agency's request. Typically, topsoil separation is also required in agricultural areas. Since the proposed pipeline does not cross agricultural lands, this requirement does not apply. Stripped topsoil will be stored on topsoil and will be separated from the trench subsoil pile to avoid mixing.

Trenching

Prior to any trenching activities, notification will be provided to the Minnesota Gopher State One-Call as required to ensure all utilities are properly identified. All other safety procedures will be adhered to as required by the Federal and State Offices of Pipeline Safety, CenterPoint Energy safety procedures and worker safety regulations.

Trenching involves excavating a trench for the pipe and is typically accomplished using ditch digging machines or backhoes. The ditch (trench) will be excavated to allow adequate cover as specified to avoid interference with normal land uses. During construction, dewatering of the trench may be necessary to ensure successful pipeline installation. Trench water appropriation/discharge approvals will be obtained as required by applicable regulations. CenterPoint Energy will utilize their existing discharge permits after completing the required notification process. In locations where the pipe crosses a railroad, the crossing procedures will be described in the railroad crossing permit as required. Road crossing procedures will be described in the required road crossing permits where the pipeline crosses highways or road right-of-way and will comply with all applicable Minnesota Department of Transportation

(Mn/DOT) and County requirements. Paved road crossings will generally be bored or directionally drilled to avoid interference with traffic.

CenterPoint Energy will take necessary precautions during construction and restoration to protect against the pollution of the environment by construction equipment. Specific requirements for reporting and responding to fuel spills or other similar instances will be specified in the construction contract documents. CenterPoint Energy Inspectors will ensure that spill response activities are properly accomplished. CenterPoint Energy will utilize a Spill Prevention Containment and Countermeasure Plan (SPCC) if required, which will be enforced by Inspectors.

Pipe Stringing

Pipe stringing activities will involve the transportation to and placement of coated pipe, valves and fittings along the right-of-way. Pipe will be loaded onto trucks, transported to the right-of-way and unloaded by side boom tractors, cranes or other equipment. The pipe will be strung along the trench in preparation for subsequent bending and welding operations. Communication with landowners will help facilitate the identification of special access requirements and access planning.

Bending

After the sections of pipe are strung along the trench and before the sections of pipe are welded together, individual joints are bent to allow a uniform fit of the pipeline with the varying contours of the trench and terrain. On-site pipe bending activities are typically accomplished by a track-mounted, hydraulic pipe-bending machine. Sections of pipe that require multiple or complex bends may be pre-fabricated off-site.

Line-up and Welding

Installation of the pipe commences after the pipe ends are sufficiently cleaned and bending activities have been completed. Next, the pipe is lined up, held in place, and welded until it is securely joined. Welding is one of the most important activities associated with pipeline construction. Welding is a technique of joining individual sections of pipe in which actual melting of the pieces to be joined occurs in the vicinity of the bond. For pipeline field welds, usually an external electrical power source is used to melt the steel as well as a filler metal, or welding rod, in the vicinity of the bond.

Welding will be completed by pre-qualified welders in accordance with American Petroleum Institute (API) 1104, the code for “Welding of Pipelines and Related Facilities”. Welders will comply with the welding procedures that have been developed and tested to the detailed national industry standards and pipeline regulations. Each weld must exhibit the same structural integrity with respect to strength and ductility. Each weld will be inspected by qualified welding inspectors to determine the quality of the weld. In addition, 100% of all welds will be radiographically inspected. Welding inspections will be completed by certified inspection

contractors. Defects will be repaired or removed in accordance with API 1104, the code for “Welding of Pipelines and Related Facilities”, which is referenced in 49 CFR Part 192.

Pipe Coating

The U.S. DOT requires buried pipelines to have an acceptable protective coating. The pipe is typically coated with a mill applied fusion-bonded epoxy prior to delivery to protect against corrosion. Directional drilled pipe will be dual coated and construction field welds will be coated in the field with an approved material that is compatible with the mill applied coating. The entire coating will be inspected and any defects in the coating will be field-repaired. After this coating is inspected, the pipe will be ready to be lowered into the trench.

Lowering-In

After the pipe is strung and bent to conform to the pipeline alignment and ground contours, the pipe will be lifted by side boom tractors, cranes or other equipment to move the pipe over the open trench. Inspection of the pipe coating will be completed prior to being lowered into the trench and any necessary repairs made to unsatisfactory or damaged areas. Precautions will be taken to prevent damage to the pipe and coating while the pipe is being lowered into the trench.

Backfilling

After the pipe has been lowered in, the trench will be backfilled. Precautions will be taken during backfilling to protect the pipe and pipe coating from damage from rocks and other debris. Large rocks will be removed from the backfill and taken off the property to avoid interference with land use. Backfilling will most likely be accomplished with an angle blade dozer, dragline or backhoe. Backfill will be placed using crowning techniques that will help avoid potential settlement that can result in a surface depression. In areas where the topsoil is segregated, careful attention will be paid during backfilling to avoid the mixing of soils.

Pressure Testing

The pipeline will be pressure tested with water, also referred to as hydrostatic testing, after backfilling is complete to ensure that the system is capable of withstanding the designed operating pressure. Hydrostatic testing procedures will be implemented in accordance with federal regulations 49 CFR Part 192. CenterPoint Energy currently has water discharge permits which will be used as needed. Water appropriation approval will be obtained as required.

Clean-up and Restoration

Clean-up and restoration of the right-of-way will be the final phase of construction and typically begins immediately after backfilling, or as soon as weather and soil conditions permit. The right-of-way will be cleaned up by the removal and disposal of construction debris and surplus materials. Construction debris will be taken to a licensed landfill.

The purpose of restoration is to return the right-of-way as close as possible to pre-construction conditions. Restoration efforts may involve smoothing with disc harrows or other equipment, stabilization using erosion control devices, and finally, revegetation activities. Preconstruction contours are restored to the extent possible, except in upland areas where a slight crown is formed over the trench to allow for settling of the backfill. Permanent slope breakers will be constructed as necessary, and seed, fertilizer and mulch will be applied in accordance with requests of the landowner or permitting agency.

CenterPoint Energy will install line markers noting pipeline locations in accordance with the U.S. DOT pipeline safety regulations as set forth in 49 CFR Part 192. These markers identify CenterPoint Energy as the operator and lists telephone numbers for pipeline emergencies or inquiries relating to the pipeline.

If drain tiles are cut or damaged during construction, they will be repaired by specialized tiling contractors or subcontractors. Private and public roads affected by construction will be restored to their preconstruction condition and the contours of drainage ditches and swales will be reestablished to maintain preconstruction hydrology as discussed in more detail in Section 4415.0145 of this application.

Location of Preferred Route and Description of Environment - 4415.0140

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 that must be submitted with the application:

- A. United States Geological Survey topographical maps to the scale of 1:24,000 if available;**
- B. Minnesota Department of Transportation county highway maps; or**
- 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 board.**

A set of United States Geological Survey (USGS) topographic maps, a set of Mn/DOT road maps and a set of aerial photograph maps depicting the pipeline route are provided in Appendix B of this application.

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.

No Build Alternative

The “no build” alternative would involve not constructing the proposed natural gas pipeline and therefore would avoid any impacts identified in this application. This alternative would not satisfy the need to provide the Xcel Energy Riverside Power Plant with the natural gas necessary for the conversion of the plant from coal to natural gas. This alternative would also undermine the goal of the PUC-approved Metro Emissions Reduction Project. As previously discussed, MERP includes the conversion of the Xcel Energy Riverside Power Plant from coal to natural gas and will substantially reduce air emissions from the power plant. CenterPoint Energy does not consider this a feasible alternative as it would not allow the conversion of the power plant to natural gas and therefore not reduce air emissions from the plant.

Identification of Alternate Routes

Several alternate routes were considered along with the proposed natural gas pipeline route. Possible routes were analyzed in an area bounded by the Mississippi River on the West, Lexington Avenue on the East, Anoka County Highway 18 and 157th Avenue on the North and

the Xcel Energy Riverside Power Plant on the South. Based on this area study, one primary (the proposed route) and two alternate routes were identified. The specific routes are described below.

Alternate Route 1 (Highway 65 Route)

Under this alternative, the route would commence at the existing Northern Natural TBS near the intersection of State Trunk Highway 65 (Central Avenue) and 139th Avenue. The route thence would traverse southerly parallel to Highway 65 to the intersection with the Minnesota Commercial Railroad right-of-way. The route would thence deflect west southerly of the railroad tracks and along the northerly edge of Locke Park in the City of Fridley to University Avenue. The route would continue across University Avenue, and would thence deflect south along University Avenue paralleling the easterly and southerly edges of Plaza Park to the intersection with the Burlington Northern Santa Fe Railroad right-of-way. The route would thence deflect southerly and parallel the easterly side of the railroad to a point lying southerly of Rice's Creek. At this point the route would cross to the westerly side of the railroad tracks and thence continue southerly parallel to the railroad tracks. The route would thence deflect westerly to East River Road (Anoka County Highway 1) near the intersection of Island Park Drive NE and East River Road. The route would then deflect south along the westerly side of East River Road to the Xcel Energy Riverside Power Plant and there terminating.

After discussions with Mn/DOT's Metro Area Division and the Public Works Department of the City of Blaine, concerns over the long term viability of this route were raised. Mn/DOT has identified Highway 65 as a highway likely to be upgraded to freeway status. Mn/DOT's "Accommodation of Utilities Within Freeway Right-of-Way" policy does not allow existing utilities to remain within the proposed right-of-way of a freeway if access is only attainable from the through traffic roadways or ramps. The proposed alignment would require installation along the areas that would be subject to future relocations due to the policy. In addition, the City of Blaine's current and future plans include the construction of service roads adjacent to the highway. Current road projects along the route include the reconstruction of the Highways 65 and 242 interchange along with two new nearby bridges. Future plans include the construction of several new bridges and possible major reconstruction of the Highways 65 and 10 interchange. Due to these extensive road reconstruction plans, it is likely that a significant portion of this route would require the relocation of the pipeline to accommodate the public infrastructure improvements. In addition, this route affects approximately 120 more parcels than the primary route. The higher likelihood of interruption of gas service and the relocation of segments of pipeline, as well as increased landowner impacts, seriously detract from the desirability and cost effectiveness of this route.

Alternate Route 2 (University Avenue Route)

Under this alternative, the route would commence at the existing Northern Natural TBS near the intersection of State Trunk Highway 65 (Central Avenue) and 139th Avenue. The route thence would traverse southerly parallel to the highway to the intersection with Bunker Lake Road. At Bunker Lake Road, the route would thence deflect to the west parallel to the road to the

intersection with Jefferson Avenue. At Jefferson Avenue the route would deflect to the south and parallel Jefferson Avenue to the intersection with State Trunk Highway 242 (Main Street). The route would thence deflect westerly paralleling State Trunk Highway 242 to the intersection with University Avenue. At this point the route would deflect southerly and parallel University Avenue to the southerly edge of Plaza Park in the City of Fridley. The route would then deflect to the west along the south edge of Plaza Park to the intersection of the Burlington Northern Santa Fe Railroad right-of-way. The route would thence deflect southerly and parallel the easterly side of the railroad to a point lying southerly of Rice Creek. At this point the route would cross to the westerly side of the railroad tracks and thence continue southerly parallel to the railroad tracks, and thence deflect westerly to East River Road (Anoka County Highway 1) near the intersection of Island Park Drive NE and East River Road. The route would then deflect south along the westerly side of East River Road to the Xcel Riverside Power Plant and there terminating.

After discussions with Mn/DOT, CenterPoint Energy has learned that State Trunk Highway 47 (University Avenue) is unlikely to see significant improvement to the highway within the project area. Some of the difficulties of construction along Highway 65 are avoided, but due to existing development along this route, the workspace available for construction activities would be limited and would require sustained lane closures to safely accommodate construction of the pipeline. In addition, this route affects approximately 100 more parcels of property than the primary route and would be traversing through the front yards versus the back yards on many of these properties. Since this route will cause a greater disruption to the immediate community and businesses, its use is less desirable than the selected primary route.

Subpart 3. Description of the Environment

The applicant must provide a description of the existing environment along the preferred route.

The following discussion is a description of the existing environment along the proposed pipeline right-of-way including land use, human settlement, vegetation and wildlife, cultural resources, soils and water resources.

Land Use

The proposed route traverses adjacent to an existing railroad for approximately 11 miles and adjacent to existing roads for approximately 5.3 miles in suburban areas in Anoka County and Hennepin County. Cities crossed by the preferred route include Andover, Coon Rapids, and Fridley in Anoka County and approximately one mile in Minneapolis, Hennepin County. Existing natural gas pipelines are located along approximately 15.3 of the 16.3 miles of the proposed right-of-way. Various land use types will be crossed by this route including commercial, residential, industrial and public lands.

According to city zoning information, approximately 35% of the route is commercial, 28% is comprised of public lands (county and city parks), 27% is residential and 10% is industrial. In

general, the north end of the route is predominantly residential and park land, while the south end of the route is predominantly commercial/industrial land.

The proposed pipeline route crosses 29 roads and 4 State Highways including Highway 242, Highway 47/10, and Highway 610 in Coon Rapids, as well as Highway 694 in Fridley. The existing railroad corridor passes underneath Highway 610 and over Highway 694. CenterPoint Energy will work closely with Mn/DOT staff to determine the specific highway crossing plans and procedures.

A portion of the proposed pipeline route that parallels the railroad is also the proposed route for the NorthStar Commuter Rail Project. Meetings have taken place between CenterPoint Energy and NorthStar staff to discuss construction issues and timing of activities for both projects. CenterPoint Energy is currently in the process of reviewing the most recent NorthStar project construction plans and intends to maintain close coordination with the NorthStar Project team to ensure that both projects may proceed in a timely and effective manner.

Human Settlement

The proposed pipeline route will cross portions of the Cities of Andover, Coon Rapids, Fridley and Minneapolis. The majority of the route will be located in Coon Rapids (6.5 miles) and Fridley (6.2 miles), with approximately 2.5 miles in Andover and approximately one mile within Minneapolis. The proposed pipeline route will affect significantly fewer landowners than the two alternate routes that were analyzed by CenterPoint Energy. The proposed route will affect approximately 110 landowners, compared to approximately 220 on the Highway 65 alternate route, and 200 landowners on the University alternate route. The current usage of the impacted properties along the proposed route is approximately 42% residential, 39% commercial, 9% industrial and 10% public property. CenterPoint Energy has existing relationships with many of the landowners along the proposed route due to the location of their current pipeline facilities. Over the years, CenterPoint Energy has maintained positive relationships with these landowners during ongoing operation and maintenance activities of their pipeline facilities.

CenterPoint Energy has been proactive in notifying and involving the affected cities, counties, road authorities, etc. in the planning process of the proposed project. CenterPoint Energy has met with the Cities of Andover, Blaine, Coon Rapids, Ham Lake, Fridley, Spring Lake Park and Minneapolis. Other entities that CenterPoint Energy has met with include the Minnesota Department of Commerce, Anoka County (Roads and Parks Departments), Mn/DOT, Hennepin County Roads Department, Minneapolis Public Works, Xcel Energy, Burlington Northern Santa Fe Railroad and North Star Rail Project team members.

The purpose of these meetings was to present potential route options and solicit feedback regarding potential issues, future development, or other concerns along each of the routes. CenterPoint Energy collected valuable information from these meetings, which was utilized during the route planning stages of the project.

CenterPoint Energy will minimize impacts to landowners by utilizing as much existing pipeline right-of-way as possible during construction. CenterPoint Energy is in discussions with the Burlington Northern Santa Fe Railroad company to utilize a portion of the railroad right-of-way for workspace during construction to reduce impacts to adjacent properties. In the areas where construction will require additional space, CenterPoint Energy will work with the landowners to acquire either permanent easement rights or permission to use extra work space during construction and restoration phases of the project.

Parks and Recreation Areas

The proposed pipeline route crosses or runs adjacent to 11 City Parks and two County parks. The City parks within the City of Andover include Coon Creek Park and Andover Lions Park. City parks within the City of Coon Rapids include Wilderness Park, Mallery Park, Sand Creek Athletic Field and Erlandson Park. The parks located in the City of Fridley include the Springbrook Nature Center, the Fridley Community Park, Plaza Park, Locke Lake Park and Edgewater Gardens Park. The two Anoka County Parks include the Bunker Hills Regional Park and Riverfront Regional Park.

Existing natural gas pipelines are located within or adjacent to these parks. In the route planning stages of the proposed pipeline project, CenterPoint Energy met with each of these Cities as well as the Anoka County Parks Department and had positive discussions regarding mitigation of impacts to park land. CenterPoint Energy will work closely with the respective Parks Departments during the acquisition, construction and restoration phases of the project to ensure that the Cities' and Counties' needs are met. Mitigation of parkland impacts is further discussed in Section 4415.0145.

Vegetation and Wildlife

The landscape of the area crossed by the proposed project can be divided into three categories: dry upland, mesic upland, and wetlands or shoreland. The dry upland areas are characterized by oak forests and oak savanna. Mesic upland areas are characterized by mixed hardwood forests which can include red maple, trembling aspen, and northern pin oak. Other tree types found in the project area include red pine, eastern white pine, jack pine, bur oak, northern red oak, maple, elm, basswood and cottonwood. Wetland types include open water marshes, cattail swamps, sedge meadows, shrub and hardwood swamps.

A variety of wildlife species are supported by habitat in the area of the proposed pipeline. This habitat includes open land, woodlands and wetlands. Typical wildlife supported by open land in the project area includes cottontailed rabbits, sharp-tailed grouse, meadowlark, wild turkey, field sparrow, and red fox. Wildlife typically supported by area woodlands include tree squirrels, grouse, raccoon and white-tailed deer. Wetlands in the project area typically attract ducks, geese, herons, muskrat, mink, beaver and several species of reptiles.

Threatened and Endangered Species

CenterPoint Energy consulted with the U.S. Fish and Wildlife Service (USFWS) and the Minnesota Department of Natural Resources (DNR) regarding the potential impacts to federally or state listed threatened or endangered species. A response was received from the USFWS which concluded that no federally listed species would be impacted by the proposed pipeline project. The DNR reviewed the Natural Heritage Inventory Data Base to determine if any state-listed threatened or endangered plant or animal species or other significant natural features are known to occur within an approximate one-mile radius of the proposed project.

The DNR provided comments for only those elements that may be impacted by the proposed project. The DNR determined that the pipeline crosses through an ecologically important area near the north end of the route, which the Minnesota County Biological Survey has identified as a “Site of Outstanding Biodiversity Significance”. In general, these are areas with varying levels of native biodiversity that may contain high quality native plant communities, rare plants, rare animals, and/or animal aggregations. The sites that the DNR specified may include dry oak savanna and dry prairie native plant communities as well as rare plant species including Tall Nut-Rush (endangered species), Tooth-Cup (threatened species) and several special concern species.

The DNR also noted that areas of dry prairie remnants are located along the railroad corridor, some of which would be crossed by the pipeline on the north end of the route. The DNR has conducted field studies along thousands of miles of railroad corridor to identify native prairie. These studies ranked the prairie fragments as very good, good or fair based on the coverage of native prairie plant species, abundance of woody shrubs, and the level of disturbance. The prairie remnants that would be impacted by the proposed pipeline were assigned the “good” ranking. Many of these prairie remnants are located within the Bunker Hills Regional Park.

The DNR also provided information regarding the Blanding’s Turtle, a state-listed threatened species, which has been reported in the vicinity of the proposed pipeline route. The DNR provided information about the Blanding’s Turtle which lists background information regarding habitat use, life history and reasons for the species’ decline, as well as recommendations for avoiding and minimizing impacts to the rare turtle. This information will be provided during training to all personnel working in the area to assist with identifying the species and details regarding proper notification.

The DNR also provided information regarding the Peregrine Falcons which have nested at the Xcel Energy Riverside Power Plant for several years. According to the DNR, the Peregrine Falcon was recently removed from the Federal Endangered Species List. However, it is currently classified as a state-threatened species. The DNR required that if the pipeline construction will require disturbance near the Peregrine Falcon nest box at the Riverside Power Plant, such activities should be timed to avoid the critical nesting period in April and May. CenterPoint Energy will incorporate this into their schedule.

CenterPoint Energy has had discussions with the DNR and communicated their commitment to compliance with DNR requirements related to the state protected species. CenterPoint Energy will conduct a field survey in the DNR suggested areas to determine if any state protected species are located within the area of potential impact. In the event that protected species are identified, CenterPoint Energy will work with the DNR to determine potential options for avoiding or minimizing impacts. These options may include minor route adjustments (i.e., crossing to the other side of the railroad tracks), directional drill, or transplanting of affected plants. The DNR has affirmed their intention to work with CenterPoint Energy regarding potential options.

Geology

The geology of the area crossed by the proposed pipeline is characterized by a number of glacial movements. Glacial drifts, mainly outwash sands and glacial till, cover much of the project area. The glacial drift is commonly 100 to 250 feet thick and is underlain by limestone and sandstone bedrock. The material deposited by earlier glaciers is buried under the more recent glacial deposits of the Wisconsin glaciation. Only deposits from the last two major ice movements are recognized in the area. The Superior lobe brought in reddish-brown sandy till from the Lake Superior basin. The DesMoines lobe deposited a light olive-brown calcareous sandy loam or loam till, commonly called “gray” till.

Soils

The proposed route crosses the Anoka Sand Plain which is characterized by sandy soils formed from materials deposited by glaciers during the last glacial period. These soils are highly permeable, which accounts for the rapid groundwater recharge rate found throughout the Anoka Sand Plain. Many of the wetland soils found in the Anoka Sand Plain are atypical due to the rapid infiltration rate of water that serves to leach out redox features typically found in wetland soils.

A large part of the Anoka Sand Plain is covered by a sand and gravel surficial aquifer. The majority of these surficial aquifers have an underlying bedrock aquifer typically consisting of dolomite, sandstone or shale. Most of the surficial groundwater in the Anoka Sand Plain ultimately flows to the Mississippi River. The water table is high in most wetlands located in the Anoka Sand Plain.

Specific soils information was obtained from the Natural Resource Conservation Service (NRCS) for the proposed corridor. The proposed project is located within the Zimmerman-Isanti-Lino soil association which consists of nearly level to undulating, excessively drained, to somewhat poorly drained and very poorly drained soils. This soil association is characterized by fine sands and is the most prevalent soil association of the Anoka Sand Plain. Because of the predominance of fine sands, sidewall stability is poor in the underlying material, and caving can be an issue during excavations.

A table of the specific soils along the route and approximate distances is provided in Appendix D. The north end of the route is dominated by Sartell Fine Sand. The surface layer of this soil is typically fine sand about 9 inches thick. This non-hydric soil is very deep and excessively drained. The surface layer has a moderately low content of organic matter and it has a rapid permeability rate.

Another very common soil type crossed by the project is Zimmerman Fine Sand. The surface layer of this soil is typically fine sand approximately 10 inches thick. This soil is very deep and excessively drained. The surface layer has a low content of organic matter. This non-hydric soil has a rapid permeability rate and is therefore typically not flooded or ponded.

The most common soil types in the southern portion of the route in Hennepin County include Udorthents and Urban Land Udipsamments. Udorthents consist primarily of areas that have been cut for leveling or filled for development. The cut and/or fill material is predominantly loamy soil material. The geomorphic setting for this soil type is typically moraines. Urban land consists mainly of industrial parks, office buildings, warehouses, and railroad yards, which are covered by impervious surfaces. Most of these areas were originally wet, mineral or organic soils. The Udipsamments consist of nearly level areas that have undergone minimal grading. The cut and fill material is predominantly sandy. The geomorphic setting for the Urban land and Udipsamments includes outwash plains and stream terraces.

Cultural Resources

CenterPoint Energy has completed preliminary research regarding cultural resources that could potentially be impacted by the project. The results of this research are discussed below. The next steps will involve detailed discussions regarding cultural resource survey methodologies with the U.S. Army Corps of Engineers (Army Corps) archaeologist and Minnesota State Historic Preservation Office (MnSHPO). The purpose of these discussions will be to develop a cultural resource field survey plan based on the preliminary research that has been completed. CenterPoint Energy will work with the Army Corps and MnSHPO to determine which areas along the proposed route would be considered high, medium or low potential for cultural resource sites. CenterPoint Energy will then use this information to develop a specific strategy for the cultural resource field investigations and survey report. The Army Corps is also responsible for consulting with Native American tribes regarding cultural resources in the project area. CenterPoint Energy will assist with the tribal consultations as directed by the Army Corps.

Cultural History of the Project Area

The project is located in Anoka and Hennepin Counties in east-central Minnesota and lies within Archaeological Region 4e: Central Lakes Deciduous Region. As implied by its name, the environment of the region is characterized by deciduous forests and numerous lakes. The prehistoric cultural groups that occupied the region reflect an adaptation to this environment. The general outline of the prehistory of the region is known from the archaeological work in the region and inferences drawn from adjacent regions.

Overview of Previous Archaeological Investigations

The earliest archaeological investigations in Anoka and Hennepin Counties were conducted by Theodore Lewis of the Northwestern Archaeological Survey in the late 1800s (Winchell 1911). Many mound sites were mapped and recorded at this time. Lloyd Wilford, archaeologist at the University of Minnesota, conducted archaeological investigations in the region between 1930 and 1960, focusing on the study of burial mounds. In the late 1970s, archaeological investigations were conducted in selected portions of Anoka County for the Minnesota Statewide Archaeological Survey (Minnesota Historical Society 1981). Dan Wendt and the Institute for Minnesota Archaeology conducted several archaeological investigations in Anoka County in the 1980s. In the 1990s several compliance surveys were conducted in Anoka County for county parks, highway construction, private development, and gas pipeline projects (Forsberg and Dobbs 1997).

Review of MnSHPO Inventory Database

CenterPoint Energy completed a literature review and file search of site file data maintained by the MnSHPO. A review of the archaeological and historic structure inventory database/maps identified seven archaeological sites within one mile of the project area (Table 1). Four of the sites are located more than 900 feet from the project area, and the project should have no impact on these sites. The specific location of two sites (21ANa and 21HEaq) is unknown, and one site (21ANr) is located near the project area. These three sites are discussed in the following section. Archaeological fieldwork will be conducted if necessary to determine if these sites will be impacted by the project. Five standing structures are located within 164 feet (50 meters) of the project area (Table 2), and they are also discussed in the following section. CenterPoint Energy will work with the Army Corps archaeologist as well as with the MnSHPO to develop survey plans and procedures if necessary to comply with applicable permit requirements.

Table 1. Previously Recorded Archaeological Sites within One Mile of the Project Area

| Site No. | Distance to Project Area | Site Description |
|-------------------|---------------------------------|--|
| 21ANa | Unknown | Woodland/Oneota - Burial mound |
| 21AN134 | 3,642 feet | Prehistoric – Isolated find |
| 21ANi (AN-FRC-A1) | 919 feet | Early historic river settlement – Lumber mill ca. 1850 |
| 21ANr | 0 feet | Early historic river settlement – Manomin ghost town ca. 1870s |
| 21AN140 | 1,837 feet | Prehistoric – Artifact scatter |
| | | Early historic river settlement – historic artifact scatter associated with Banfill Tavern (AN-FRC-2) ca. 1849 |

| Site No. | Distance to Project Area | Site Description |
|----------|--------------------------|--------------------|
| 21HEaq | Unknown | Soo Line Yards |
| 21HEar | 1,640 feet | Shingle Creek Mill |

Table 2. Previously Recorded Standing Structures Within 164 feet (50 meters) of Project Area

| Site No. | Distance to Project Area | Site Description |
|-------------|--------------------------|---|
| AN-CRC-3 | Unknown | Brick Factory ca. 1925 |
| AN-CRC-7 | +/- 33 feet | Railroad Bridge 1926 |
| AN-FRC-1 | +/- 33 feet | Minneapolis waterworks Fridley plant 1923 |
| HE-MPC-8608 | +/- 33 feet | Riverside Power Plant |
| HE-MPC-3714 | Unknown | Minneapolis General Electric Company |

Sites and Structures Near the Project Area

Site 21ANa is listed as a site lead in the MnSHPO files. The site is a possible mound that was initially reported to the Minnesota Historical Society Archaeological Committee in ca. 1860-1870 by a local informant. The mound has not been verified through professional investigations. The description of the mound is vague, and its precise location can't be determined. The mound may exist near the proposed pipeline route. Further archaeological investigations will be conducted.

Site 21ANr is the Manomin ghost town, which was platted in 1851 by John Banfill around his establishment (Miller-Dunwiddle-Architects, Inc. 1980). The town did not extend east of the railroad based on an early plat map (ca. 1860), and therefore may not extend into the project area, which is located on the east side of the railroad in the area of this site. In 1851 the town appears to have consisted only of a saw mill and the Banfill Tavern, which also functioned as an inn, general store, and post office. The place had grown into a “tidy settlement” by 1856 (Gilman et al. 1979:83). In 1857 there were three hotel owners (and presumably three hotels) in Manomin based on state census records. The actual number of businesses and residences in the town is unknown as is the date when the town was abandoned. The proposed route crosses east of the area platted as the town of Manomin on the historic plat map (ca. 1860). The Manomin town site encompasses a slightly larger area on the MnSHPO site inventory map and extends into the project area.

Site 21HEaq is the Soo Line Yards. The site is listed in the archaeology database inventory, but it is not depicted on the MnSHPO site maps. The specific location of the site is unknown. There was no additional documentation available for this site in the MnSHPO files.

Structure AN-CRC-3 is a former brick factory built in 1925. The proposed route crosses the general area where the factory was located. As of 1976, the chimney of the factory was still standing. However, the exact location of the factory is not plotted on the MnSHPO inventory map.

Structure AN-CRC-7 is a railroad bridge built in 1926. The proposed route is located just east of the bridge.

Structure AN-FRC-1 is the Minneapolis Waterworks Fridley plant built in 1923. The proposed route crosses near the northeast corner of the parcel on which the facility is located.

Structure HE-MPC-8-608 is the Xcel Energy Riverside Power Plant. The structure is listed in the standing structure database inventory, but it is not depicted on the MnSHPO maps. The address of the property is 3100 Marshall Street NE. There was no additional documentation available for this site in the MnSHPO files.

Structure HE-MPC-3714 is the Minneapolis General Electric Company. The structure is listed in the standing structure database inventory, but it is not depicted on the MnSHPO maps. The address of the property is 2900 Marshall Street NE.

Historic Document Review

Several sources of information were reviewed to determine if there are any potential historic properties within a mile of the project area that have not previously been inventoried. Sources examined included the original land survey maps, historic plat maps, local history documents, and the MnSHPO files.

Historic research conducted as part of the statewide archaeological survey in Anoka County identified three potential historic properties within a mile of the project area that have not been inventoried in the MnSHPO archaeological and historic structure database (Fame 1977). These properties include a school building, brick factory, and mill (Table 3). The precise location of the school building and brick factory is not known because of limitations in the source documents, and their proximity to the project area cannot be determined.

**Table 3. Potential Sites Within One Mile of Project Area
Based on Historic Document Research**

| Site Type | Date | Distance to Project Area |
|---------------------------------|-------------|---------------------------------|
| School Building | 1874 | Unknown |
| Brick Factory & Clay Pit | 1903 | Unknown |
| Saw and Grist Mill | 1851 | ca. 1,837 feet |
| Oxcart Trails and Military Road | 1830s-1870s | Variable |
| Railroad | 1864 | +/- 33 feet |

| Site Type | Date | Distance to Project Area |
|---|------|--------------------------|
| Northern Ordnance Plant (formerly Northern Fire Apparatus Company) | 1907 | 295 feet |

The original land survey maps, which were compiled between 1872 and 1876, depict a historic road along the southern portion of the pipeline route (United States 1872-1876). The road, which is labeled as the “Red River Road”, began as an oxcart trail in the early 1800s. The trail was initially used by fur traders as a route between the Red River Valley region and St. Paul. In the 1850s the trail was improved for use as a military road linking Point Douglas and Fort Ripley (Gilman et al. 1979). The oxcart trails facilitated the growth of St. Paul into a major center for commercial distribution, travel, and early settlement as links to the east coast had been established via steamboat and railroad. The oxcart trails, which were initially used for the fur trade, were later used for commerce and settlement throughout the western and northwestern parts of Minnesota. They had a vital role in shaping the history of Minnesota. By the 1870s, the construction of railroads and new roads along section lines made the oxcart trails largely obsolete. It is unlikely that any evidence of the oxcart trails has survived the development that has occurred since their use. In the project area, the modern East River Road and railroad follow the route of the old trail. The Museum Director of the Anoka County Historical Society stated that there was no remaining evidence of the Red River trails in Anoka County (letter on file at MnSHPO).

A preliminary review of historic plat maps (1898, 1913, 1914, and 1916) in Anoka and Hennepin counties reveals that there are numerous structures (residences and businesses) that have been constructed in the vicinity of the project area along East River Road; as development and settlement occurred early in this area. A visual reconnaissance of this area indicates it has been heavily impacted by modern development, and it is likely that most of these former building sites along the project route have been extensively disturbed or destroyed.

Streams

The proposed pipeline project crosses three perennial streams including Coon Creek (two crossings), Sand Creek and Rice Creek, as well as nine intermittent ditches and tributaries, according to the USGS topographic maps. Coon Creek and Sand Creek are not designated as Minnesota DNR Protected Waters at the crossing locations, and Rice Creek is designated as a Minnesota DNR Protected Water. The method of crossing these streams during construction will minimize or avoid impacts to the bed and banks and is discussed in greater detail in the environmental impact section below.

Coon Creek originates in the southern part of the Carlos Avery Wildlife Management Area in western Columbus Township. This creek flows west, then south, and empties into the Mississippi River at the Coon Rapids Dam Regional Park. Coon Creek has several tributaries and the land use along the creek is generally an equal mix of residential and vacant/agricultural, along with some small commercial sites. A vegetative buffer of 20-100 feet is typical along the

creek. The streambed is composed of sand and silt and is approximately 20 feet wide at the northern most crossing location. The second crossing is located south of Highway 10 where the stream meanders along the west side of the railroad corridor for approximately 500 feet. The crossing method for both Coon Creek crossings will be directional drill, which will minimize impacts to the creek bed and banks.

Sand Creek is the largest tributary of Coon Creek. It drains suburban residential, commercial and retail areas throughout Coon Rapids and portions of Blaine. At the crossing location, the creek is approximately 15 feet wide. The crossing method for Sand Creek will minimize impacts to the creek bed and banks.

Rice Creek originates from Howard Lake in east-central Anoka County, flowing south and west through the Rice Creek Chain of Lakes and eventually into the Mississippi River. Rice Creek has a rock bottom in most areas with several pools and riffles. The Rice Creek Watershed is highly urbanized and the creek receives runoff from a variety of sources. At the crossing location, the creek is approximately 50 feet wide. At this location, a paved trail crosses above the creek culvert which allows the creek to run into Locke Lake. CenterPoint Energy has not chosen the crossing method at this time for Rice Creek. The two options include directionally drilling the creek or installing the pipeline under the trail and above the Rice Creek culvert. Both options would minimize impacts to the bed and banks of Rice Creek.

Watershed

The proposed route is located within the Upper Mississippi River Basin. The Upper Mississippi River Basin originates at the Headwaters in Itasca State Park (Itasca County) and ends where the Mississippi River combines with the St. Croix River near Hastings. As the river runs its course, it drains a mixture of forests, prairie, agriculture and urban land areas. The Upper Mississippi River Basin covers approximately 20,100 square miles and drains 15 of the 80 major watersheds in Minnesota. The pipeline route is situated within the major watershed of the Mississippi River (Twin Cities - Metro). This watershed is highly developed and as a result of the amount of impermeable surfaces in the area, stormwater treatment and wetland conservation is a high priority.

Several watershed districts and watershed management organizations are also crossed by the proposed route. The longest portion of the route crosses Coon Creek Watershed District with Six Cities Watershed Management Organization, Rice Creek Watershed District, and Central Mississippi Watershed Management Organization also crossed by the proposed project.

Ground Water

The ground water that will be encountered along the route occurs in surficial aquifers, buried drift aquifers and bedrock aquifers. Surficial aquifers occur above bedrock, closest to the surface and are unconfined. Unconfined aquifers are the saturated portions of the upper soil profile located above the confining layer. The water level of a surficial aquifer is typically associated with the ground water table of an area. Buried drift aquifers occur in well sorted sands and

gravels deposited in bedrock valleys, alluvial channels and outwash plains. Bedrock aquifers are geologic bedrock units that have porosity and permeability such that they meet the definition of an aquifer (able to release water in quantities sufficient to supply reasonable amounts to wells). Bedrock aquifers are fairly well defined and the units are considered connected hydrologically.

A large portion of the Anoka Sand Plain is covered by a sand and gravel surficial aquifer. The majority of these surficial aquifers include an underlying bedrock aquifer typically consisting of dolomite, sandstone or shale. The majority of the surficial ground water in the Anoka Sand Plain ultimately flows to the Mississippi River. In general, a high water table is characteristic of the Anoka Sand Plain wetlands.

Surficial aquifers are most likely to be encountered along the proposed route due to the shallow ground water that is typical of the Anoka Sand Plains. In general, pipeline construction impacts to surficial aquifers are most common due to shallow water tables. In areas where shallow bedrock exists, construction can also impact bedrock aquifers.

Wetlands

A review of the National Wetland Inventory (NWI) maps for the route identified 19 wetlands that will most likely be crossed by the project for a total of approximately 6,800 feet. Crossing lengths vary from approximately 100 feet to 700 feet. The most common wetland type crossed by the project is emergent wetlands. The emergent wetland class is characterized by erect, rooted, non-woody, soft stemmed plants, excluding mosses and lichens. Their vegetation is present for most of the growing season in most years. These wetlands are typically dominated by perennial plants. Examples of emergent wetland plants include cattails, sedges and bulrush, which are rooted in the bottom sediments and extend above the surface of the water and sediments. The next most common wetland type encountered by the proposed project is scrub-shrub wetlands. The scrub-shrub wetland class includes areas dominated by woody vegetation less than 20 feet tall. The species include trye shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. The other wetlands that occur along the proposed route include forested wetlands and unconsolidated bottom wetlands. Atypical wetland soils are found in many wetlands in the Anoka Sand Plain because of the rapid infiltration rate of water that serves to leach out redox features typically found in wetland soils.

A table of the wetlands crossed by the project is provided in Appendix D. CenterPoint Energy will be conducting a wetland delineation in accordance with applicable state and Federal guidelines.

Environmental Impact of Preferred Route - 4415.0145

The applicant must also submit to the board along with the application an analysis of the potential human and environmental impacts that may be expected from the 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 parts 4415.0040 and/or 4415.0100.

Human Settlement

Economic benefits to the local economy will be realized during construction as a result of the project labor workforce. These benefits will include expenditures for materials, workforce lodging, fuel sales, grocery sales and restaurant expenditures. Additional local benefits will include easement payments, permit fees and property tax revenues. CenterPoint Energy has estimated that more than \$400,000 of additional property tax revenue will be generated as a result of the proposed project. Furthermore, MERP has received support from communities, industry and government agencies and will result in substantial environmental benefits. According to the *Public Utilities Commission Staff Briefing Papers for Docket No. E-002/M-02-633 on December 18, 2003*, the conversion of the Riverside Plant from coal to natural gas will eliminate coal based air emissions from the site while providing about 439 MW of creditable capacity. The conversion of the Riverside Plant will result in 100% reduction in SO₂, a 99% reduction in NO_x, and a 100% reduction in particulate matter. CO₂ will be reduced by 57%, CO by 41% and virtually all mercury and lead emissions will be eliminated. The conversion of the plant from coal to natural gas will substantially reduce local train and truck traffic to and from the Riverside Power Plant. Approximately 1.4 million tons of coal is delivered to the site each year. The existing coal pile and handling equipment will also be removed, which will reduce the coal ash leaving the site.

The proposed project may result in short-term impacts to the human environment during pipeline construction activities. Impacts to existing roads within the project area will be short-term and minimal. CenterPoint Energy will typically construct the pipeline across paved roads and railroads using boring or directional drill methods in order to avoid impacts to road surfaces or railroads and to minimize traffic interruptions. Unpaved roads may be crossed by boring, or open-cut construction methods. In the event that an unpaved road is open-cut, CenterPoint Energy will minimize traffic disruptions by maintaining one open lane of traffic except when the pipeline is being trenched and backfilled. CenterPoint Energy will obtain all necessary permits for right-of-way crossings. Transportation of equipment and materials to the right-of-way could also result in short-term impacts to traffic in the area, but are expected to be minimal.

The proposed pipeline will not include new compression facilities so there will not be exhaust or other noise that can be associated with compressor stations. Furthermore, the pipeline will not generate noise under normal operations. During construction, noise impacts from equipment will be short-term as construction progresses along the right-of-way.

Recreation Areas

The proposed pipeline route traverses through 13 parks as discussed in Section 4415.0140 above. CenterPoint Energy will work closely with Anoka County and the Cities of Andover, Coon Rapids and Fridley regarding specific construction requirements associated with park land. Construction and operation of the proposed pipeline are not expected to have significant impacts to recreational areas or public land. During construction, temporary impacts may include restricted use of trails, noise and visual impacts. After construction is completed, CenterPoint Energy will work with the County or City to restore the recreation areas, trails and public lands. This restoration will allow for the continuation of pre-construction recreation uses. Future maintenance of the permanent right-of-way will include periodic clearing of trees and shrubs for pipeline operational activities. The future maintenance of the pipeline right-of-way will be consistent with the maintenance of the existing natural gas pipeline rights-of-way.

Geology

The overall effects of construction and operation of the proposed project on topography and geology will be minor, limited primarily to the results of construction activities. The primary effect from construction is disturbance of slopes along the proposed project right-of-way as a result of excavation activities.

With pipeline installations, the principal impact to geologic resources resulting from construction activities is associated with blasting activities in areas where bedrock is either at grade or within the excavation depth. It is not expected that bedrock will be encountered along the proposed project area. The construction and operation of the proposed pipeline project is not expected to result in any adverse impacts to known mineral resources in the project area.

Impacts on topography will be limited primarily to the construction phase, during which conditions along the pipeline right-of-way will be temporarily altered. Slopes may be recontoured to accommodate construction equipment. Following the completion of construction, topographic and drainage conditions along the proposed pipeline right-of-way will be restored as close as possible to their pre-construction configuration. Minor short-term impacts resulting from the spreading of excess soil from the excavation over the right-of-way and from the placement of a small berm of mounded soil over the pipeline will occur. This technique is also referred to as “crowning” the trench. This will be done as necessary to compensate for settling of backfill and to reduce ditch slumping.

Ground Water

Due to the proposed construction methods planned to be utilized during this project, construction, operation, and maintenance activities are not expected to have long-term impacts on groundwater resources. Potential short-term construction impacts to surficial aquifers may include: increased temporary turbidity from excavation, short-term disruption of recharge and localized flow along the pipeline trench.

Trenching will be completed using backhoes or trenching machines. The potential for surface activities to produce an adverse influence on groundwater quality or quantity is minimal. The need to utilize blasting for trench excavation is not anticipated. The trench will be backfilled with native material allowing the groundwater to re-establish equilibrium on either side of the trench. After backfilling, the groundwater level will rapidly stabilize. Water removed from the trench during installation will be discharged in the immediate vicinity in accordance with permit requirements. Shallow surficial aquifers are generally found adjacent to wetlands or low-lying areas and experience rapid recharge of groundwater. This rapid recharge will help quickly re-establish equilibrium allowing turbidity levels to decrease. Hay bale structures or geotextile filter bags will be used to remove sediments when trench dewatering is necessary.

During the construction of the proposed pipeline, CenterPoint Energy will take steps to minimize impacts to any existing water supply wells located near the proposed project area. These measures are primarily associated with construction activities, refueling activities or storage areas for hazardous liquids. Construction personnel will follow procedures to prevent, contain, clean-up and report spills that may occur during the course of construction, as will be outlined in CenterPoint Energy's SPCC Plan.

Wetlands

The proposed project will cross approximately 6,800 feet of wetlands as detailed on the wetland crossing table in Appendix D. The 50-foot-wide permanent right-of-way will include approximately 7.87 acres of wetlands, and the 10-foot-wide temporary workspace will include approximately 1.58 acres of wetlands. As discussed above, the 50-foot-wide permanent right-of-way will overlap with existing natural gas pipeline right-of-way in most areas.

Wetlands will not be drained or permanently filled during construction/restoration of the proposed project. CenterPoint Energy will restore the impacted wetlands to pre-construction conditions to the extent possible. Construction of the proposed pipeline may result in minor short-term disturbances to wetlands including the following: temporary loss of wetland vegetation, wildlife habitat and aesthetics associated with clearing and other construction activities; soil disturbance associated with trenching, equipment traffic and the limited pulling of stumps; and temporary increases in turbidity and fluctuations in wetland hydrology associated with trenching, equipment traffic and spoil storage. The duration of impacts to forested and scrub-shrub wetlands will be longer than other wetland types due to the additional time required for re-establishment of woody vegetation. These impacts will be temporary because the wetland hydrology will be restored, the hydric topsoil will be replaced, and the wetlands will be allowed to naturally revegetate.

In preparation for construction, clearing crews will cut existing wetland vegetation off at ground level and remove it from the wetland. CenterPoint Energy will limit the pulling of stumps in wetlands to the trench line unless safety concerns warrant otherwise. Excavated stumps will be removed from the wetland. After clearing activities are complete, timber riprap and/or timber mats may be utilized as necessary to minimize construction impacts to the wetlands and create a

safe, stable working surface. In addition, temporary sediment controls will be installed to contain soil within the construction right-of-way.

Backfilling of the excavated wetland material will take place after pipeline installation is complete. CenterPoint Energy may utilize set-on weights or concrete coated pipe in wetlands to secure the position of the pipeline. In areas where trench dewatering is necessary, CenterPoint Energy will utilize construction methods designed to prevent heavily silt-laden water from entering a waterbody or undisturbed portion of a wetland, such as filtering the water through geotextile filterbags in well vegetated areas.

Where wetlands are adjacent to the construction right-of-way and the right-of-way slopes toward the wetland, CenterPoint Energy will install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way and prevent sediment flow into the wetland.

Following the lowering-in of the pipe, the trench will be backfilled with the excavated trench spoil and the right-of-way will be restored as close as possible to its pre-construction contours. Restoration and revegetation will be conducted in accordance with permit requirements and landowner arrangements. This restoration will help restore existing groundwater and surface water flow patterns within the wetlands.

After construction is completed in wetland areas, the permanently maintained right-of-way will re-establish as emergent wetlands. In non-maintained areas, wetlands will be allowed to naturally revert to pre-construction conditions. The purpose of this restoration is to restore existing groundwater and surface water flow patterns within the wetlands. No loss of wetland acreage is expected from construction and operation of the proposed pipeline project.

Streams

As discussed above, the proposed route crosses three creeks (Coon Creek, Sand Creek and Rice Creek) and several intermittent tributaries. CenterPoint Energy is proposing to utilize horizontal directional drilling construction techniques to cross Coon Creek and likely Sand Creek. The purpose of using directional drill construction methods is to minimize impacts associated with typical open-cut construction methods, by drilling the pipeline under the stream channel. CenterPoint Energy is proposing to cross Rice Creek either by directional drill method, or by trenching the pipeline under the trail that runs above the creek culvert. CenterPoint Energy will develop site-specific crossing plans for each of the directional drill crossings. CenterPoint Energy will cross the tributaries and ditches by either directional drill method or open-cut construction techniques. CenterPoint Energy will also develop a SPCC Plan which will include information regarding storage of fuels and lubricants and restrictions for refueling near streams and wetlands.

Directional Drill

Directional drilling construction methods will be utilized by CenterPoint Energy to minimize impacts to stream bed and banks during pipeline installation. Potential impacts to streams during directional drilling include inadvertent release of drilling mud. The directional drilling process involves a drilling fluid primarily made up of clay bentonite and water. The purposes of this fluid include lubrication and stabilization of the borehole. A release of drilling mud can occur when the pressure of the drilling fluid causes the fluid to migrate from the borehole to the surface, following subterranean fractures. The extent of a release can be limited by careful monitoring and having appropriate equipment and response plans. CenterPoint Energy will develop a directional drill contingency plan which will include procedures regarding clean-up of inadvertent release material.

In areas where there are slopes adjacent to streams, CenterPoint Energy may also install sediment barriers at the base of the slope with materials such as silt fence, staked hay or straw bales, or sand bags. The sediment barriers help prevent siltation from entering the stream. The sediment barriers will also be inspected and maintained until permanent revegetation measures are successful. Slope breakers may also be installed as necessary to minimize runoff into a stream. Slope breakers are positioned at an angle across the right-of-way in order to direct runoff to adjacent vegetated areas. The purpose of slope breakers is to reduce runoff velocity and divert water off the construction right-of-way. Following installation of the pipeline, construction debris will be removed and work areas graded as near as possible to pre-construction conditions. As necessary, CenterPoint Energy will also apply mulch, consisting of straw, hay, erosion control fabric and/or some other functional equivalent, in order to stabilize the soil.

Open-Cut Crossing

The open-cut construction method, which may be utilized to cross intermittent tributaries or ditches, will require in-stream trenching, backfilling and stream bank restoration. This stream crossing method may result in short-term, localized increase in turbidity, possible disruption of local fish populations and other aquatic organisms, and disturbance of wetland and/or riparian vegetation. At the open-cut streams, banks and approaches may be graded during construction to provide a safe and level work area. Furthermore, temporary bridges may be needed to allow equipment to cross the streams. Areas affected by construction will be restored to original contours to the extent possible and revegetated according to the permit conditions and recommendations of landowners or land management agencies. No long-term effects to surface water resources are anticipated.

CenterPoint Energy may utilize staging areas/extra workspaces at each waterbody crossing to facilitate construction activities. The dimensions of the extra workspaces will vary based on site specific conditions. Generally, CenterPoint Energy will use an additional 40 foot wide by 200 foot long area to facilitate safe working conditions at crossing locations. This extra workspace will be used to provide additional area for equipment mobilization, operation and temporary storage.

Erosion control measures, including silt fencing and/or straw bales, will be utilized as necessary to minimize disturbed sediment from the trench impacting the waterbodies. The erosion control measures will be inspected regularly to evaluate their effectiveness and repaired or replaced as needed. CenterPoint Energy will install sediment barriers across the entire construction right-of-way where necessary at waterbody crossings, to prevent the flow of sediments into the waterbody.

After backfilling of the trench is complete, the disturbed areas will be re-graded as close as possible to pre-construction contours. Disturbed stream banks will be stabilized with erosion control methods such as geotextile fabric, erosion control blankets or comparable materials as necessary.

Soils

Potential temporary impacts to soils resulting from construction and operation of the proposed pipeline project include: increased potential for soil erosion; soil compaction; loss of soil productivity associated with mixing of topsoil; introduction of rock into the topsoil; and poor revegetation following construction. The magnitude of these impacts depends on several factors including the characteristics of the major soil types that will be crossed and the construction restoration techniques.

CenterPoint Energy will minimize the adverse impacts to soils by implementing mitigative measures and best management practices. CenterPoint Energy will also develop erosion control plans in conjunction with the Minnesota Pollution Control Agency (MPCA) stormwater discharge permit. Temporary erosion controls may include slope breakers, mulching, and the use of silt fences. Following construction, revegetation will commence as soon as possible in accordance with any existing permit requirements, and/or negotiations with landowners.

Erosion Potential

Construction of the proposed pipeline project will remove existing vegetation and temporarily destabilize soils, increasing the potential for soil erosion. The potential for erosion caused by water is a concern in the construction and operation of the proposed pipeline project. Water erosion is strongly related to the permeability of a soil and to the cohesion of the soil particles that compromise a soil. Other soil properties that influence water erosion include soil texture, percent of organic matter, soil structure, and soil infiltration capacity. Soils containing high portions of silt and very fine sand are most erodible. Well-drained and well-graded gravels and gravel-sand mixtures with little or no silt are the least erodible soils. Erosion is influenced by slope length and gradient; the frequency, intensity, and duration of rainfall; and the amount of time bare soils are exposed.

The proposed construction work areas will be restored upon the completion of construction. Revegetation efforts, seeding, lime application and fertilization may be performed based on permit conditions and recommendations from landowners and land management agencies.

Topsoil Preservation

Grading, trenching, and backfilling activities could result in the mixing of topsoil and less productive subsoil horizons. In order to protect topsoil resources, topsoil segregation procedures will be used as required in areas specified by applicable regulations, permit conditions or landowner requests. Environmental Inspector(s) will be used to ensure contractor compliance with these procedures.

Soil Compaction and Rutting

Movement of heavy construction equipment can produce soil compaction. Soil characteristics that affect soil compaction include soil texture, soil moisture, grain size distribution, and porosity. Soil compaction has a restrictive action on water penetration, root development, and the rate of diffusion of oxygen into soils. Compaction has the effect of reducing yields of most agricultural crops. Soils with a surface texture of sandy clay loam, or finer, with a drainage class of somewhat poorly drained through very poorly drained, are likely to be susceptible to compaction. After construction is complete, if excessive compaction is found, mitigative measures may include remedial tillage and/or planting deep rooted legumes to correct compacted areas.

Vegetation

Long-term impacts to vegetation associated with construction of the proposed pipeline will primarily include the clearing and maintenance of forest vegetation along the permanent right-of-way. During construction activities, the removal of vegetative cover and exposure of soil will increase the potential for wind and water erosion, and may increase soil temperatures as a result of additional sunlight exposure. The increased sunlight exposure due to tree and shrub removal could actually benefit certain shade intolerant vegetative species, allowing these species to receive adequate amounts of light necessary for growth.

Other construction impacts such as the clearing of temporary right-of-way and workspace will be largely short-term in nature. CenterPoint Energy will minimize impacts to vegetation adjacent to the right-of-way by restricting construction activities to only the approved work areas. Since the proposed pipeline route follows adjacent to existing natural gas pipelines, the construction area for the proposed pipeline will overlap with the existing pipeline corridor, minimizing the amount of clearing necessary for construction. After construction of the proposed project is completed, the work areas will be restored to pre-construction conditions to the extent possible. This restoration may include revegetation with seed mixtures specified by permit conditions, land managing agencies or landowners. It is expected that the immediate restoration efforts following construction will help ensure only short-term impacts to vegetation. After construction is completed, CenterPoint Energy will maintain a corridor which will be cleared of trees and shrubs to facilitate operation, maintenance and inspection of the pipeline. Along with pipeline markers, this corridor will also enhance pipeline safety by prominently identifying the location of the pipeline.

Wildlife

The construction of the proposed pipeline will generally result in minor short-term impacts to wildlife. It is anticipated that the proposed construction may temporarily displace avian, mammal, amphibian and reptile species. Although some loss of less mobile wildlife such as small mammals, amphibians, and reptiles, may incur within the construction work area, it is anticipated that the vast majority of wildlife will relocate to suitable adjacent habitats during construction. Most likely, the displaced species will either recolonize in adjacent areas or reestablish their original habitat after construction activities have been completed.

Long-term effects to wildlife will be limited. The primary long-term effect will be a permanent widening of pipeline corridors. Future periodic maintenance of the right-of-way will comply with any wildlife timing windows as specified by agencies. Construction and maintenance of the proposed project will not significantly alter the character of the landscape along the route. Consequently, effects on wildlife will be mostly temporary in nature.

Endangered Resources

As discussed above, CenterPoint Energy has had discussions with the DNR regarding potential impacts to state listed threatened or endangered species. CenterPoint Energy is committed to compliance with DNR requirements related to the state protected species. CenterPoint Energy will conduct a field survey in the DNR suggested areas to determine if any state protected species are located within the area of potential impact. In the event that protected plants are identified within the proposed construction corridor, CenterPoint Energy will work with the DNR to develop mitigation plans to either avoid or minimize impacts to protected resources. Potential mitigation measures include minor route adjustments (i.e., crossing to the other side of the railroad tracks), directional drilling under the plants, or transplanting the affected plants. The DNR has affirmed their intention to work with CenterPoint Energy regarding potential options.

Cultural Resources

CenterPoint Energy has completed preliminary research regarding cultural resources that could potentially be impacted by the project. The results of this research are discussed in Section 4415.0140, Subp. 3, above. The next step will involve detailed discussions regarding cultural resource survey methodologies with the Army Corps archaeologist and MnSHPO. The purpose of these discussions will be to develop a cultural resource field survey plan based on the preliminary research that has been completed by CenterPoint Energy. CenterPoint Energy will work with the Army Corps and MnSHPO to determine which areas along the proposed route would be considered high, medium or low potential for cultural resource sites. CenterPoint Energy, in conjunction with the Army Corps and MnSHPO, will then use this information to develop a specific strategy for the cultural resource field investigations and survey report.

In the event that any cultural resource sites are identified and are eligible for the National Register of Historic Places, CenterPoint Energy will work closely with the Army Corps and MnSHPO to establish mitigation measures in order to avoid or minimize impacts to the sites. These measures may include routing around the site or directionally drilling under the site. CenterPoint Energy will also develop a plan to address unanticipated cultural discoveries during construction. This plan will include procedures such as suspending construction activities and contacting a qualified archaeologist to evaluate the findings. The archaeologist would also consult with the Army Corps and MnSHPO regarding mitigation measures.

Right-of-Way Protection and Restoration Measures - 4415.0150

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.

Protection of the right-of-way and mitigating adverse impacts on the human and natural environment has been a focal point for CenterPoint Energy during the routing phase of the project and will continue to be a high priority during the construction and restoration phases of the project. CenterPoint Energy will implement various measures 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. These measures include but are not limited to, utilizing low impact construction techniques in sensitive areas (horizontal directional drilling), installing erosion and sedimentation control measures, and restoring the right-of-way as close as possible to pre-construction conditions. CenterPoint Energy will work closely with the landowners and applicable agencies to ensure proper restoration of the right-of-way is accomplished.

CenterPoint Energy will utilize Environmental Inspector(s) during construction and restoration activities to ensure environmental compliance throughout the duration of the project. Environmental inspection activities will include monitoring compliance with permit requirements, inspection of erosion control and sedimentation methods, inspection of topsoil segregation procedures, compliance with stream and wetland construction and mitigation procedures and permits, spill response activities, inspection of water appropriation and dewatering activities and implementation of restoration plans. The project contract documents will specifically address environmental compliance requirements and the construction contractor will be held responsible for mitigating any adverse impacts as identified by CenterPoint Energy, applicable agencies or landowners.

Human Environment

CenterPoint Energy will provide protection of the human environment by limiting construction activities to approved workspaces, maintaining safe working conditions along the right-of-way and by providing consistent communication with all affected parties during construction, restoration and operation/maintenance of the facilities. The presence of dust will depend on soil characteristics and weather conditions. To minimize dust in residential areas, water may be applied to the right-of-way if deemed necessary by CenterPoint Energy.

Erosion Control

CenterPoint Energy will prepare a SWPP Plan as required. Various erosion and sedimentation control measures will be utilized to minimize impacts and are described below. Erosion control

is achieved through nature by vegetation including grasses, trees and brush. CenterPoint Energy will remove only those trees necessary to facilitate construction activities, create a safe working environment, and protect the pipeline integrity.

Temporary erosion control measures such as trench breakers, slope breakers, silt fences, and staked straw bales will be installed and maintained at appropriate locations as necessary to minimize erosion and sedimentation. Temporary erosion controls will be properly maintained throughout construction and reinstalled as necessary until restoration is complete. Typical erosion control drawings are included in Appendix C of this application.

Trench Breakers

Trench breakers will be installed as necessary in the sloped areas, to prevent subsurface erosion along the pipe; and will be installed in wetlands, as needed, to maintain original wetland hydrology. Trench breakers are sacks of soil placed from the bottom of the ditch to the natural ground surface, completely surrounding the pipe. Trench breakers help to prevent erosion of the backfill from both surface flow and subsurface flow of water.

Slope Breakers

Slope breakers will be utilized if necessary on side hills and consist of a ditch or mound of excavated material which slows the flow of water by re-directing the flow nearly 90 degrees, while decreasing its velocity. The slope breakers act to impede the water's ability to carry and transport suspended solids down the slope.

Silt Fence

Silt fences will be installed as necessary to filter waterborne sediment, acting as a temporary replacement for the natural filtration effect of the vegetative cover. Silt fences will be installed as needed adjacent to wetland areas and creek crossings to minimize silt-laden water from entering these waterbodies. Staked straw bales may also be utilized for the same purposes as the silt fencing.

Wetland Protection

Construction in wetlands may be facilitated by the use of timber construction mats, timber rip-rap, or low ground pressure equipment to minimize disturbance to the wetland. In areas where traditional trenching will take place in wetlands, trench dewatering may be necessary to facilitate construction. If possible, discharge from trench dewatering will be directed to vegetated upland areas to minimize the potential of trenchwater flowing into waterbodies and wetlands.

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.

Clean-up and restoration of the right-of-way will be the final phase of construction and typically begins immediately after backfilling or as soon as weather and soil conditions permit. The right-of-way will be cleaned up by the removal and disposal of construction debris and surplus

materials. Construction debris will be taken to a licensed landfill. Temporary erosion control measures will be removed after right-of-way stabilization is complete and revegetation is deemed successful. Minnesota Rules 4415.0195 “Permit Conditions for Right-of-Way Preparation, Construction, Clean-up, and Restoration” detail permit requirements for pipeline construction and restoration. CenterPoint Energy will employ Environmental Inspector(s) to ensure compliance with these requirements.

The purpose of restoration is to return the right-of-way as close as possible to pre-construction conditions. Restoration efforts may involve smoothing with disc harrows or other equipment, stabilization using erosion control devices, and finally, revegetation activities. Pre-construction contours are restored to the extent possible, except in upland areas where a slight crown is formed over the trench to allow for settling of the backfill. Permanent slope breakers are constructed, and seed, fertilizer and mulch (as needed) are applied in accordance with permit requirements, land management agencies or reasonable landowner requests. CenterPoint Energy will work closely with land management agencies as well as landowners to ensure proper and successful revegetation.

After restoration is complete, CenterPoint Energy will contact the landowners to request that a damage release form be signed indicating that clean-up was satisfactorily completed. The landowner will have the opportunity to check and verify that the actual construction and restoration conforms with the terms of the easement agreement.

Operation and Maintenance - 4415.0160

4415.0160 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.

CenterPoint Energy will own and operate the pipeline under the jurisdiction of the U.S. DOT, the Minnesota Public Utilities Commission (PUC), and the Minnesota Office of Pipeline Safety (MNOPS). The minimum Federal Safety Standards for Gas Lines are contained in Title 49 of the Code of Federal Regulations (49 CFR Part 192). Subpart L (Operations) specifies minimum requirements for the utility's operations and maintenance plan. Under these rules, CenterPoint Energy is required to have the following:

- 1) Operation and Maintenance Plan;
- 2) 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;
- 3) damage prevention programs;
- 4) emergency plans; and
- 5) 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 transmission lines in High Consequence areas; and
- ensure that personnel working on these facilities are part of a random drug and alcohol testing program.

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 U.S. DOT regulations.

CenterPoint Energy has an extensive Gas Operations and Maintenance Manual, which details all aspects of operating distribution systems and transmission lines. The Operations and Maintenance Manual is currently on file with the MNOPS. A brief description of the operations activities required for the proposed transmission line is provided below.

Patrolling and Leak Surveys

The transmission line facility 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 transmission line operation, in accordance with 49 CFR Part 192. The transmission line will be leak surveyed at intervals not exceeding fifteen months, but at least once each calendar year.

Line Markers for Gas Lines

The transmission line will be identified by an approved gas line marker which will be placed and maintained as close as practical over the buried pipeline at each crossing of a public road, railroad, river and wherever else necessary to identify the location of the facility to reduce the possibility of damage or interference. The transmission line will be patrolled two times per year, not to exceed 7½ months between patrols.

Corrosion Control

The transmission line 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).

Odorization

The natural odor intensity of natural gas is too low for safe distribution, therefore an odorant must be added. CenterPoint Energy will install an automatic odorization system at the TBS site which will control odorant flow based upon the gas flow rate input signal.

Telemetry

CenterPoint Energy will own and maintain equipment which telemeters gas flow to a central dispatching office. Gas pressure and gas temperature may also be telemetered to the dispatching office. This allows instruments to monitor the gas flows and pressures on a 24-hour basis.

Line Valves

Transmission line valves may consist of main line valves, blow off valves, lateral line valves, and station valves. Each valve that may be needed for the safe operation of the proposed transmission line will be checked and serviced as required by applicable regulations. Each valve shall be secured with a locking device to prevent operation by unauthorized personnel.

Right-of-way Maintenance

CenterPoint Energy conducts routine maintenance and vegetation clearing along their pipeline corridor to facilitate right-of-way inspection activities. A corridor of approximately 15 feet centered over the pipeline is typically kept clear of trees and brush.

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. Route 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 who will be operating and maintaining the pipeline system, and also for the general public. Safety code compliance is achieved through adherence to 49 CFR Part 192 as defined by the U.S. DOT.

General Safety Procedures

- Strict adherence to Operations and Maintenance Plans.
- The pipeline MAOP is assured through the use of over pressure protection equipment.
- Company signs, with emergency numbers, are posted along the pipeline.
- Ignition sources are minimized.
- Smoking will be prohibited in and around any structure or area containing gas facilities.
- “No Smoking” signs are posted where appropriate.
- Above ground 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 State Fire Marshall has the authority to inspect the proposed pipeline to ensure compliance with safety requirements pursuant to Minnesota Statutes, Section 299F.63. CenterPoint Energy 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.

Pipeline Integrity Management Program

CenterPoint Energy's Pipeline Integrity Management Program is a comprehensive, systematic approach to maintaining and improving the safety of the transmission pipeline systems. The program ensures that the operational integrity of CenterPoint Energy's natural gas pipeline system meets the requirements as detailed in 49 CFR Part 192, Subpart O, and any supplemental state regulatory requirements related to pipeline integrity. The program contains processes and procedures that help employees achieve results. The program contains five plans that provide the foundation for the program.

The five plans are:

- Integrity Management Plan
- Performance Plan
- Communications Plan
- Management of Change Plan
- Quality Control Plan

Each of these plans will be updated with changes and/or improvements to the knowledge base, technology, system components, environment, etc. affecting management of CenterPoint Energy's transmission line system.

Training

CenterPoint Energy has a written 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 CenterPoint Energy's pipelines.

Public Awareness Program

CenterPoint Energy’s Public Awareness Program raises the awareness of the affected public and key stakeholders of the presence of pipelines in their communities and increases their understanding of the role of pipelines in transporting energy. This public awareness program will be in compliance with federal and state requirements including API RP 1162. A more informed public along pipeline routes supplements operators’ safety measures. CenterPoint Energy’s Public Awareness Program helps the public understand that pipelines are a safe mode of energy transportation, that pipeline operators undertake a variety of measures to prevent pipeline accidents, and that pipeline operators anticipate and plan for management of accidents if they occur. Finally, a more informed public also understands that they have a role in helping to prevent accidents that are caused by third party damage and right-of-way encroachment.

One-Call

CenterPoint Energy is committed to pipeline safety and has been a member of the Gopher State One-Call program since the program’s inception in 1988. The purpose of the One-Call notification center is to reduce third party damage to underground facilities. CenterPoint Energy works very closely with the One-Call center to identify locations of their facilities when nearby digging is expected.

List of Government Agencies and Permits - 4415.0165

The following is a list of all known permits of federal, state and local agencies or authorities which may be required for the proposed pipeline.

| Agency | Type of Permit | Description |
|---|---|---|
| FEDERAL | | |
| United States Army Corps of Engineers | Section 10 River Crossing Permit | Navigable Waterway Crossing Permit |
| | Section 404 Permit | Wetland Crossing Permit |
| United States Fish and Wildlife Service | Section 7 Consultations | Endangered Resources Consultations |
| STATE of Minnesota | | |
| Public Utilities Commission | Pipeline Routing Permit | Environmental review of the proposed project. |
| Minnesota Department of Natural Resources (MN DNR) | License to Cross Public Waters | Rivers/Streams Crossing Permit |
| | State Endangered Species Consultations | Threatened and Endangered Species clearance |
| | Water Appropriation Permit | Hydrostatic Test Water Appropriation Permit |
| | Water Appropriation Permit | Trench Water Appropriation Permit |
| Minnesota Pollution Control Agency (MPCA) | NPDES Discharge Permit | Hydrostatic Water Discharge Permit MN0063649 |
| | NPDES Discharge Permit | Trench Water Discharge Permit MN0063649 |
| | NPDES Discharge Permit | Construction Stormwater Discharge Permit MN0063649 |
| | Section 401 Water Quality Certification | Water discharge approval associated with the Section 404 US Army Corps permit |
| Minnesota Historical Society (MnSHPO) | Section 106 Consultation | Cultural Resource Consultation |
| Minnesota Department of Transportation | Road Crossing Permits | Road encroachment approval |
| LOCAL | | |
| City and County Permits | Road Crossing Permits | Environmental and right-of-way county approvals |
| Watershed Districts – Coon Creek Watershed District, Rice Creek Watershed District, Six Cities Watershed Management Organization, Central Mississippi Watershed Management Organization | Wetland Conservation Act Exemptions (Local Government Unit) Watershed District Permits/Approvals | Consultations and permitting with local watershed districts/watershed management organizations. |

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www.anokanaturalresources.com.

www.dnr.mn.us.

Appendix A – Material Safety Data Sheets (MSDS)

- **Natural Gas**
- **Natural Gas Odorizer (RP Captan)**

Natural Gas

MATERIAL SAFETY DATA SHEET
Natural Gas

Northern Natural Gas Company
1111 S. 103rd St.
Omaha, NE 68124-1000

24 Hr. Company Contact: Operations Communication Center - (888) 367-6671

SECTION #1 - IDENTIFICATION

Product: Natural Gas
CAS Number: 74-82-8
Chemical Family: Aliphatic Hydrocarbon, Alkane Series
Synonyms: Methane, Fuel Gas, Marsh Gas

SECTION #2 - HAZARDOUS CHEMICAL COMPONENTS

| <u>%</u> | <u>Material</u> | <u>CAS#</u> | <u>Exposure Limit</u> |
|----------|-----------------|-------------|--|
| > 90 | Methane | 74-82-8 | Simple asphyxiant (ACGIH) |
| < 5 | Ethane | 74-84-0 | Simple asphyxiant (ACGIH) |
| < 1 | Propane | 74-98-6 | 1000 ppm PEL (OSHA) Simple asphyxiant (ACGIH) |

This product is hazardous according to OSHA, 29 CFR 1910.1200. This product normally contains no hazardous components, other than ethane, as defined in OSHA 29 CFR §1910.1200 (i.e., greater than 1%). This product may contain small amounts of heavier hydrocarbons. This product and/or components present at concentrations greater than 0.1% are not carcinogenic according to OSHA, IARC, or NTP. Components of this product are normally within the ranges listed above, however, depending on the geographical source, gas composition may vary.

SECTION #3 - PHYSICAL DATA

Boiling Point: -259 F, 162 C
Vapor Pressure: N/A – Gas
Gas Density (Air = 1) 0.6
Specific Gravity: N/A – Gas
Solubility (H₂O): Very slightly soluble
Evaporation Rate: Gas at normal ambient conditions
Appearance: Colorless gas at normal temperature
Odor: Natural gas is odorless. Various Northern Natural Gas branch lines are odorized. Odorized gas has a rotten egg or garlic type odor.

SECTION #4 - FIRE FIGHTING & EXPLOSION DATA

| | |
|-------------------------------------|--|
| Flash Point: | 306 F, 187.8 C |
| Autoignition: | 1004 F, 540 C |
| Flammable Limits in Air: | 5% (lower) 15% (upper) |
| Unusual Fire and Explosion Hazards: | This gas is extremely flammable and forms flammable mixtures with air. It will burn in the open or be explosive in confined spaces. Its vapors are lighter than air and will disperse. A hazard of re-ignition or explosion exists if flame is extinguished without stopping the gas flow. |
| Extinguishing Media: | Stop the flow of gas. Dry chemical, CO ₂ , or halon. Water can be used to cool the fire but may not extinguish the fire. |
| Special Fire Fighting Instructions: | Evacuate area upwind of source. Stop gas flow and extinguish fire. If gas source cannot be shut off immediately, equipment and surfaces exposed to the fire should be cooled with water to prevent overheating and explosions. Control fire until gas supply can be shut off. |

SECTION #5 - HEALTH HAZARD DATA

| | |
|--|---|
| Exposure Limits: | See Section # 2. |
| Effects of Single Overexposure: | |
| Swallowing: | This product is a gas at normal temperature/pressure. No potential for ingestion expected. Solid and liquefied forms of this material and pressurized gas can cause freeze burns. |
| Skin Absorption: | This material is not expected to be absorbed through the skin. Solid and liquefied forms of this material and pressurized gas can cause freeze burns. |
| Inhalation: | Exposure may produce rapid breathing, headache, dizziness, visual disturbances, muscular weakness, tremors, narcosis, unconsciousness, and death, depending on the concentration and duration of exposure. |
| Skin Contact: | Non-irritating, but solid and liquid forms of this material and pressurized gas can cause frostbite, blisters and redness. |
| Eye Contact: | This gas is non-irritating; but direct contact with liquefied/pressurized gas or frost particles may produce severe and possible permanent eye damage from freeze burns. |
| Effects of Repeated Overexposure: | |
| Medical Conditions Aggravated by Overexposure: | Personnel with pre-existing chronic respiratory diseases should avoid exposure to this material. |
| Emergency and First Aid Procedures: | |
| Swallowing: | This product is a gas at normal temperature/pressure and not expected to present a swallowing hazard. |
| Skin: | Frozen tissues should be flooded or soaked with warm water. DO NOT USE HOT WATER. Cryogenic burns that result in blistering or deeper tissue freezing should be promptly seen by a doctor. |
| Inhalation: | Immediately move personnel to area of fresh air. For respiratory distress, give air, oxygen, or administer CPR (Cardiopulmonary Resuscitation) if necessary. Obtain medical attention if breathing difficulties continue. |
| Eyes: | Methane gas is not expected to present an eye irritation hazard. If contacted by liquid/solid, immediately flush the eye(s) gently with warm water for at least 15 minutes. Seek medical attention if pain or redness persists. |

SECTION #6 - REACTIVITY & POLYMERIZATION

| | |
|---|---|
| Stability: | Stable |
| Conditions to Avoid: | High heat, open flames and other sources of ignition. Explosive reactions can occur between natural gas and oxidizing agents. Spontaneous ignition with chlorine dioxide. |
| Incompatibility (materials to avoid): | Barium peroxide, chlorine dioxide and strong oxidizing agents. |
| Hazardous Combustion or Decomposition Products: | Combustion may produce carbon monoxide, carbon dioxide and other harmful substances. |
| Hazardous Polymerization: | None |

SECTION #7 - SPILL, LEAK, & DISPOSAL PROCEDURES

| | |
|--|---|
| Steps to be Taken in the Event of Spills, Leaks, or Release: | Eliminate all potential sources of ignition. Handling equipment and tools must be grounded to prevent sparking. Evacuate all non-essential personnel to an area upwind. Equip responders with proper protection equipment (as specified in Section # 8) and advise of hazards. Stop sources of release with non-sparking tools before attempting to put out any fire. Ventilate enclosed areas to prevent formation of flammable or oxygen-deficient atmospheres. Water spray may be used to cool equipment or reduce gas accumulation. |
| Waste Disposal Procedures: | Waste Natural gas in compressed gas cylinders must be disposed of as a hazardous waste. |

SECTION # 8 - SPECIAL PROTECTION MEASURES

| | |
|-------------------------|--|
| Ventilation: | Local exhaust and general room ventilation may both be essential in work areas to prevent accumulation of explosive mixtures. If mechanical ventilation is used, electrical equipment must meet National Electric Code requirements. |
| Eye Protection: | Use chemical-type goggles and face shields when handling liquefied gases. Safety glasses and/or face shields are recommended when handling high-pressure cylinders and piping systems or whenever gases are discharged. |
| Skin Protection: | If there is a potential for contact with high concentrations of compressed gas, use insulated, impervious plastic or neoprene-coated canvas gloves and protective gear (apron, face shield, etc.) to protect hands and other skin areas. |
| Respiratory Protection: | For excessive gas concentrations, use only NIOSH/MSHA approved, self-contained breathing apparatus. |
| Work/Hygiene Practices: | Emergency eye wash fountains and safety showers for first aid treatment of potential freeze burns should be available in the vicinity of any significant exposure from compressed gas release. Personnel should not enter areas where the atmosphere is below 19.5 vol. % oxygen without special procedures/equipment. Respirator use should comply with OSHA 29 CFR 1910.134 or equivalent. |

SECTION #9 - SPECIAL PRECAUTIONS - STORAGE & HANDLING

Storage and Handling Conditions: Store and use cylinders and tanks in well-ventilated areas, away from heat and sources of ignition. No smoking near storage or use. Follow standard procedures for handling cylinders, tanks, and loading/unloading. See NFPA #58 and API 2510. Fixed storage containers must be grounded and bonded during transfer of product.

Naturally Occurring Radioactive Material (NORM): This product may contain Naturally Occurring Radioactive Material (NORM) and customers should be aware of the potential for NORM within their processing system. The actual concentration of NORM in the product is dependent on the geographical source of the natural gas and storage time prior to its delivery. Process equipment (e.g., lines, filters, pumps and reaction units) may accumulate radioactive daughters and emit gamma radiation during operation. Equipment emitting gamma radiation may be presumed to be internally contaminated with alpha-emitting decay products that may be a hazard if inhaled or ingested. Consult applicable NORM regulations for worker protection guidelines and handling requirements before initiating maintenance operations that require opening contaminated equipment.

SECTION #10 - SHIPPING INFORMATION

Proper Shipping Name: Methane, Compressed
Hazard Class: 2.1
DOT Identification Number: UN1971
DOT Shipping Label: Flammable Gas (red)

SECTION #11 - REGULATORY INFORMATION

Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to state and federal reporting requirements. Consult those regulations applicable to your facility or operation.

Federal Clean Water Act:

Any spill or release of liquid oils associated with this product into "navigable waters" (essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802). Also contact appropriate state and local regulatory agencies as required.

CERCLA Section 103:

The Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) requires notification to the National Response Center of a release of quantities of Hazardous Substances equal to or greater than the reportable quantities in 40 CFR §302.4. The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts natural gas, natural gas liquids and any indigenous components of such (e.g., benzene) from the CERCLA Section 103 reporting requirements.

EPCRA Section 304:

The Emergency Planning and Community Right-to-Know Act (EPCRA) requires emergency planning based on Threshold Planning Quantities and release reporting based on reportable quantities in 40 CFR §355. There are no known components present in this product that would require reporting under this statute.

EPCRA Sections 311/312:

The Emergency Planning and Community Right-to-Know Act (EPCRA) requires notification and annual reporting of materials for which maintenance of an MSDS is required. This product is classified under the following hazard categories: Immediate (acute) Health Hazard and Fire Hazard.

EPCRA Section 313:

The Emergency Planning and Community Right-to-Know Act (EPCRA) requires submission of annual reports of the release of toxic chemicals that appear in 40 CFR §372. This product contains no chemicals subject to reporting requirements under this statute.

Toxic Substances Control (TSCA) Status:

The ingredients of this product are on the TSCA inventory.

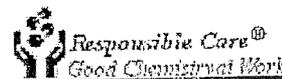
DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

This information relates only to the material designed and may not be valid for such material used in combination with other materials or in any process. Such information is to the best of this Company's knowledge believed accurate and reliable as of the date indicated. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use.

Natural Gas Odorizer (RP Captan)



Natural Gas Odorizing



MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Natural Gas Odorizing

3601 Decker Drive

P.O. Box 1429

Baytown, Texas 77522-1429

24 HOUR EMERGENCY TELEPHONE:

1-800-733-3665 or 1-972-404-3228 (U.S.);

32.3.575.55.55 (Europe);

1800-033-111 (Australia)

1-866-295-5278 or 1-615-399-5148

1-281-424-5568

TO REQUEST AN MSDS:

CUSTOMER SERVICE:

MSDS NUMBER: M36034

SUBSTANCE: RP CAPTAN (V)

SYNONYMS:

Mercaptan and alkyl sulfide

PRODUCT USE: gas odorant

REVISION DATE: May 13 2004

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: TERT-BUTYL MERCAPTAN

CAS NUMBER: 75-66-1

PERCENTAGE: 75-81

COMPONENT: ETHYL METHYL SULFIDE

CAS NUMBER: 624-89-5

PERCENTAGE: 18-25

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=3 REACTIVITY=0

HMIS RATINGS (SCALE 0-4): HEALTH=2 FLAMMABILITY=3 REACTIVITY=0

EMERGENCY OVERVIEW:**COLOR:** colorless**PHYSICAL FORM:** liquid**ODOR:** gassy odor**MAJOR HEALTH HAZARDS:** MAY BE IRRITATING TO RESPIRATORY TRACT, SKIN AND EYES. MAY CAUSE CENTRAL NERVOUS SYSTEM EFFECTS.**PHYSICAL HAZARDS:** Extremely flammable liquid and vapor.**POTENTIAL HEALTH EFFECTS:****INHALATION:****SHORT TERM EXPOSURE:** irritation, central nervous system effects**LONG TERM EXPOSURE:** irritation**SKIN CONTACT:****SHORT TERM EXPOSURE:** irritation**LONG TERM EXPOSURE:** dermatitis**EYE CONTACT:****SHORT TERM EXPOSURE:** irritation, tearing**LONG TERM EXPOSURE:** irritation**INGESTION:****SHORT TERM EXPOSURE:** nausea, vomiting, central nervous system effects**LONG TERM EXPOSURE:** to our knowledge, no effects are known**CARCINOGEN STATUS:****OSHA:** No**NTP:** No**IARC:** No**4. FIRST AID MEASURES****INHALATION:** If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. If respiration or pulse has stopped, have a trained person administer Basic Life Support (Cardio-Pulmonary Resuscitation/Automatic External Defibrillator) and CALL FOR EMERGENCY SERVICES IMMEDIATELY.**SKIN CONTACT:** Wash contaminated areas with soap and water. Thoroughly clean and dry contaminated clothing and shoes before reuse. IF IRRITATION OCCURS, GET MEDICAL ATTENTION.**EYE CONTACT:** Immediately flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissues. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.**INGESTION:** Never give anything by mouth to an unconscious or convulsive person. If swallowed, do not induce vomiting. If vomiting occurs spontaneously, keep airway clear. Give water when vomiting stops. GET MEDICAL ATTENTION.**5. FIRE FIGHTING MEASURES****FIRE AND EXPLOSION HAZARDS:** Severe fire hazard. Vapor/air mixtures are explosive. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back.**EXTINGUISHING MEDIA:** Use carbon dioxide, regular dry chemical, foam or water.

FIRE FIGHTING: Water may be ineffective as an extinguishing media. Wear NIOSH approved positive-pressure self-contained breathing apparatus. Eliminate all sources of ignition. Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Flood with fine water spray. Do not scatter spilled material with high-pressure water streams. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

SENSITIVITY TO MECHANICAL IMPACT: Not sensitive

SENSITIVITY TO STATIC DISCHARGE: Electrostatic charges may build up during handling. Grounding of equipment is recommended.

FLASH POINT: -9.9 F (-23.3 C) (OC)

LOWER FLAMMABLE LIMIT: 1.7% estimated

UPPER FLAMMABLE LIMIT: 10% estimated

HAZARDOUS COMBUSTION PRODUCTS:

Thermal decomposition products or combustion: oxides of sulfur (combustion product), hydrogen sulfide (decomposition product)

6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:

Remove sources of ignition. Ventilate closed spaces before entering. Stop leak if possible without personal risk. Collect with absorbent into suitable container. Keep container tightly closed. Liquid material may be removed with a vacuum truck. Keep out of water supplies and sewers. Releases should be reported, if required, to appropriate agencies.

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Store in a cool, dry place. Store in a well-ventilated area. Avoid heat, flames, sparks and other sources of ignition. Subject to storage and handling regulations: U.S. OSHA 29 CFR 1910.106. Keep separated from incompatible substances.

HANDLING: Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Keep away from heat, sparks and flame. Keep container tightly closed. Use only with adequate ventilation. Do not reuse containers.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

RP CAPTAN (V):

TERT-BUTYL MERCAPTAN:

75 ppm recommended TWA 8 hour(s) (internal Occupational Exposure Limit based on acute toxicity data)

ETHYL METHYL SULFIDE:

50 ppm recommended TWA 8 hour(s) (internal Occupational Exposure Limit based on data from analogous chemicals)

VENTILATION: Use explosion-proof equipment. Use engineering controls if feasible. Provide local exhaust ventilation where vapor may be generated. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear chemical resistant safety goggles if eye contact is likely. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear protective clothing to minimize skin contact.

GLOVES: Wear appropriate chemical resistant gloves. May be based on plant experience, not ASTM permeation testing.

PROTECTIVE MATERIAL TYPES: 4H(R), nitrile, Silver Shield(R)

RESPIRATOR: A NIOSH approved respirator with organic vapor cartridges may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits, or when symptoms have been observed that are indicative of overexposure.

SHORT ORGANIC VAPOR SERVICE LIFE.

A full facepiece air-purifying respirator may be used in concentrations up to 50X the acceptable exposure level. Supplied air should be used when the level is expected to be above 50X the acceptable level, or when there is a potential for uncontrolled release.

A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid

APPEARANCE: clear

COLOR: colorless

ODOR: gassy odor

BOILING POINT: 145-151 F (62.8-66.1 C)

FREEZING POINT: <-60.0 F (<-51.1 C)

VAPOR PRESSURE: 5.6 psia @ 38 C

VAPOR DENSITY (air=1): 3.0

SPECIFIC GRAVITY (water=1): 0.811

DENSITY: 6.76 lbs/gal @ 15.6 C

WATER SOLUBILITY: negligible

PH: Not available

VOLATILITY: 100%

ODOR THRESHOLD: 0.008 ppb (TERT-BUTYL MERCAPTAN)

EVAPORATION RATE: Not available

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available

10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers.

INCOMPATIBILITIES: oxidizing materials

HAZARDOUS DECOMPOSITION:

Thermal decomposition products or combustion: oxides of sulfur (combustion product), hydrogen sulfide (decomposition product)

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

RP CAPTAN (V):

TOXICITY DATA: This material is considered to be a moderate to strong irritant to the respiratory tract, skin and eyes (with burning sensation). High exposure levels may lead to central nervous system effects, including CNS depression, headache, nausea, weak pain, a sense of coldness in the extremities, unconsciousness and death. Overexposure may cause pulmonary edema. Repeated contact with this material to the skin may result in dermatitis. Inhalation may cause loss of smell. Ingestion of this material may cause nausea, vomiting, irritation to mouth, esophagus and stomach, potential CNS depression and unconsciousness.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

FISH TOXICITY: No data available. However, if released in water, it rapidly dissipates through evaporation.

FATE AND TRANSPORT:

BIODEGRADATION: This material may biodegrade in soil and water.

PERSISTENCE: Based on volatilization and degradation rates, this material is believed not to persist in the environment.

BIOCONCENTRATION: This material is believed not to bioaccumulate.

OTHER ECOLOGICAL INFORMATION: This material is expected to rapidly oxidize in the atmosphere.

13. DISPOSAL CONSIDERATIONS

Reuse or reprocess if possible. Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:

PROPER SHIPPING NAME: Flammable liquids, n.o.s. (TERT-BUTYL MERCAPTAN, ETHYL METHYL SULFIDE)

ID NUMBER: UN1993

HAZARD CLASS OR DIVISION: 3

PACKING GROUP: II

LABELING REQUIREMENTS: 3

ADDITIONAL SHIPPING DESCRIPTION: Transport by vessel domestic requires flashpoint on shipping papers.

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

SHIPPING NAME: Flammable liquid, n.o.s. (TERT-BUTYL MERCAPTAN, ETHYL METHYL SULFIDE)

UN NUMBER: UN1993

CLASS: 3

PACKING GROUP/RISK GROUP: II

15. REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):

ACUTE: Yes

CHRONIC: No

FIRE: Yes

REACTIVE: No

SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65): Not regulated.

OSHA PROCESS SAFETY (29CFR1910.119): Not regulated.

STATE REGULATIONS:

California Proposition 65: Not regulated.

**NEW JERSEY WORKER AND COMMUNITY RIGHT TO KNOW:
REPORTING REQUIREMENT:**

TERT-BUTYL MERCAPTAN 75-66-1 75-81%

ETHYL METHYL SULFIDE 624-89-5 18-25%

RIGHT TO KNOW HAZARDOUS SUBSTANCE LIST:

Not regulated.

SPECIAL HEALTH HAZARD SUBSTANCE LIST:

Not regulated.

PENNSYLVANIA RIGHT TO KNOW:

REPORTING REQUIREMENT:

TERT-BUTYL MERCAPTAN 75-66-1 75-81%

ETHYL METHYL SULFIDE 624-89-5 18-25%

HAZARDOUS SUBSTANCE LIST:

TERT-BUTYL MERCAPTAN 75-66-1 75-81%

ENVIRONMENTAL HAZARDOUS SUBSTANCE LIST:

Not regulated.

SPECIAL HAZARDOUS SUBSTANCE LIST:

Not regulated.

CANADIAN REGULATIONS:

CONTROLLED PRODUCTS REGULATIONS (CPR): This product has been classified in accordance with the criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

WHMIS CLASSIFICATION: B2, D2B.

NATIONAL INVENTORY STATUS:

U.S. INVENTORY (TSCA): All the components of this substance are listed on or are exempt from the inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): All components of this product are listed on the DSL.

16. OTHER INFORMATION

MSDS SUMMARY OF CHANGES

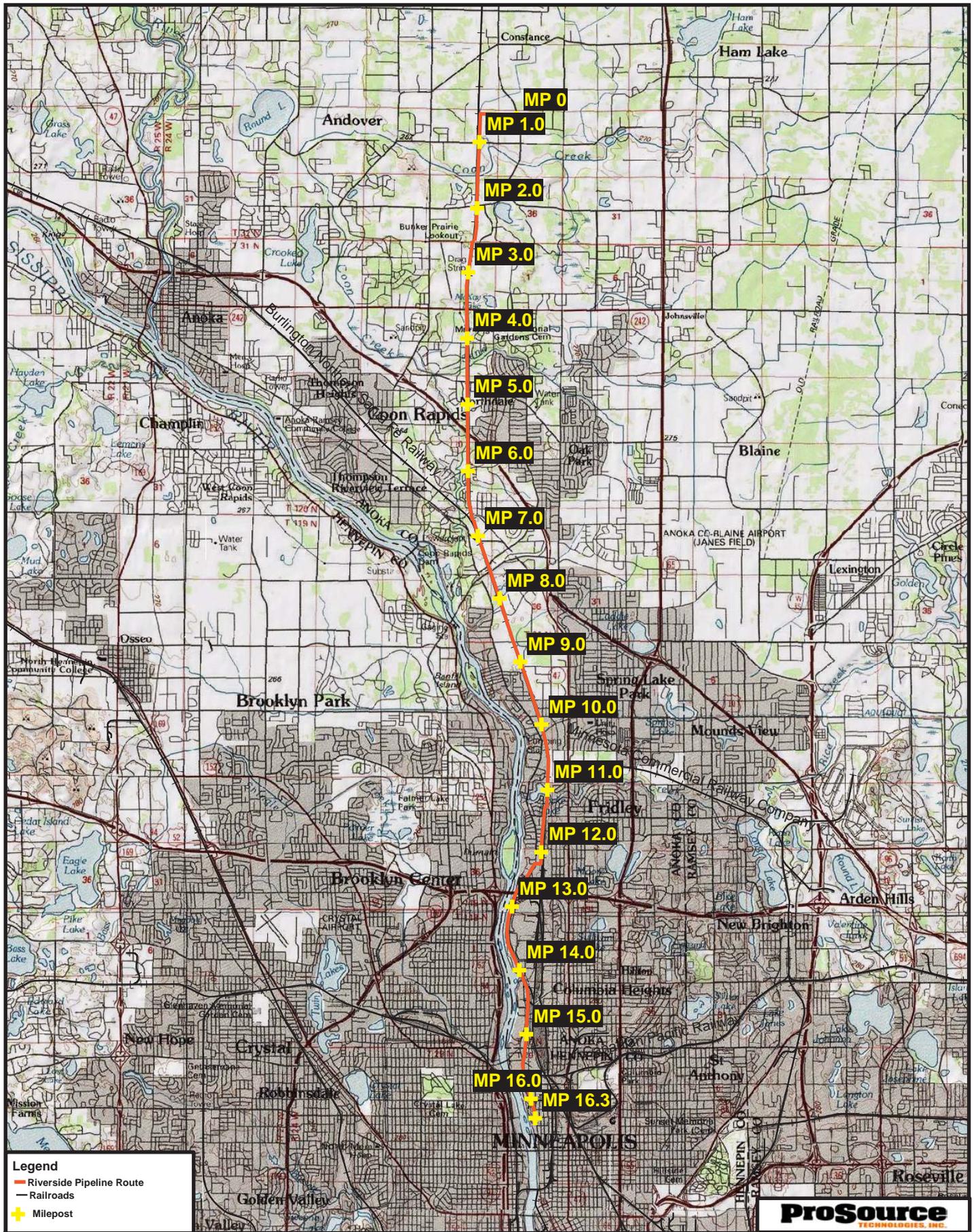
8. EXPOSURE CONTROLS, PERSONAL PROTECTION

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Appendix B - Route Maps

- **Topographic Maps**
- **Aerial Photo Maps**
- **Road Maps**
- **NWI - Wetland Maps**
- **Soil Coverage Maps**
- **Route Alternatives Map**

Topographic Route Maps



Legend

- Riverside Pipeline Route
- Railroads
- + Milepost

CenterPoint Energy

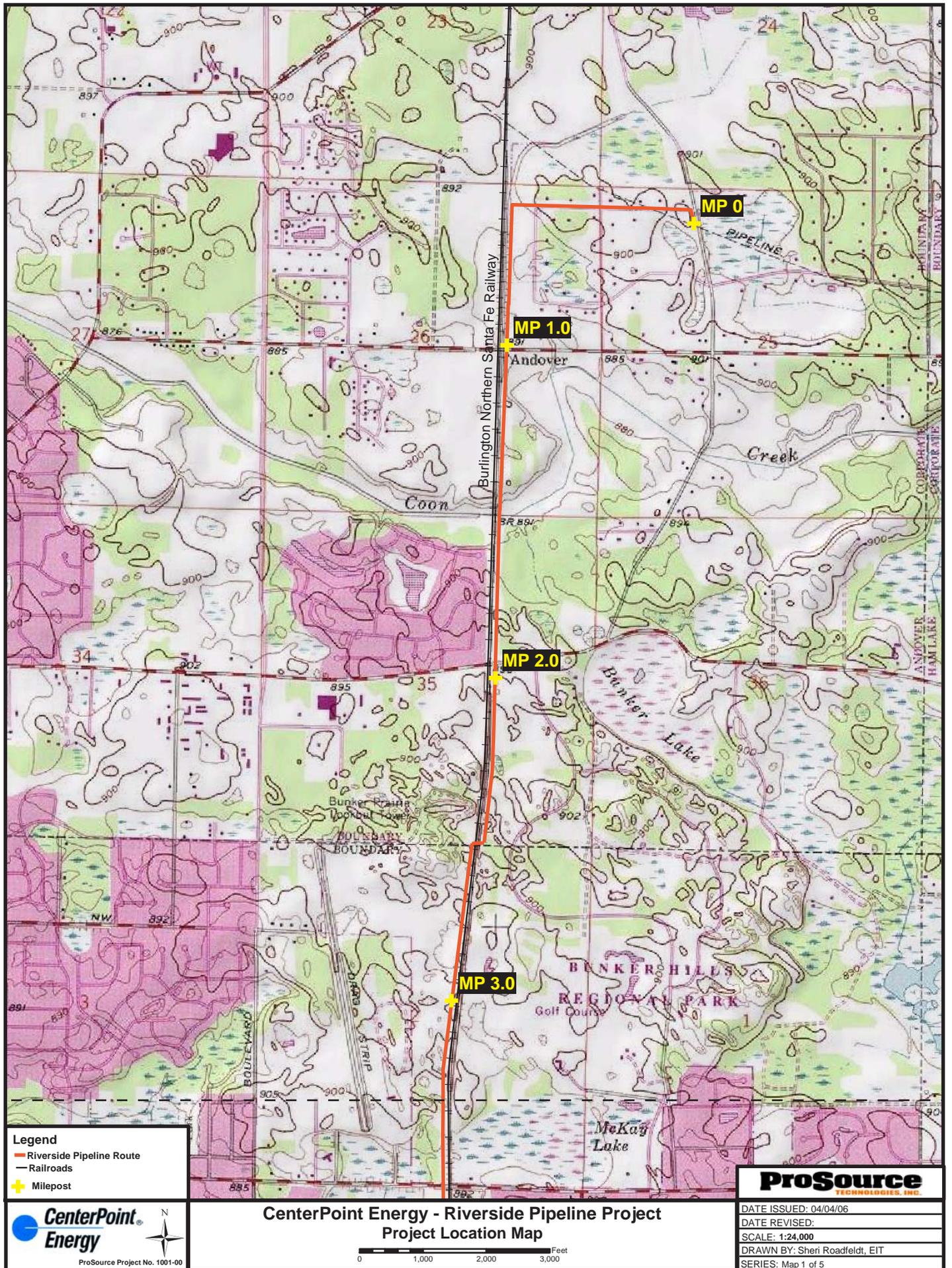
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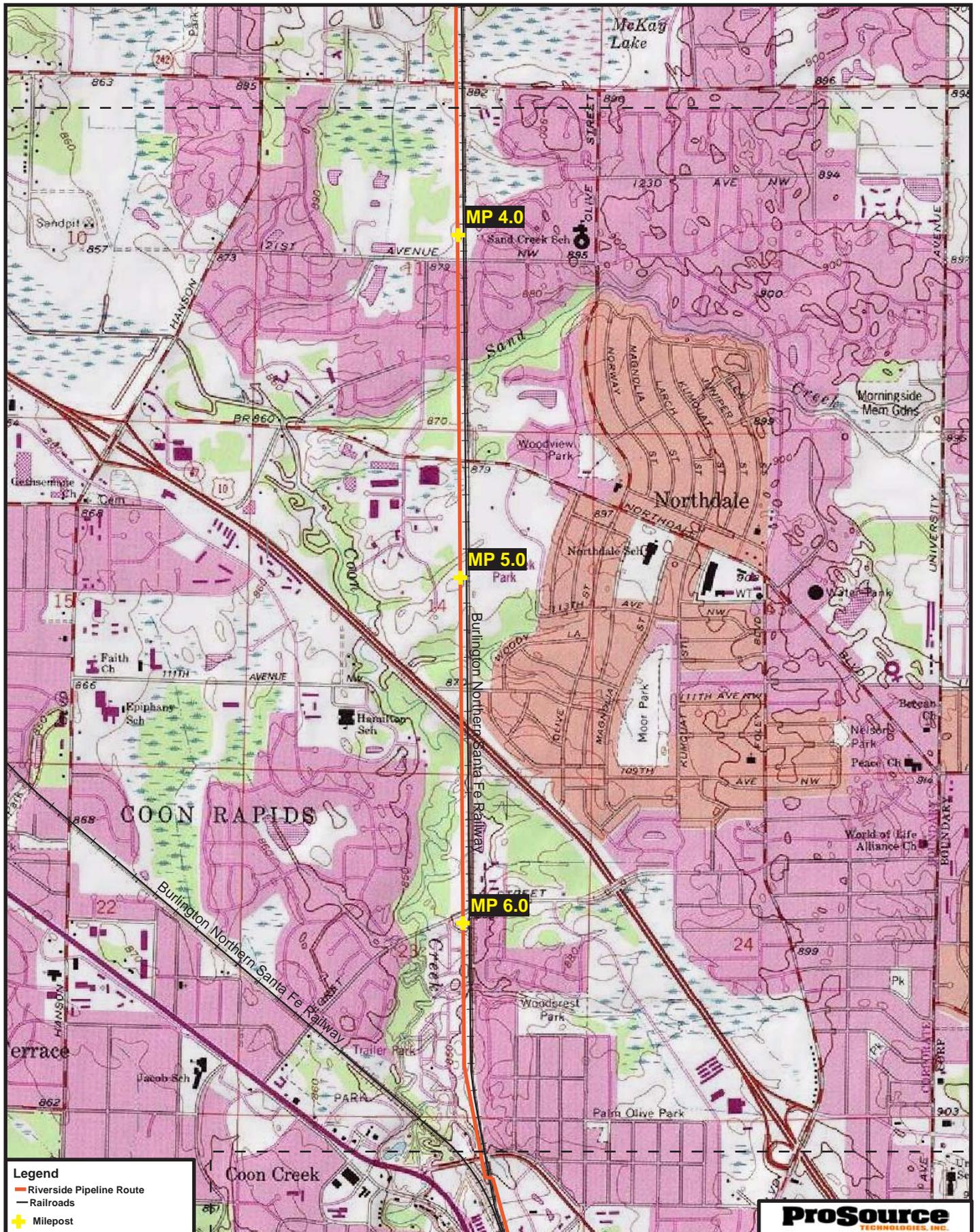
**CenterPoint Energy - Riverside Pipeline Project
Project Overview Map**



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Legend

- Riverside Pipeline Route
- Railroads
- ★ Milepost

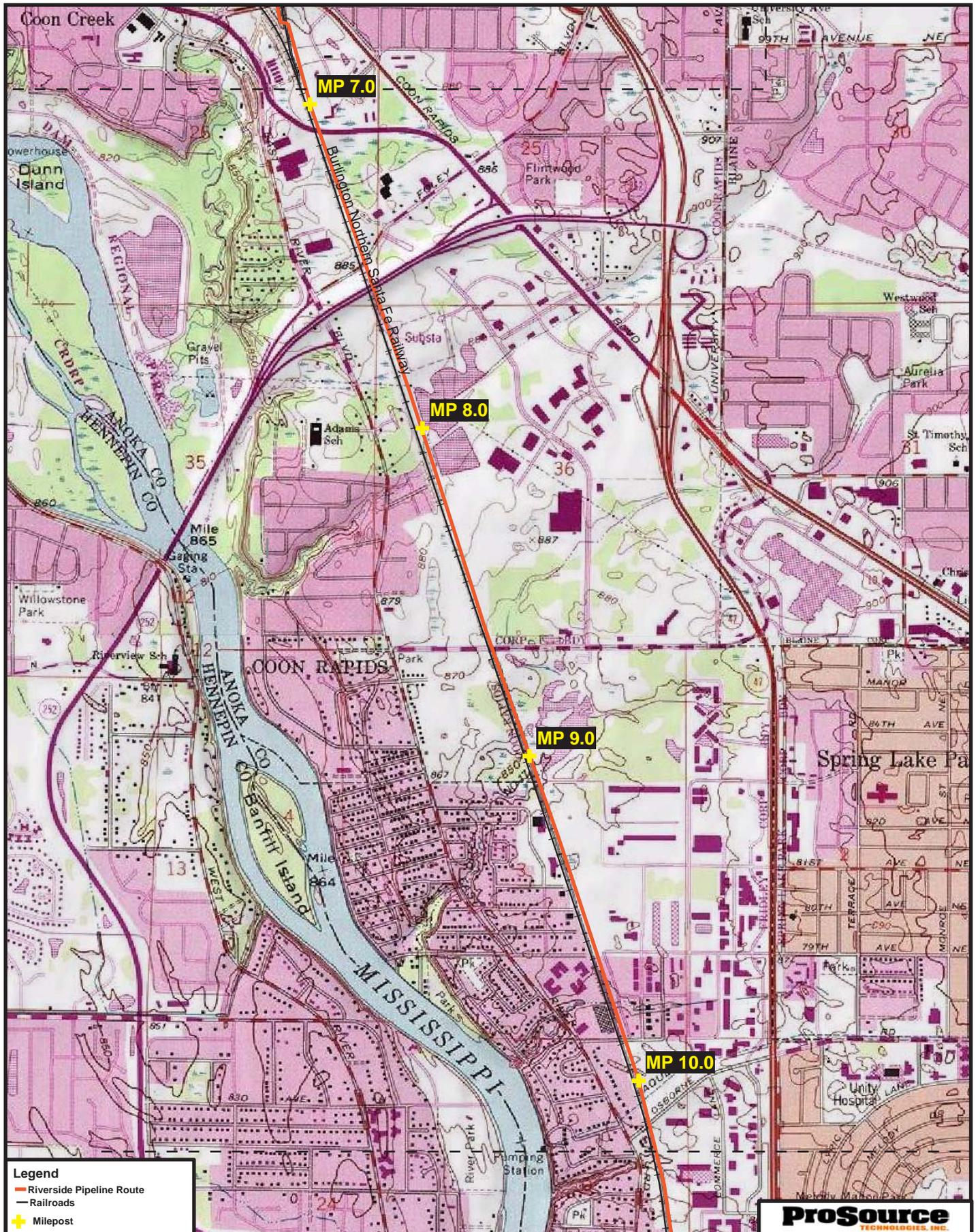
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Project Location Map**



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Legend

- Riverside Pipeline Route
- Railroads
- + Milepost

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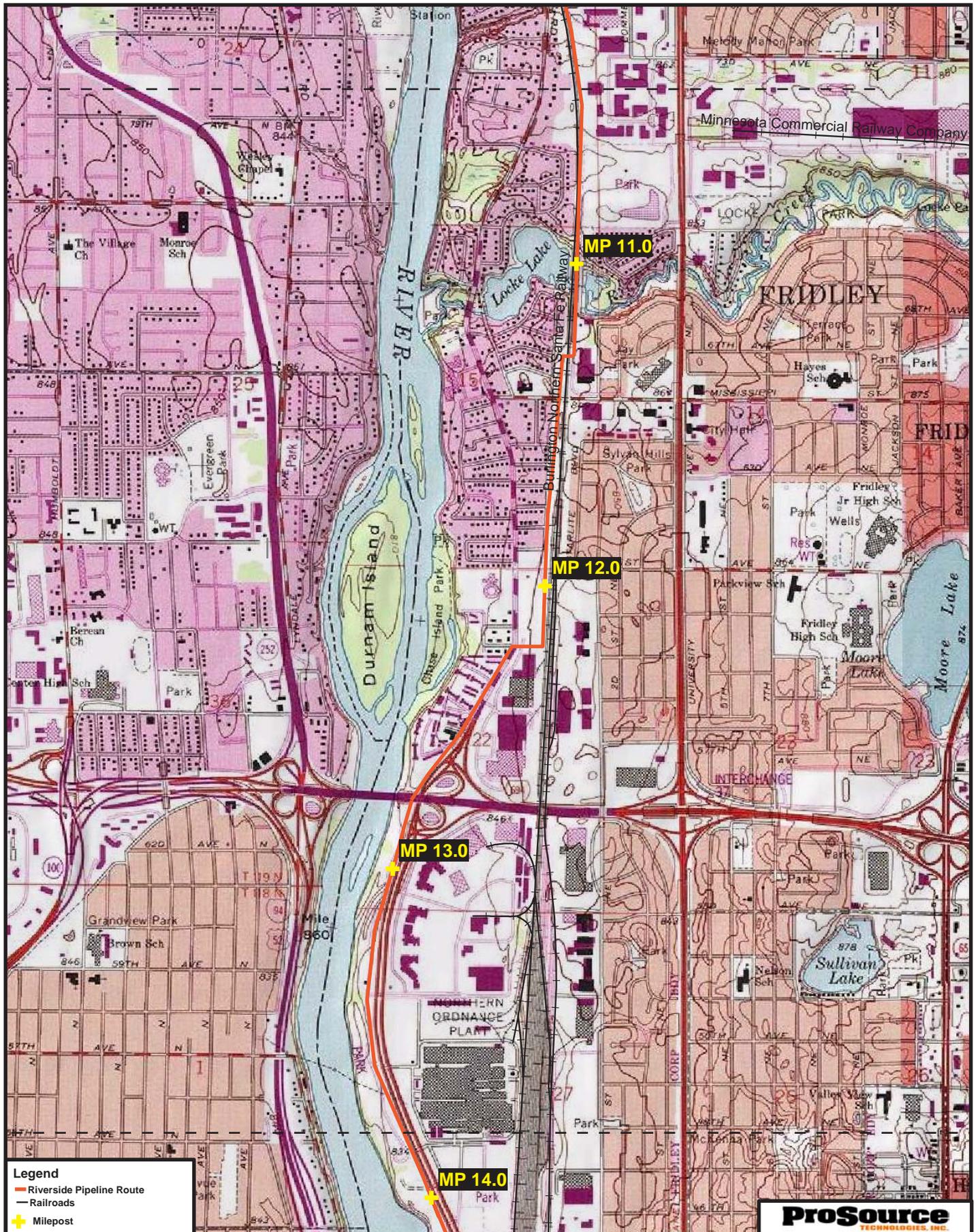
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Legend

- Riverside Pipeline Route
- Railroads
- + Milepost

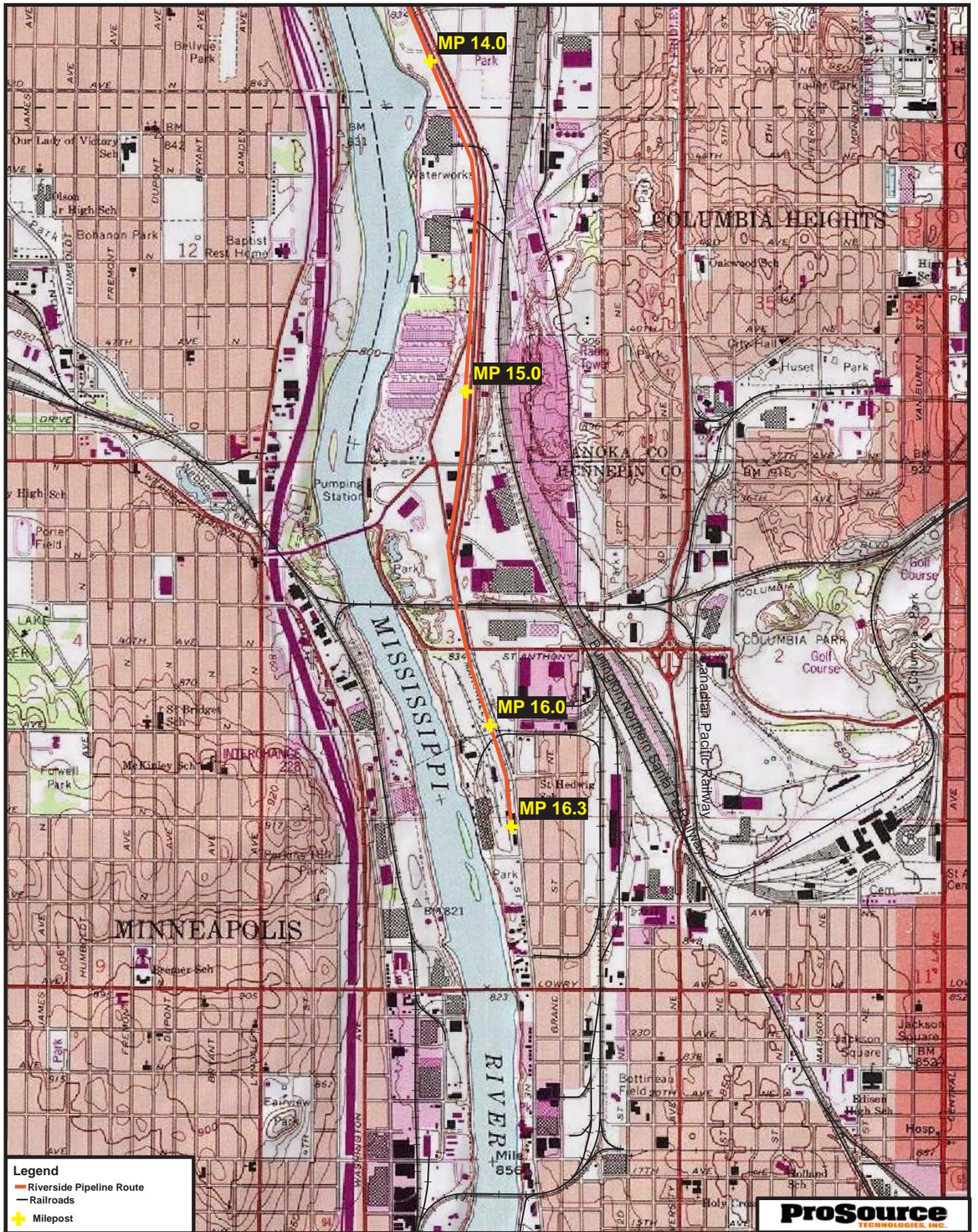
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Legend

- Riverside Pipeline Route
- Railroads
- + Milepost

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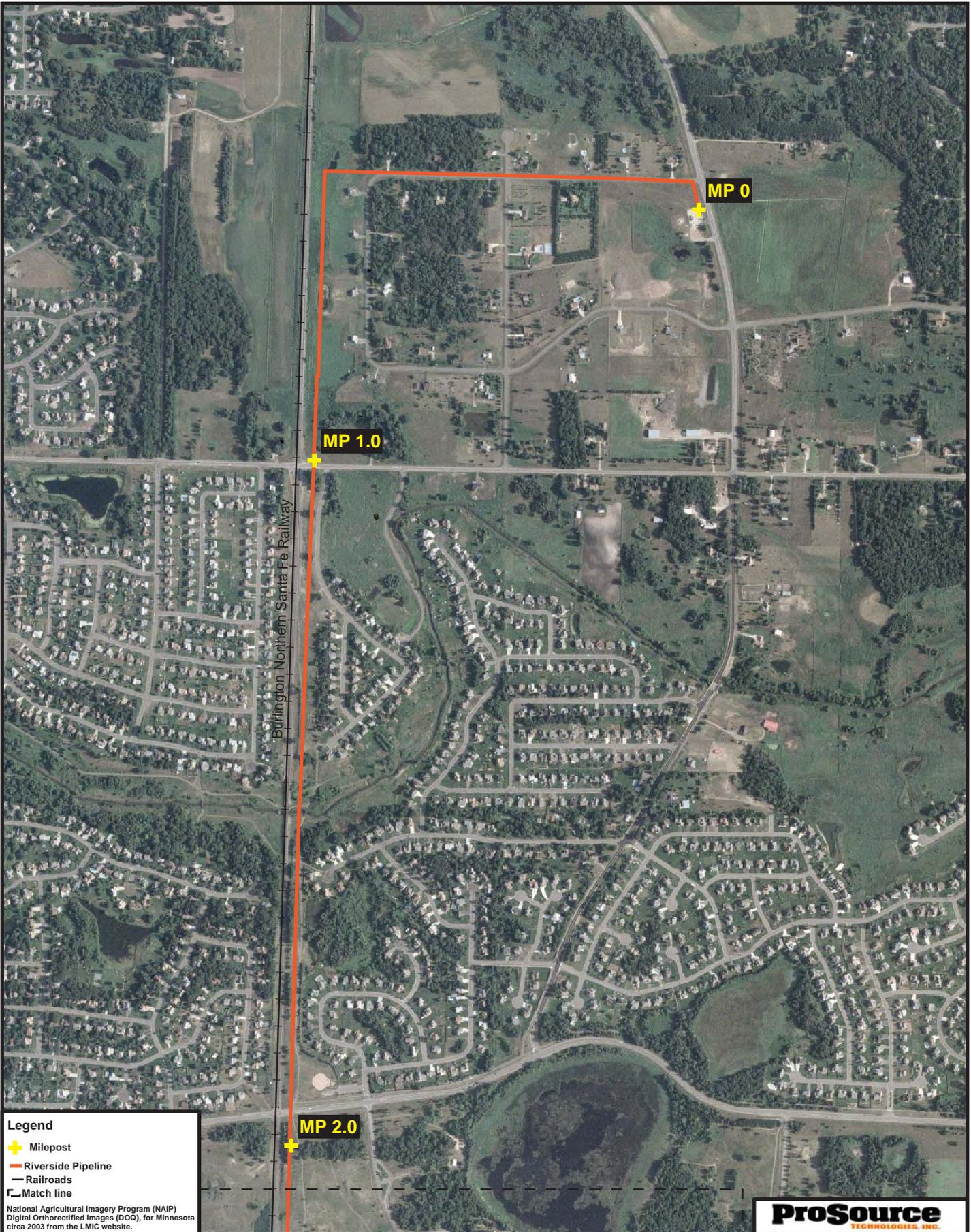
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Aerial Photo Route Maps



- Legend**
- + Milepost
 - Riverside Pipeline
 - Railroads
 - Match line

National Agricultural Imagery Program (NAIP)
 Digital Orthorectified Images (DOQ), for Minnesota
 circa 2003 from the LMIC website.

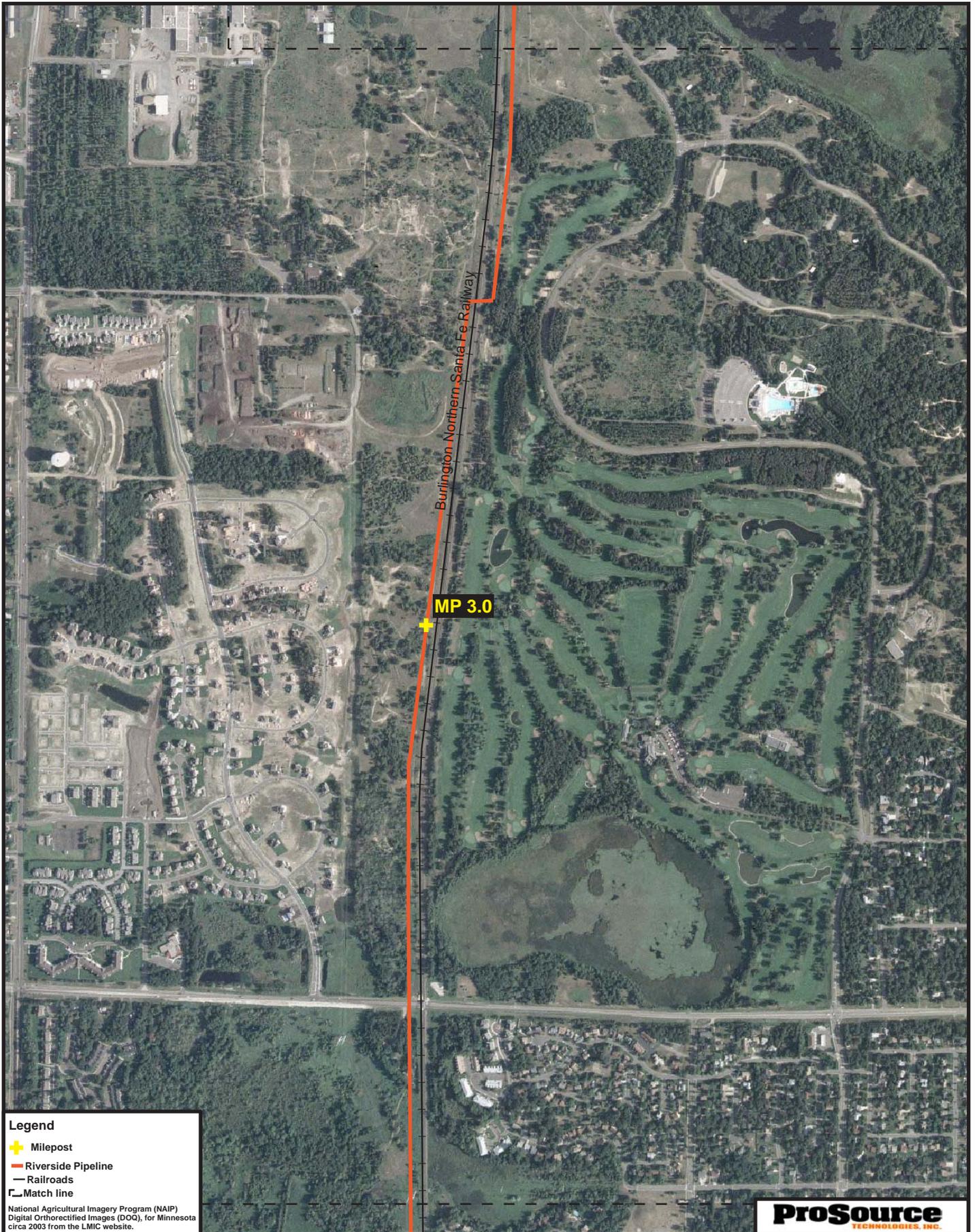


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**CenterPoint Energy - Riverside Pipeline Project
 Project Location Map - Aerial Photos**



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Burlington Northern Santa Fe Railway

MP 3.0

- Legend**
- + Milepost
 - Riverside Pipeline
 - Railroads
 - Match line

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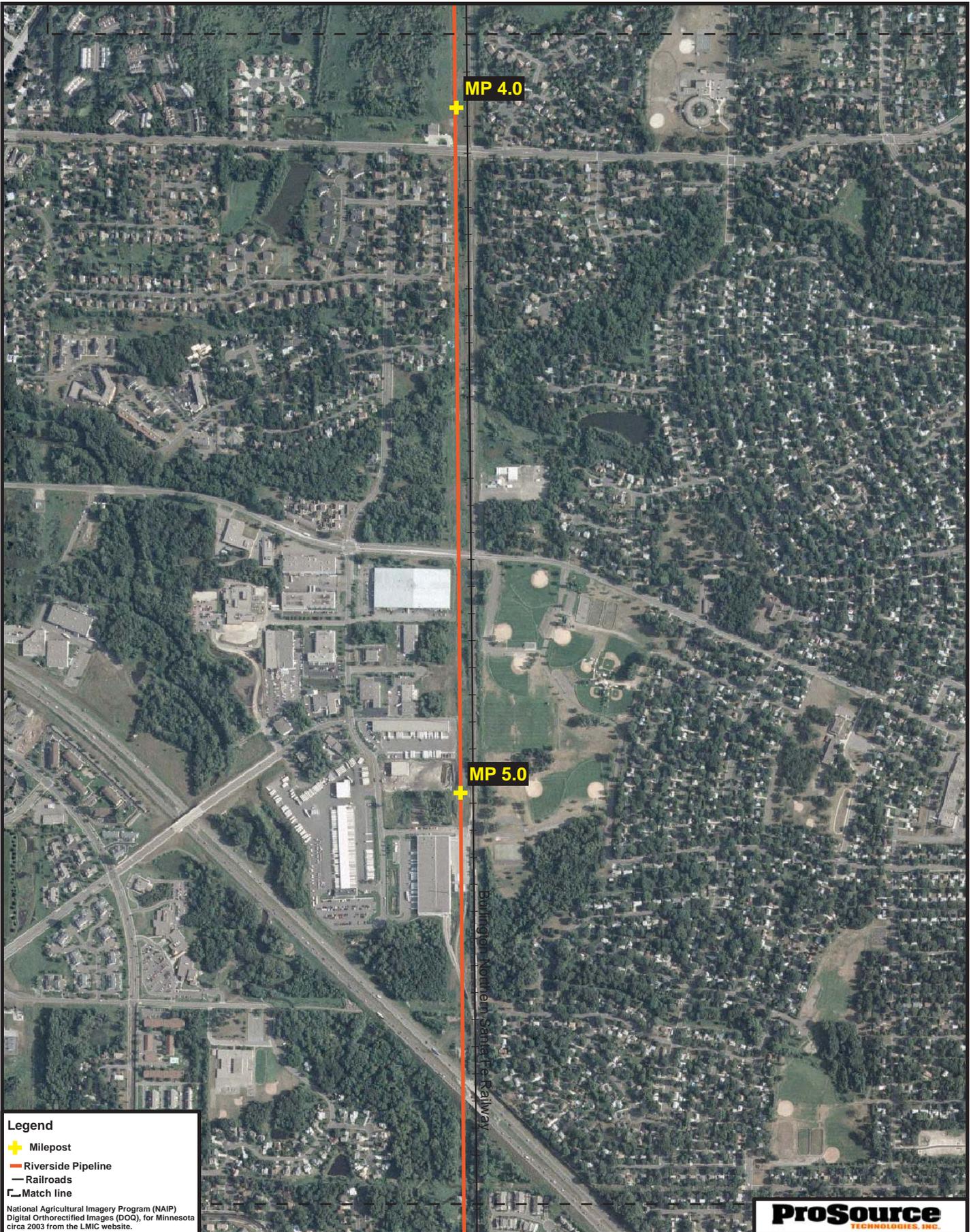

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Project Location Map - Aerial Photos



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MP 4.0

MP 5.0

Burlington Northern Santa Fe Railway

Legend

- Milepost
- Riverside Pipeline
- Railroads
- Match line

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 Project Location Map - Aerial Photos**



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Legend

- + Milepost
- Riverside Pipeline
- Railroads
- Match line

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Legend

- + Milepost
- Riverside Pipeline
- Railroads
- Match line

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Legend

- + Milepost
- Riverside Pipeline
- Railroads
- Match line

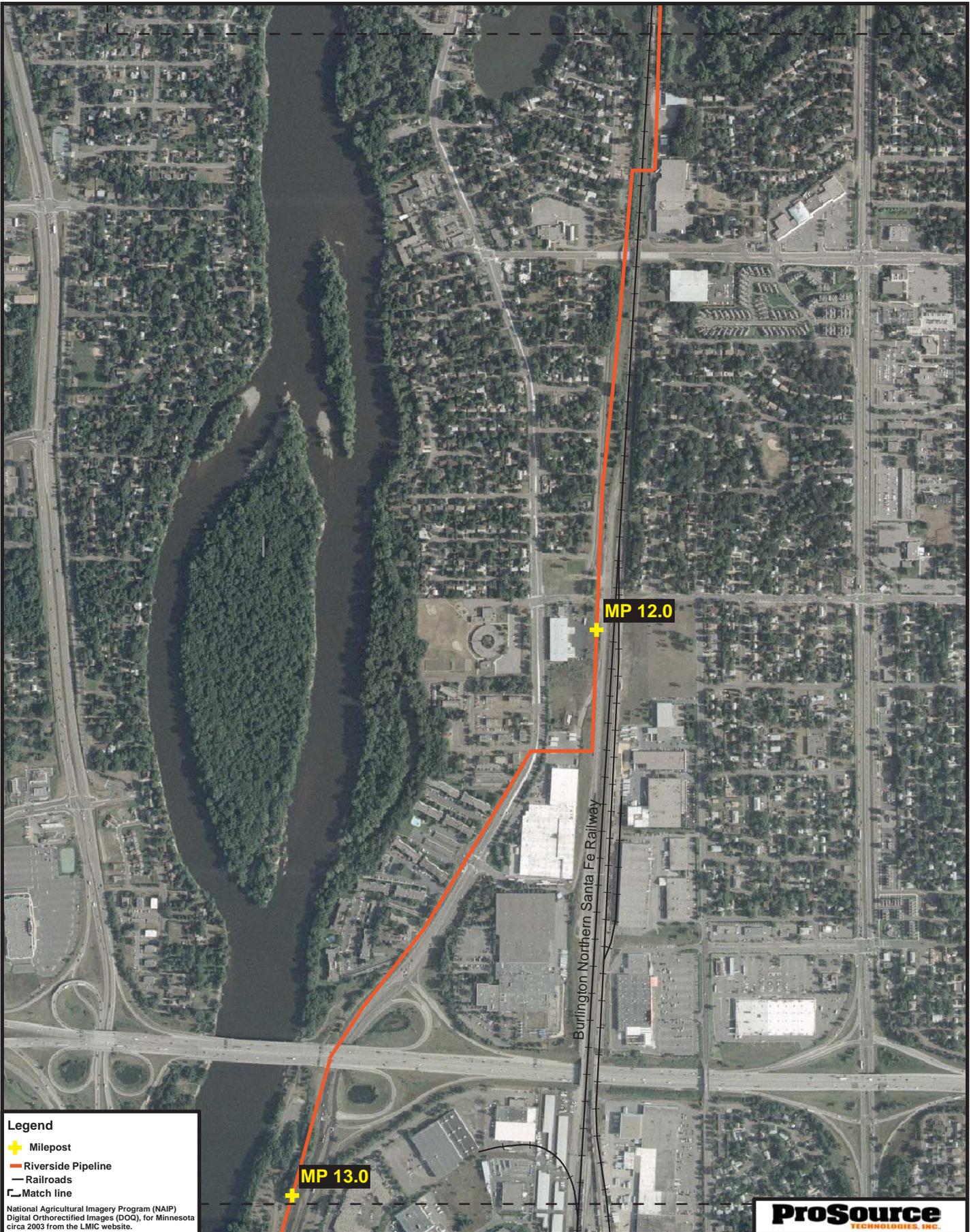
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Legend

- + Milepost
- Riverside Pipeline
- Railroads
- Match line

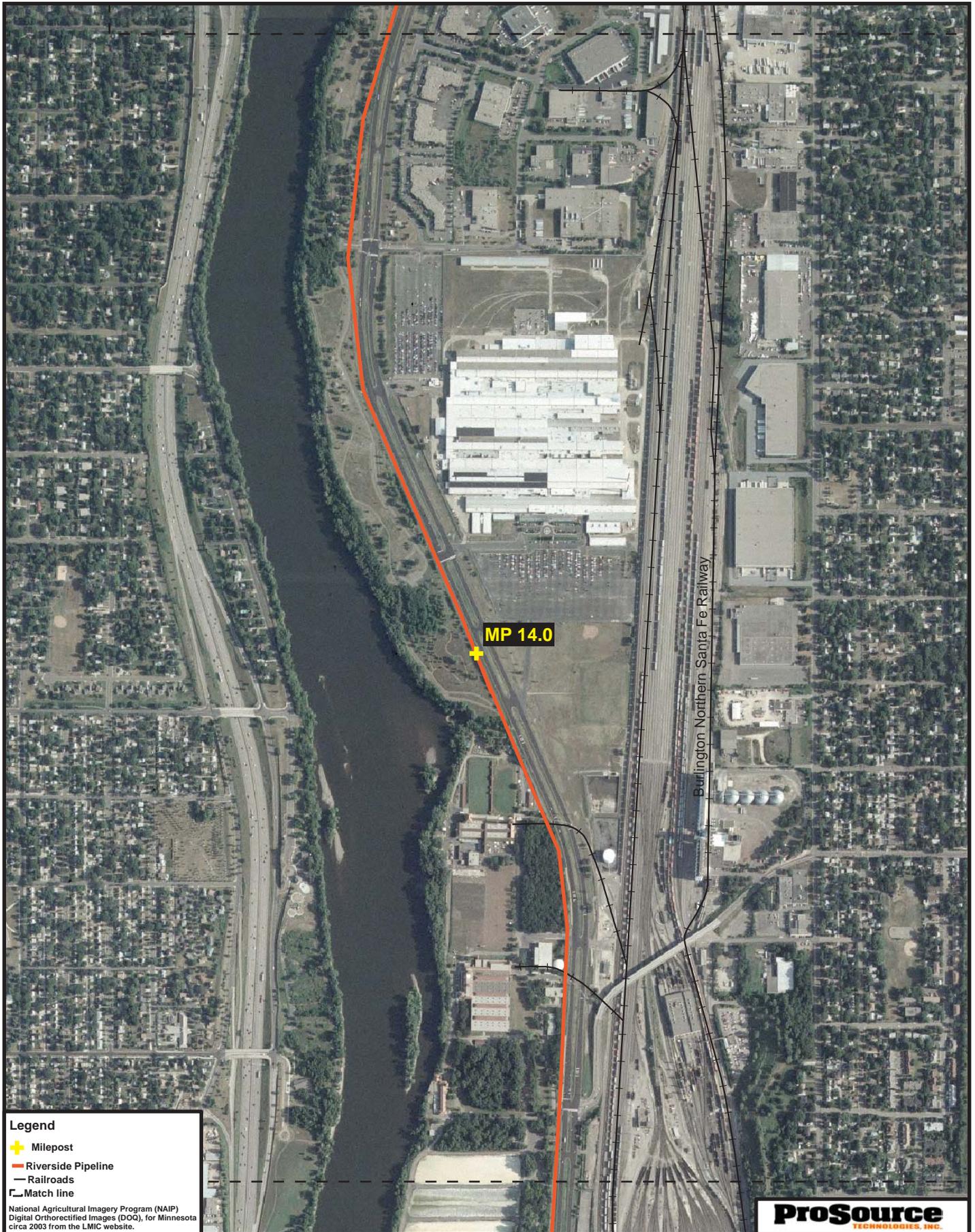
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**CenterPoint Energy - Riverside Pipeline Project
 Project Location Map - Aerial Photos**



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- Legend**
- + Milepost
 - Riverside Pipeline
 - Railroads
 - Match line

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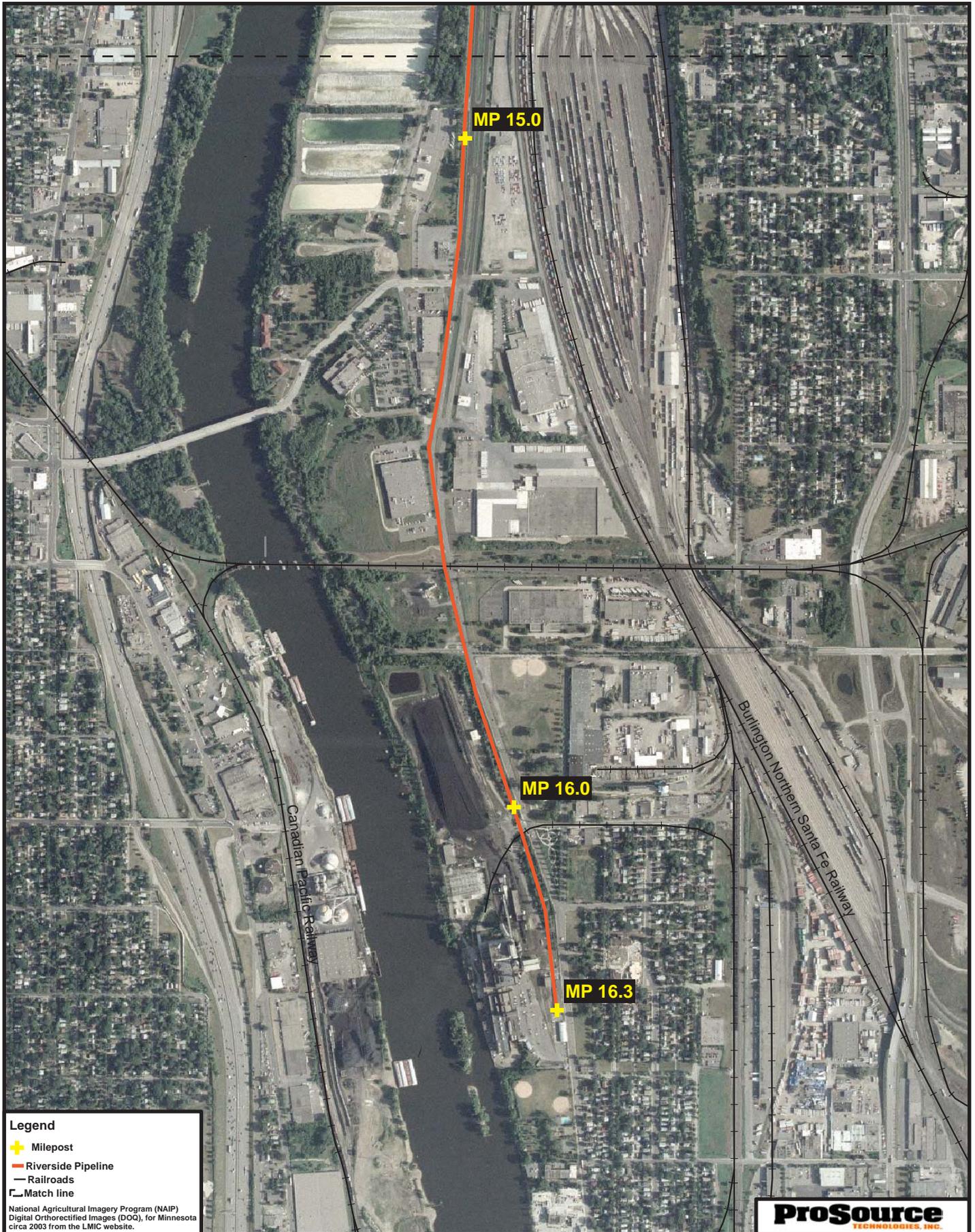
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 Project Location Map - Aerial Photos**



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- + Milepost
 - Riverside Pipeline
 - Railroads
 - Match line

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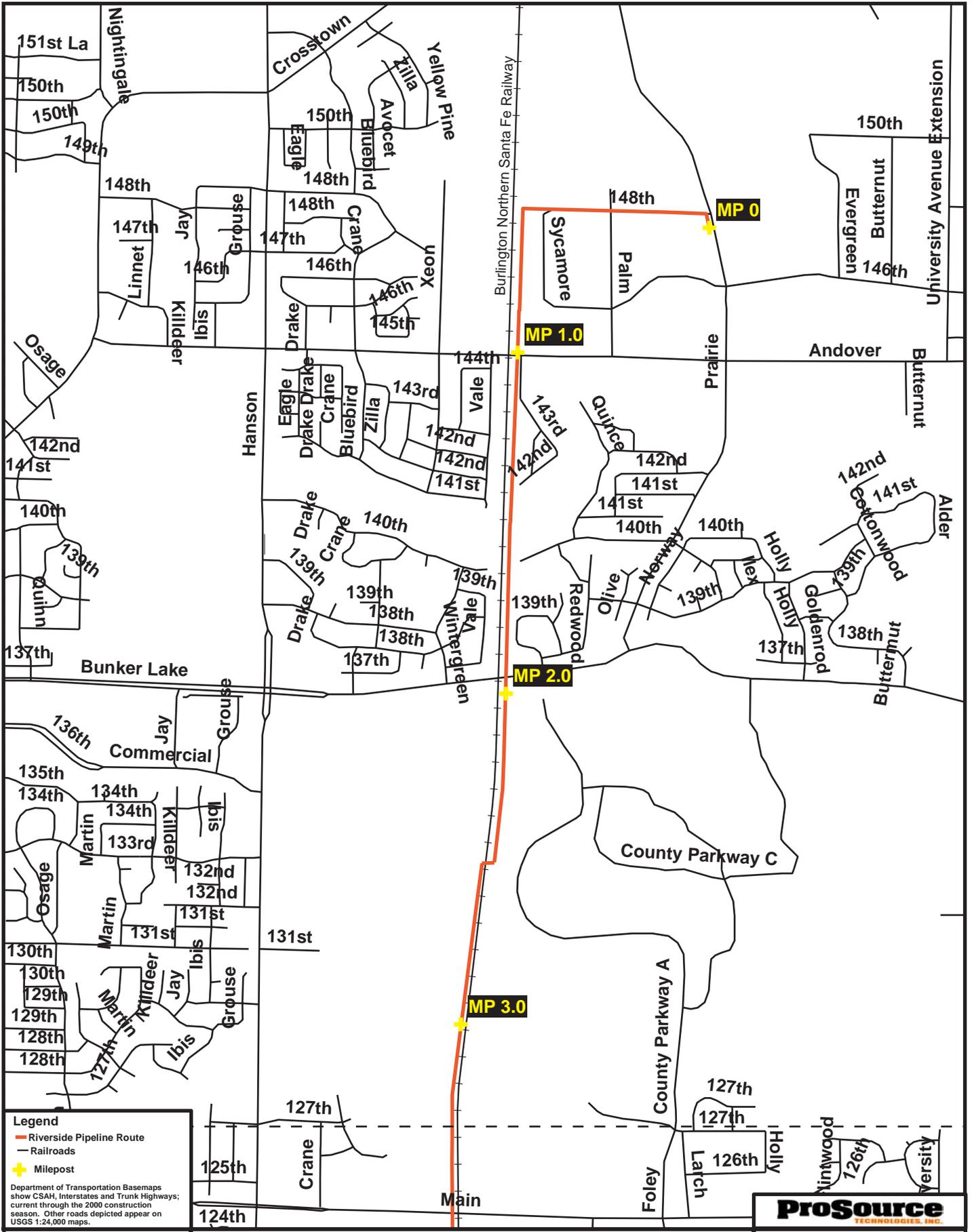
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 Project Location Map - Aerial Photos**



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Road Maps



Legend

- Riverside Pipeline Route
- Railroads
- + Milepost

Department of Transportation Basemaps show CSAH, Interstates and Trunk Highways; current through the 2000 construction season. Other roads depicted appear on USGS 1:24,000 maps.

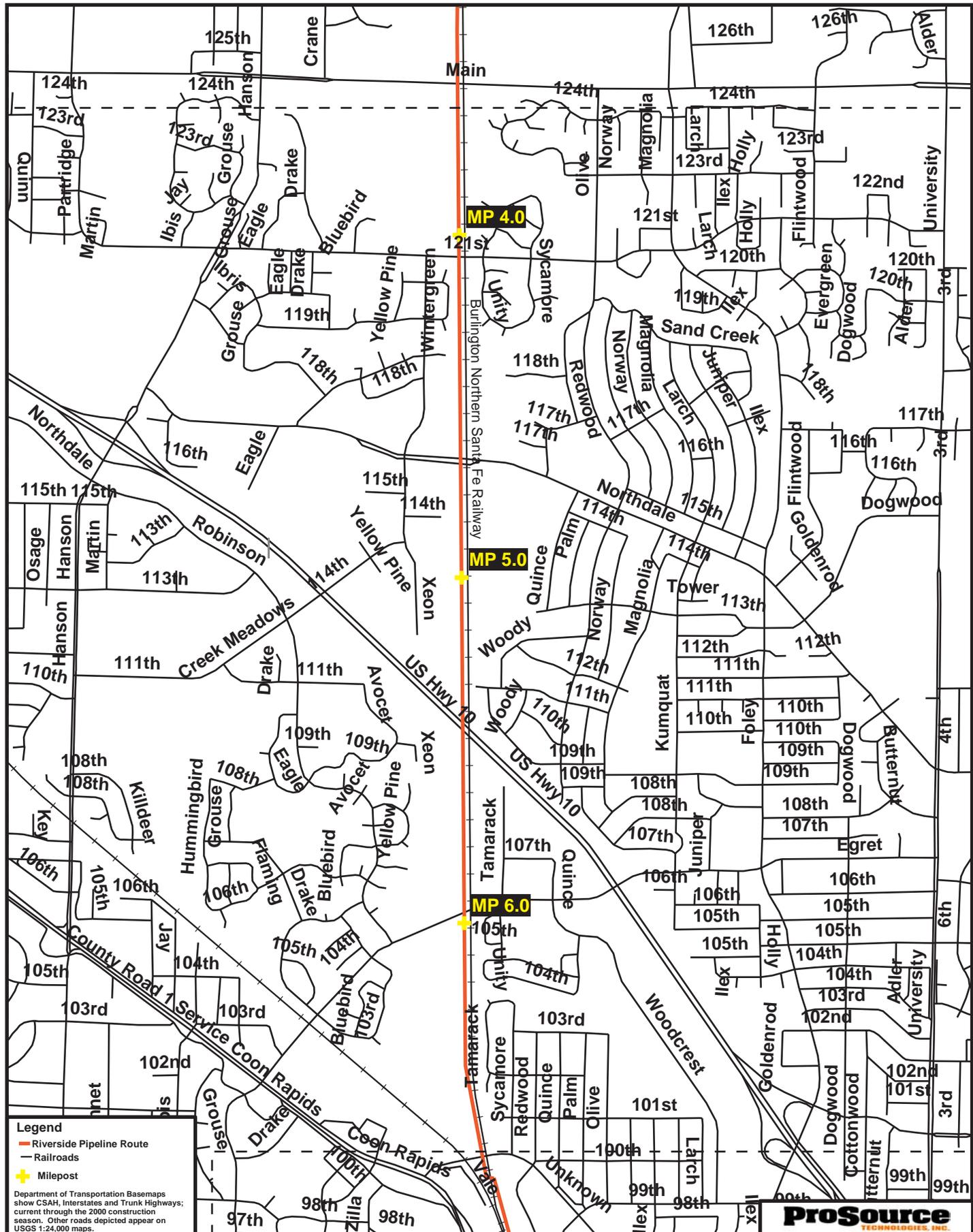
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ProSource Project No. 1001-00

CenterPoint Energy - Riverside Pipeline Project
Department of Transportation Road Map



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Legend

- Riverside Pipeline Route
- Railroads
- Milepost

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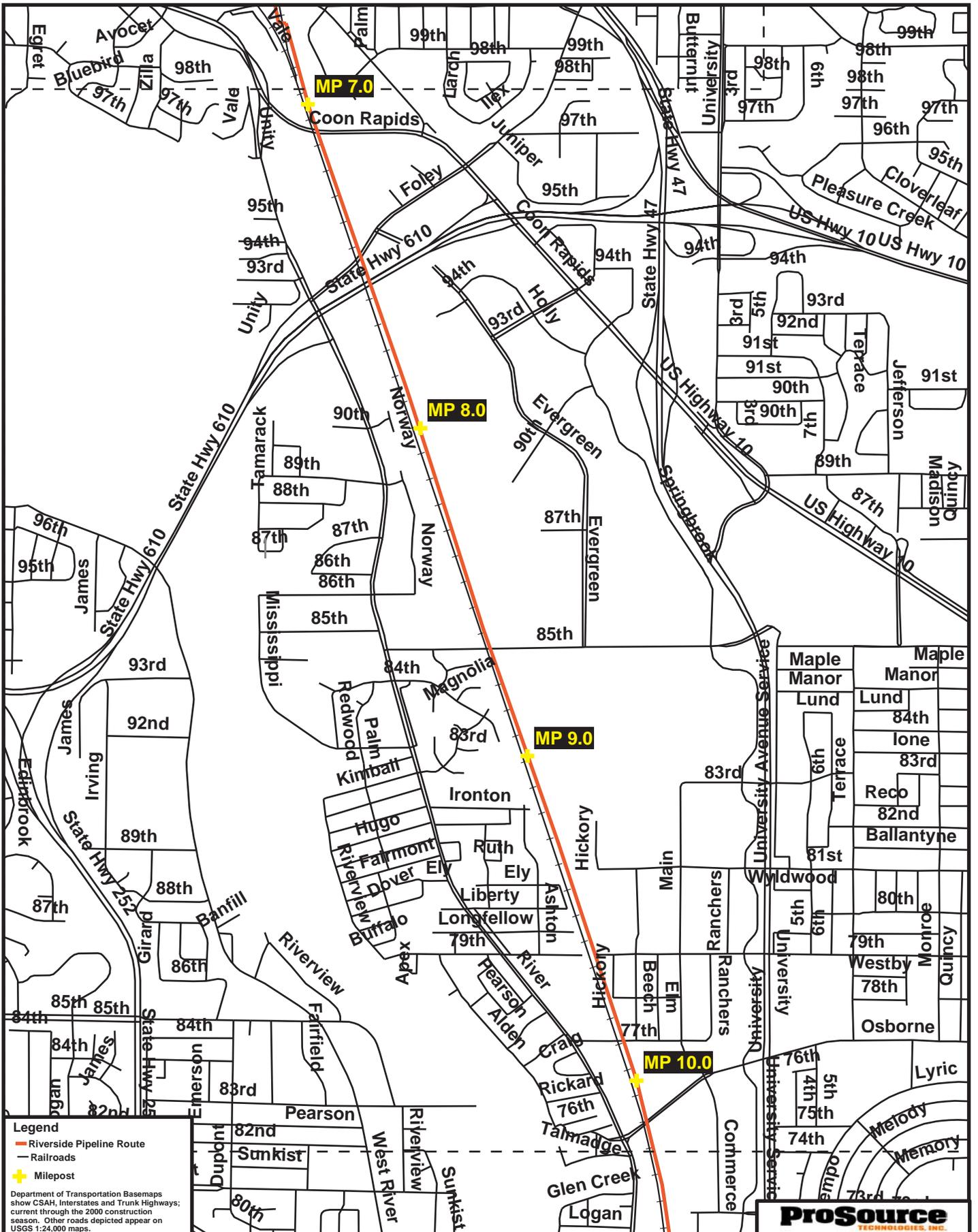


CenterPoint Energy - Riverside Pipeline Project
 Department of Transportation Road Map



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Legend
 - Riverside Pipeline Route
 - Railroads
 + Milepost

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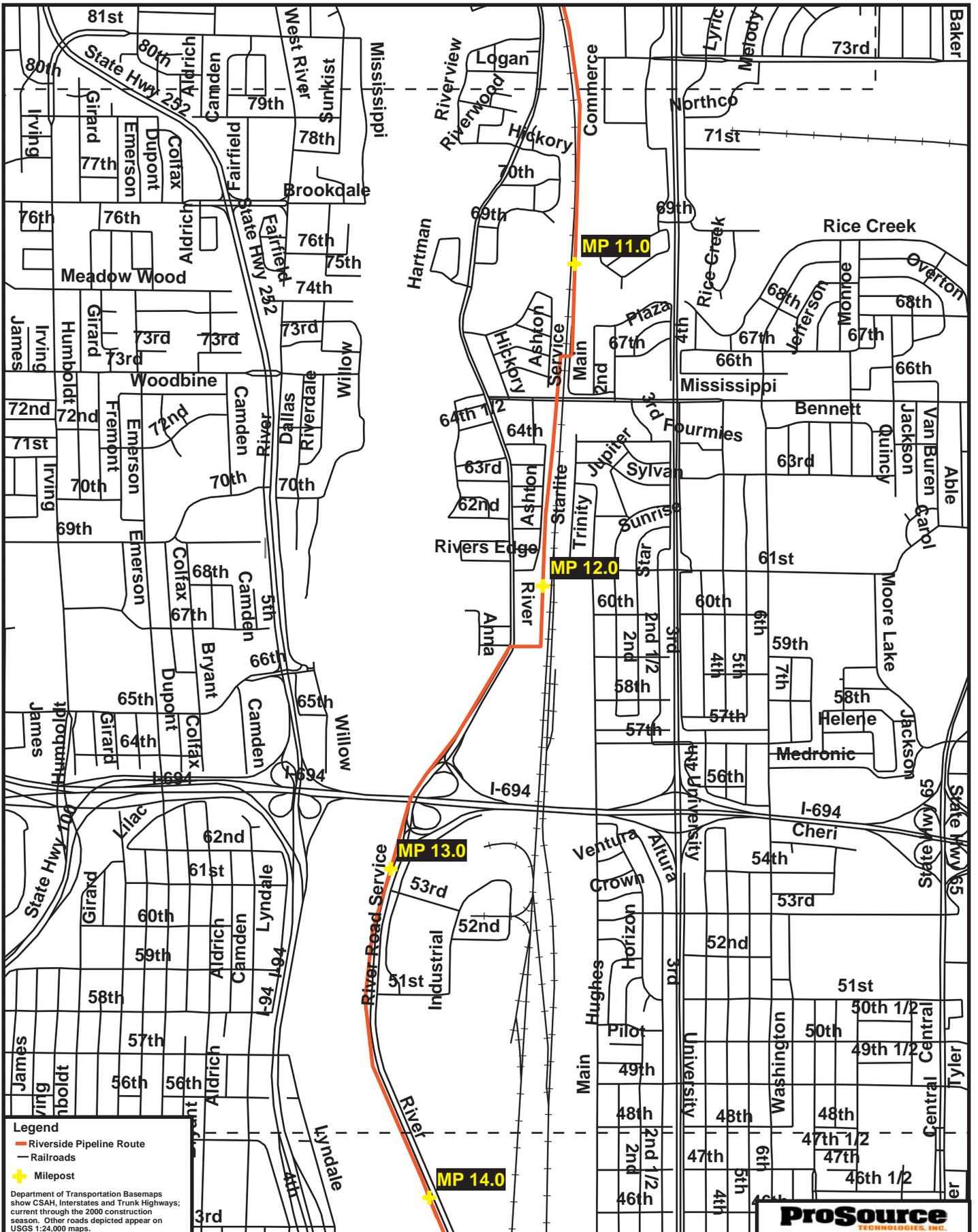


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Legend

- Riverside Pipeline Route
- Railroads
- + Milepost

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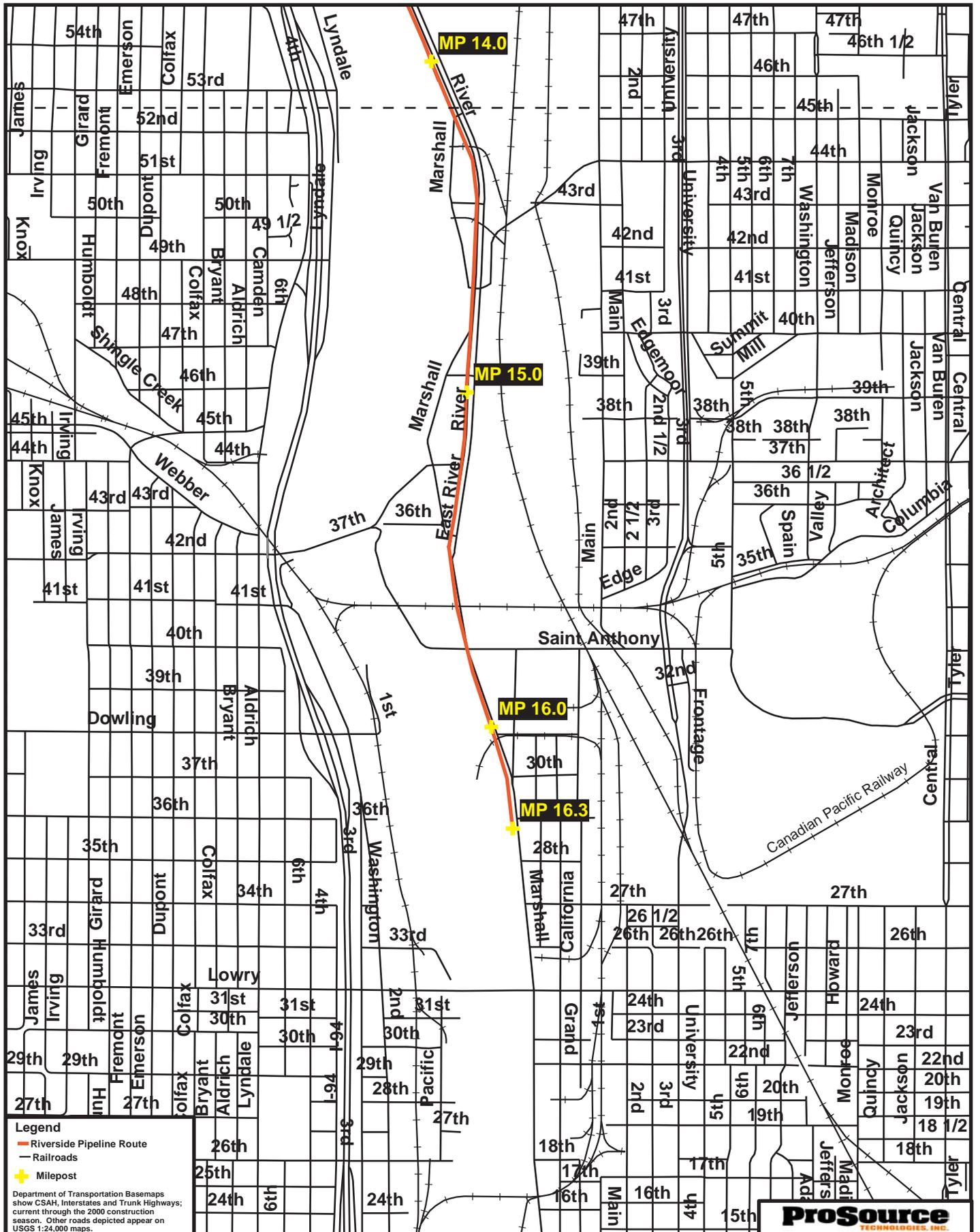
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ProSource Project No. 1001-00



Legend
 - Riverside Pipeline Route
 - Railroads
 + Milepost

Department of Transportation Basemaps show CSAH, Interstates and Trunk Highways; current through the 2000 construction season. Other roads depicted appear on USGS 1:24,000 maps.



CenterPoint Energy - Riverside Pipeline Project
 Department of Transportation Road Map



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National Wetland Inventory Maps



Legend

- + Milepost
- Riverside Pipeline
- Railroads
- - - Match line

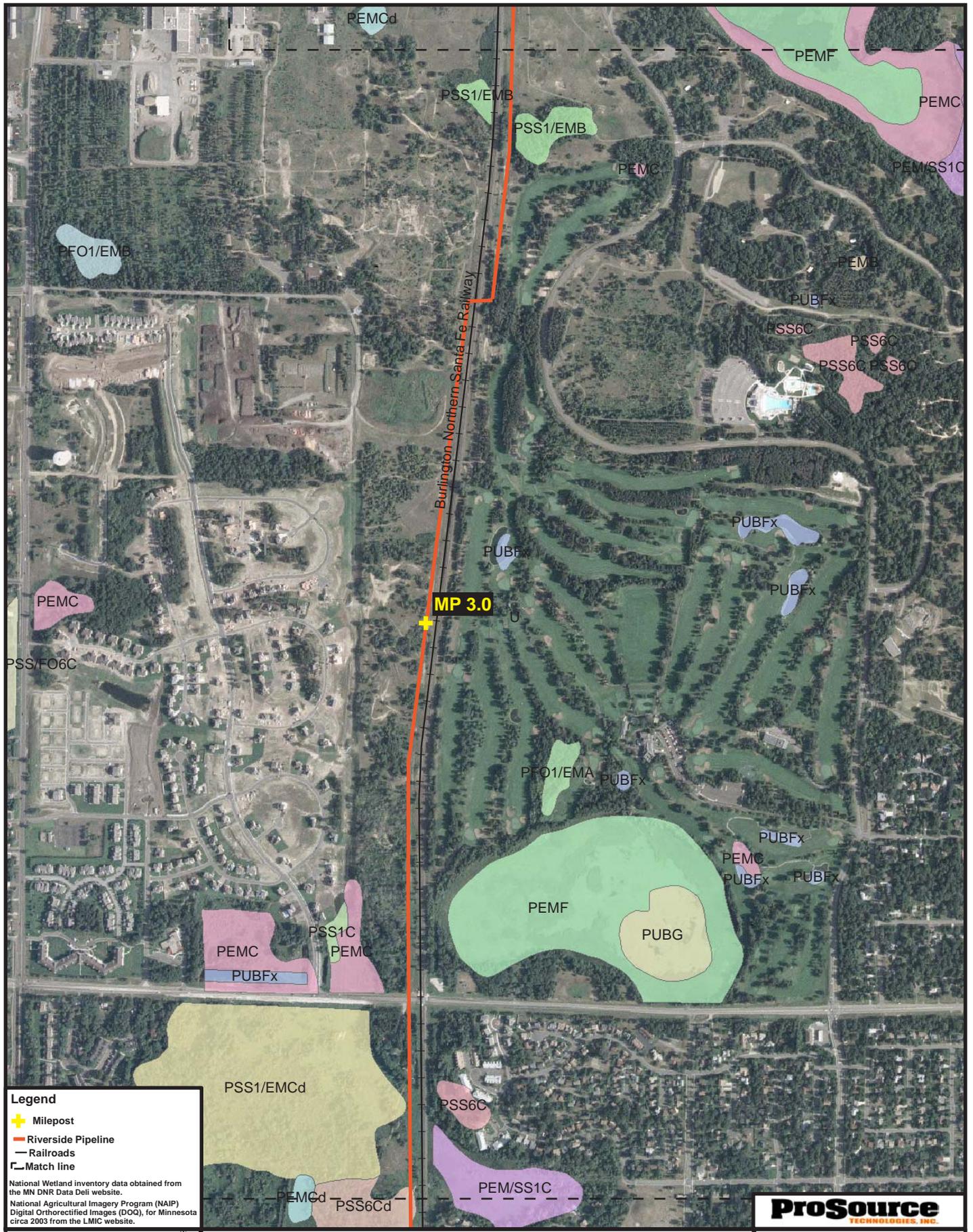
National Wetland inventory data obtained from the MN DNR Data Deli website.
 National Agricultural Imagery Program (NAIP) Digital Orthorectified Images (DOQ), for Minnesota circa 2003 from the LMC website.



**CenterPoint Energy - Riverside Pipeline Project
 National Wetland Inventory Map**



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Legend

- + Milepost
- Riverside Pipeline
- Railroads
- - - Match line

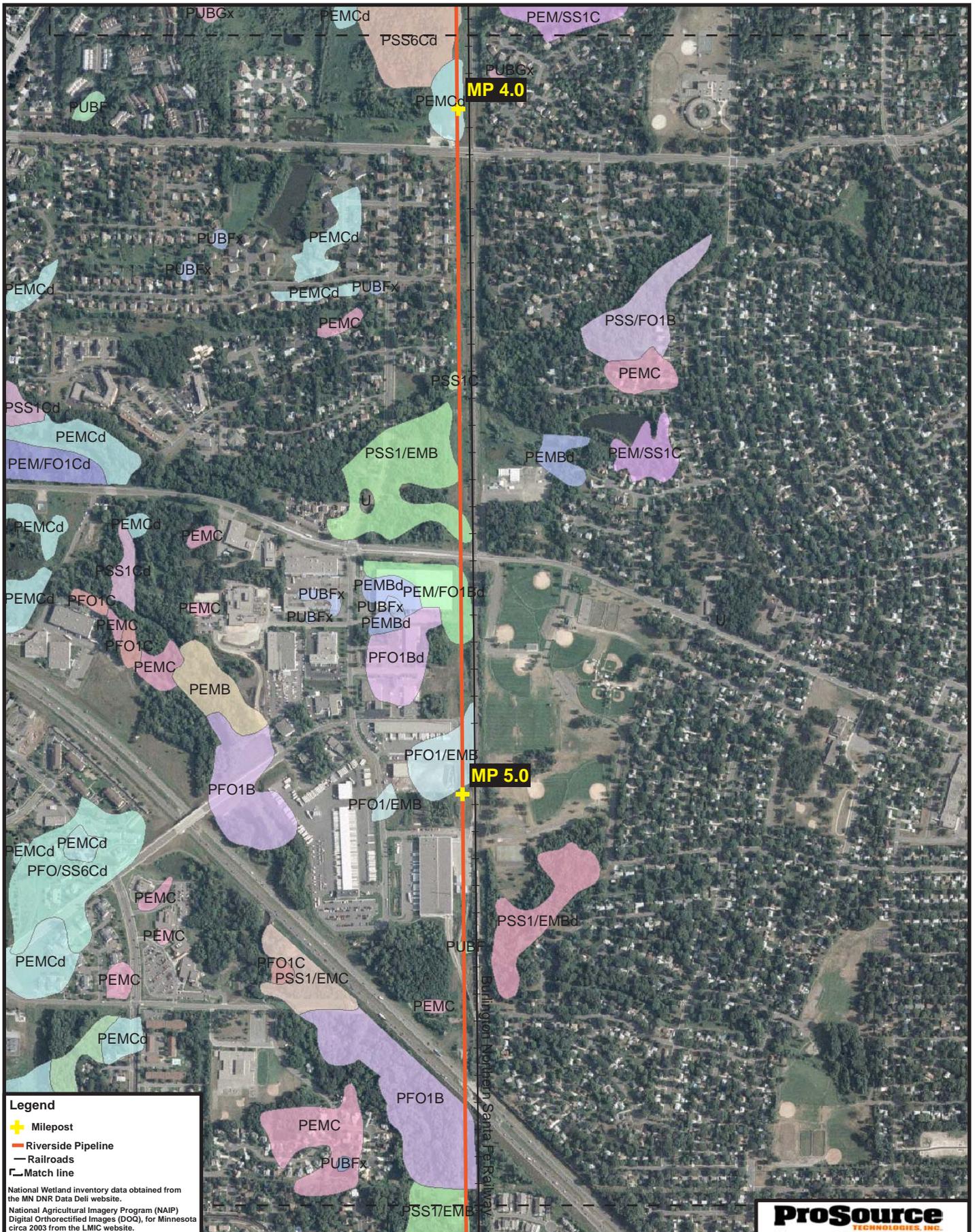
National Wetland inventory data obtained from the MN DNR Data Deli website.
 National Agricultural Imagery Program (NAIP) Digital Orthorectified Images (DOQ), for Minnesota circa 2003 from the LMIC website.



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National Wetland Inventory Map**



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Legend

- + Milepost
- Riverside Pipeline
- Railroads
- Match line

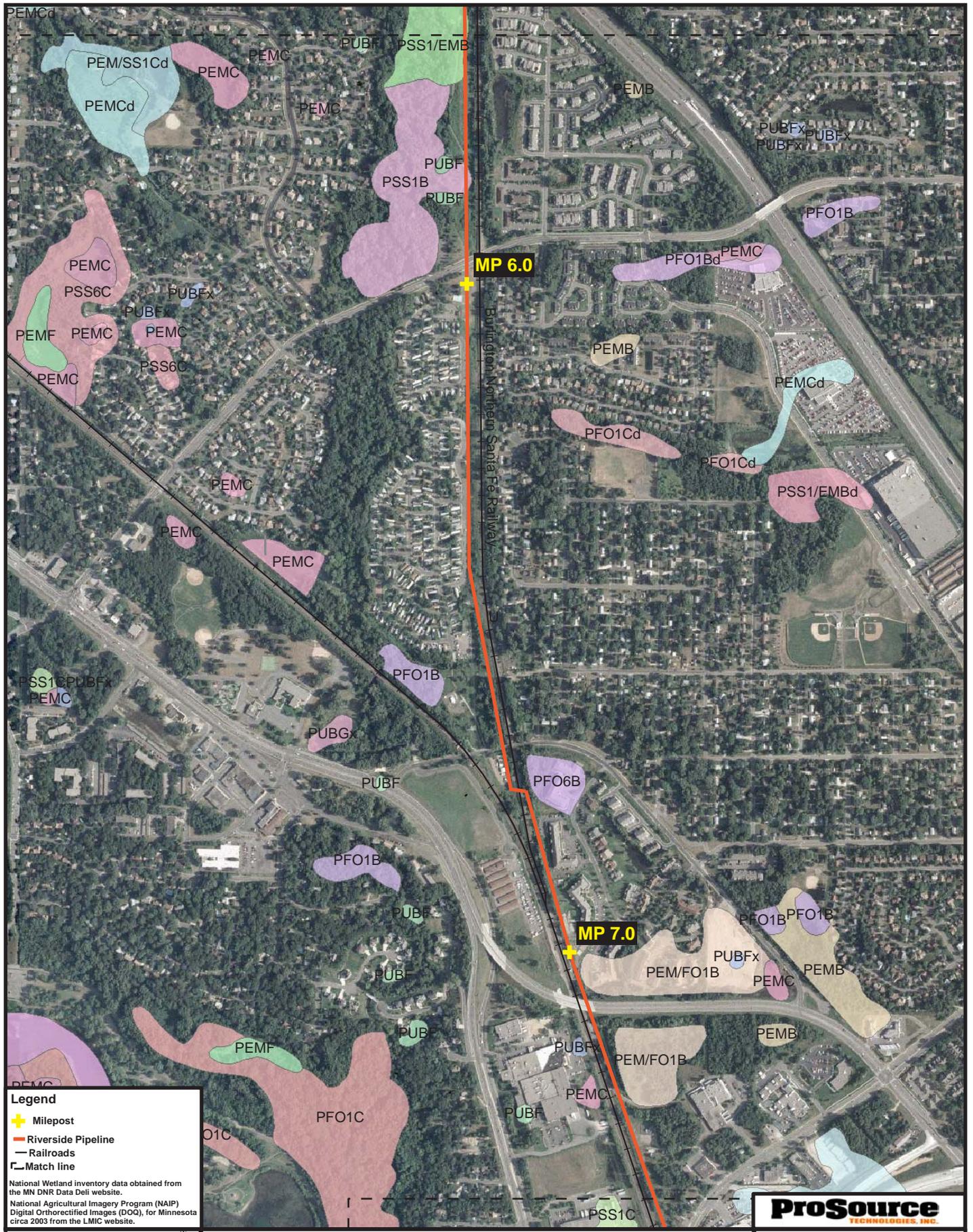
National Wetland inventory data obtained from the MN DNR Data Deli website.
 National Agricultural Imagery Program (NAIP) Digital Orthorectified Images (DOQ), for Minnesota circa 2003 from the LMIC website.



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National Wetland Inventory Map**



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Legend

- + Milepost
- Riverside Pipeline
- Railroads
- - - Match line

National Wetland inventory data obtained from the MN DNR Data Deli website.
 National Agricultural Imagery Program (NAIP) Digital Orthorectified Images (DOQ), for Minnesota circa 2003 from the LMIC website.

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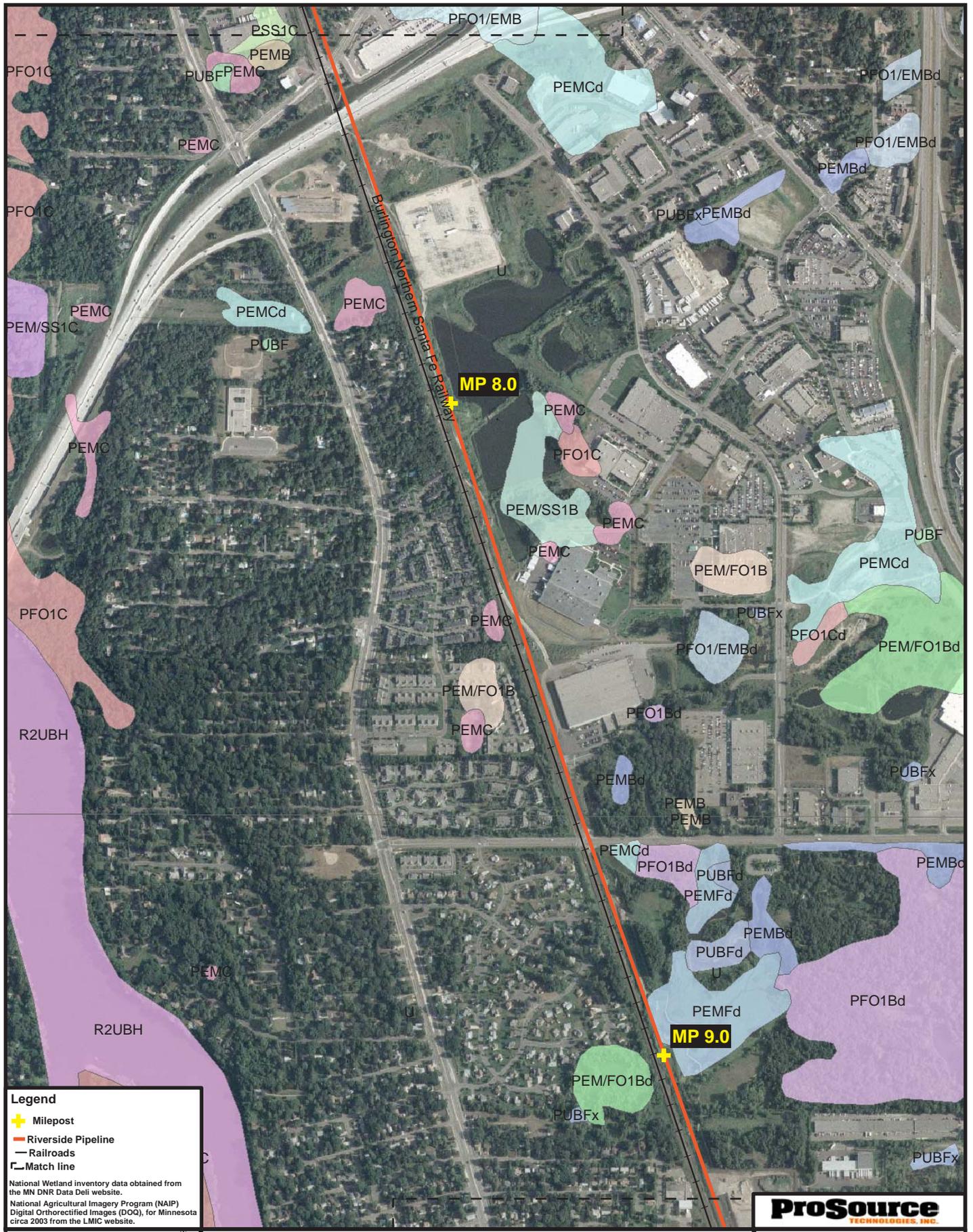
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National Wetland Inventory Map**



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Legend

- + Milepost
- Riverside Pipeline
- Railroads
- ┌ Match line

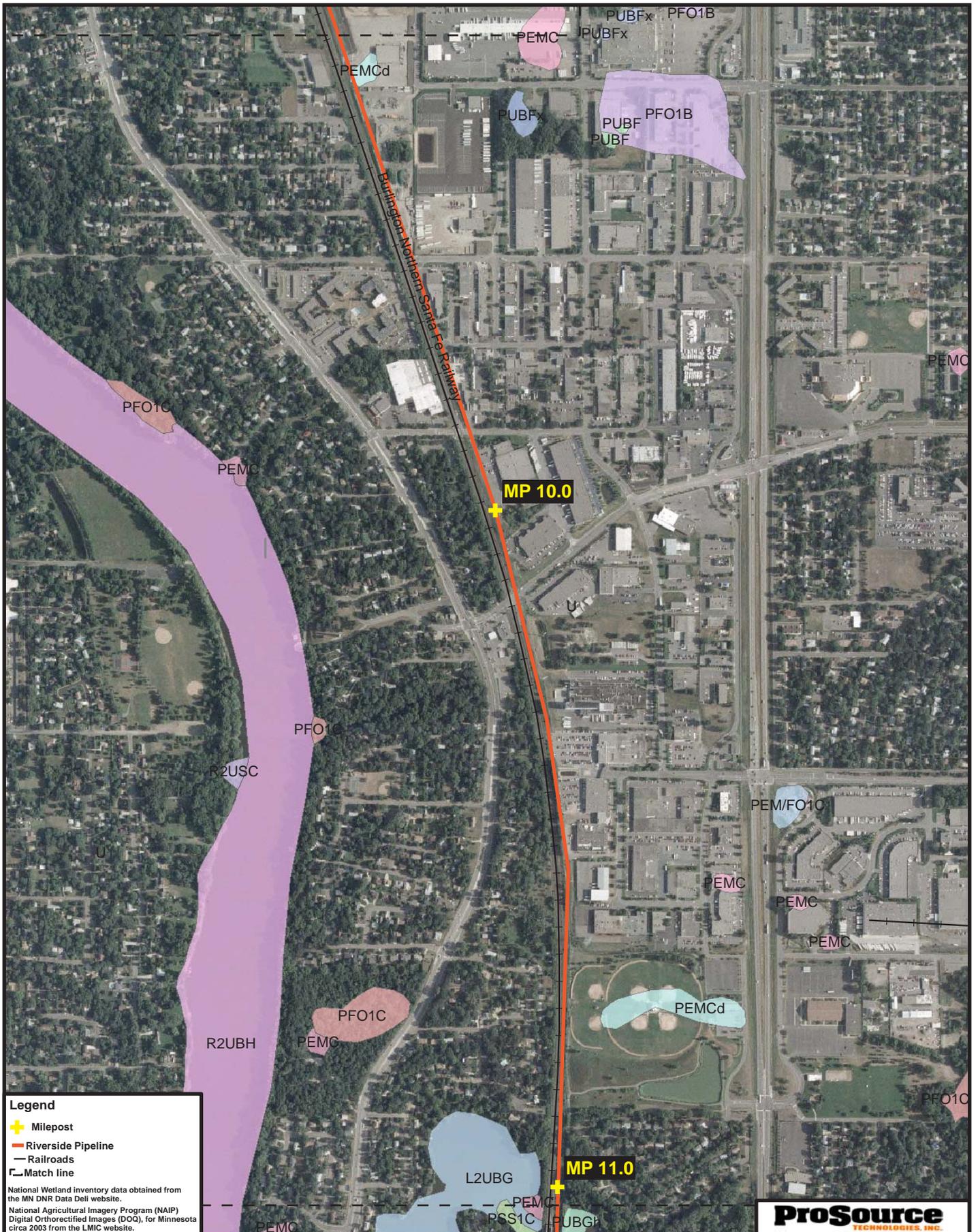
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National Wetland Inventory Map**



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Legend

- + Milepost
- Riverside Pipeline
- - - Railroads
- ┌ Match line

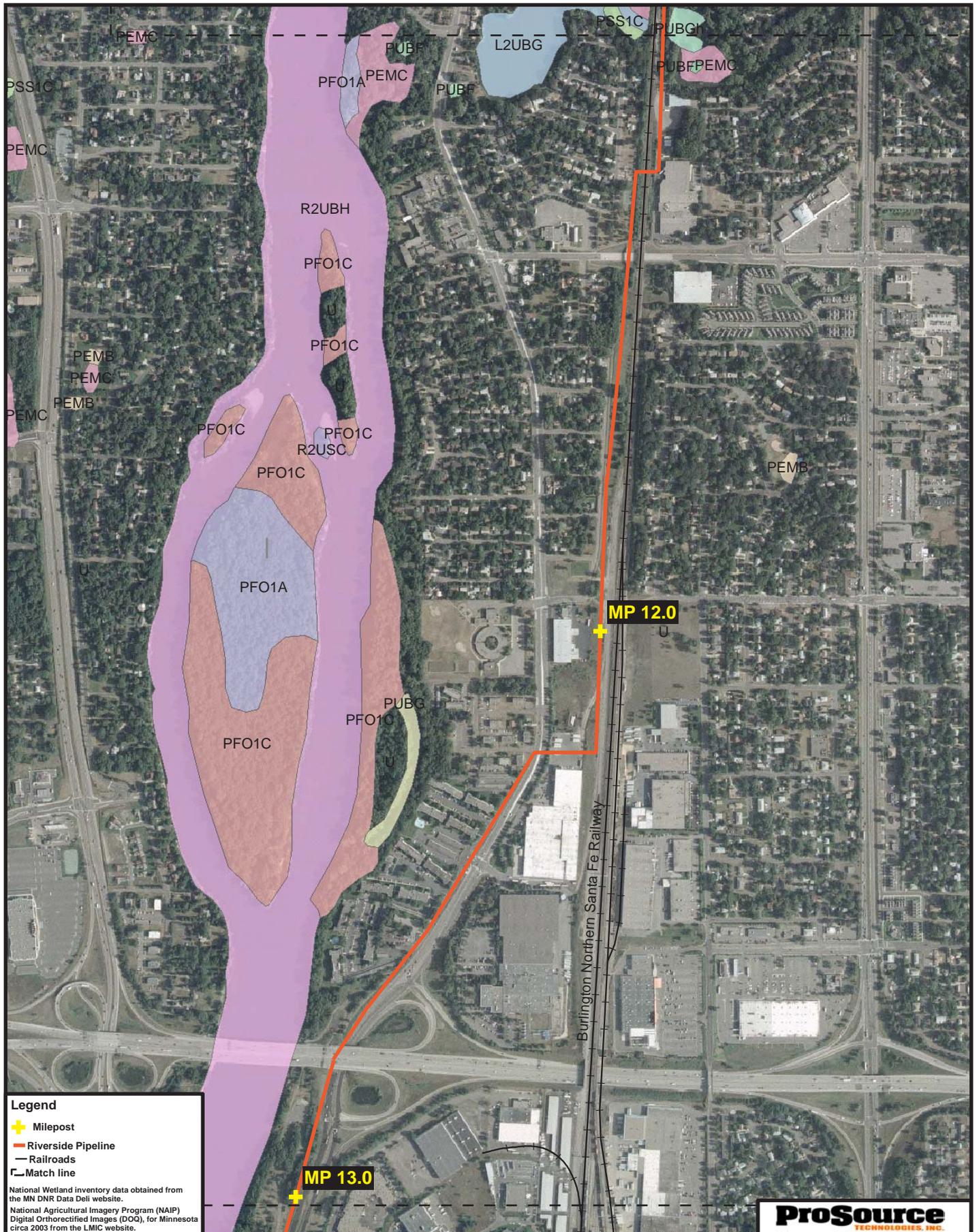
National Wetland inventory data obtained from the MN DNR Data Deli website.
 National Agricultural Imagery Program (NAIP) Digital Orthorectified Images (DOQ), for Minnesota circa 2003 from the LMIC website.



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National Wetland Inventory Map**



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Legend

- + Milepost
- Riverside Pipeline
- Railroads
- ┌ Match line

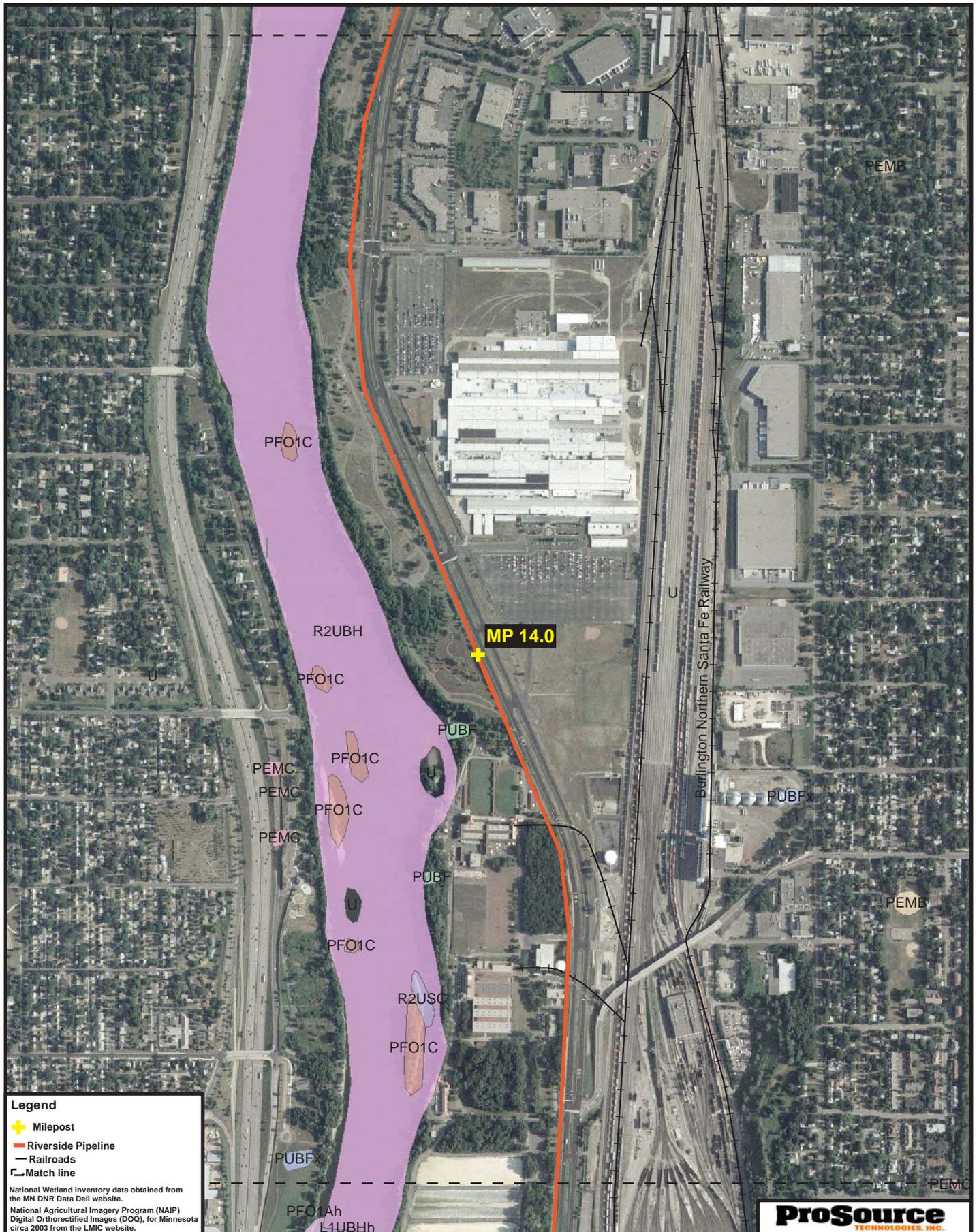
National Wetland inventory data obtained from the MN DNR Data Deli website.
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 National Wetland Inventory Map**



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Legend

- + Milepost
- Riverside Pipeline
- Railroads
- - - Match line

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National Wetland Inventory Map

0 1,000 2,000 3,000 Feet

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Legend

- + Milepost
- Riverside Pipeline
- Railroads
- Match line

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 National Agricultural Imagery Program (NAIP) Digital Orthorectified Images (DOQ), for Minnesota circa 2003 from the LMC website.



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National Wetland Inventory Map**



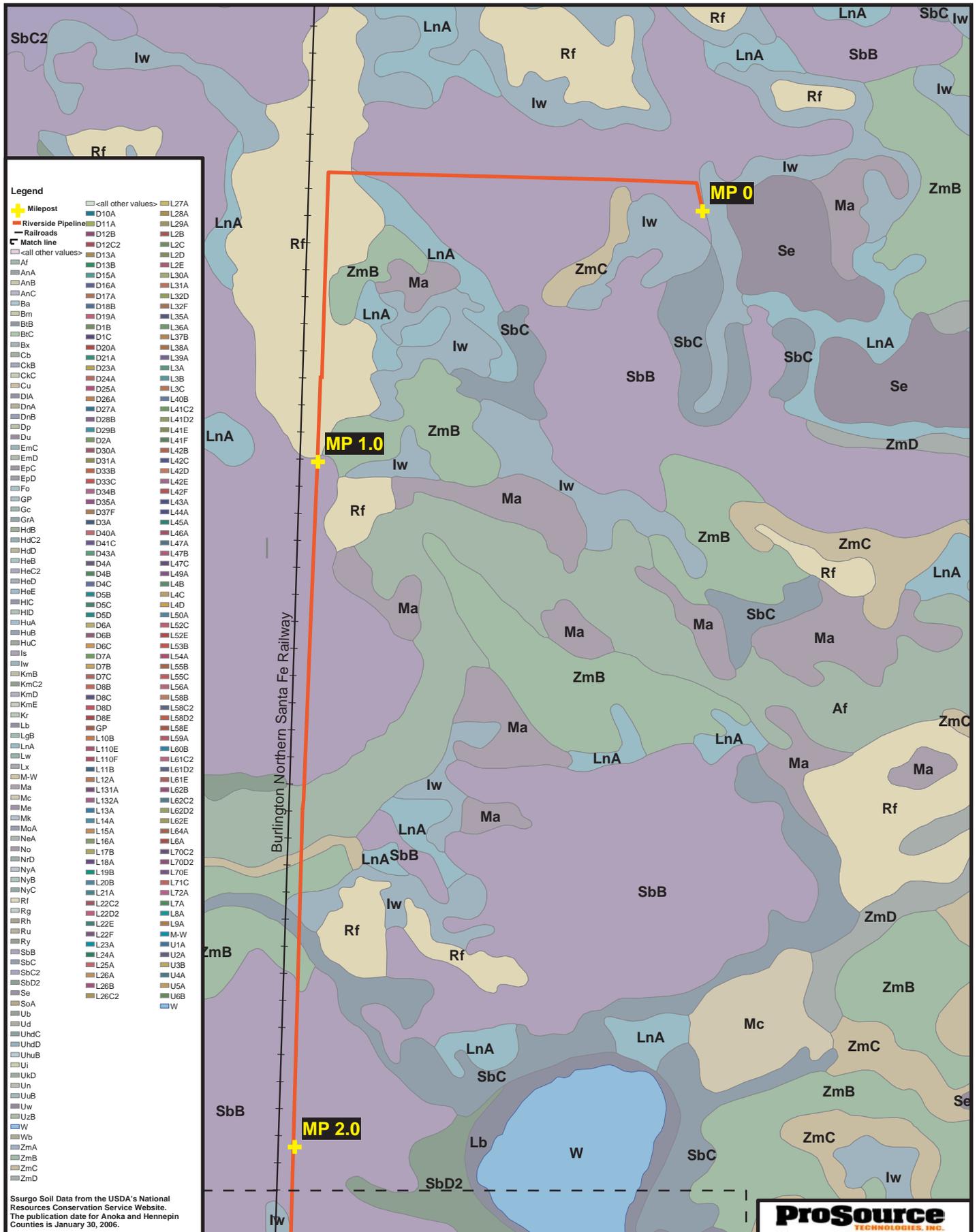
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National Wetland Inventory Maps – Key

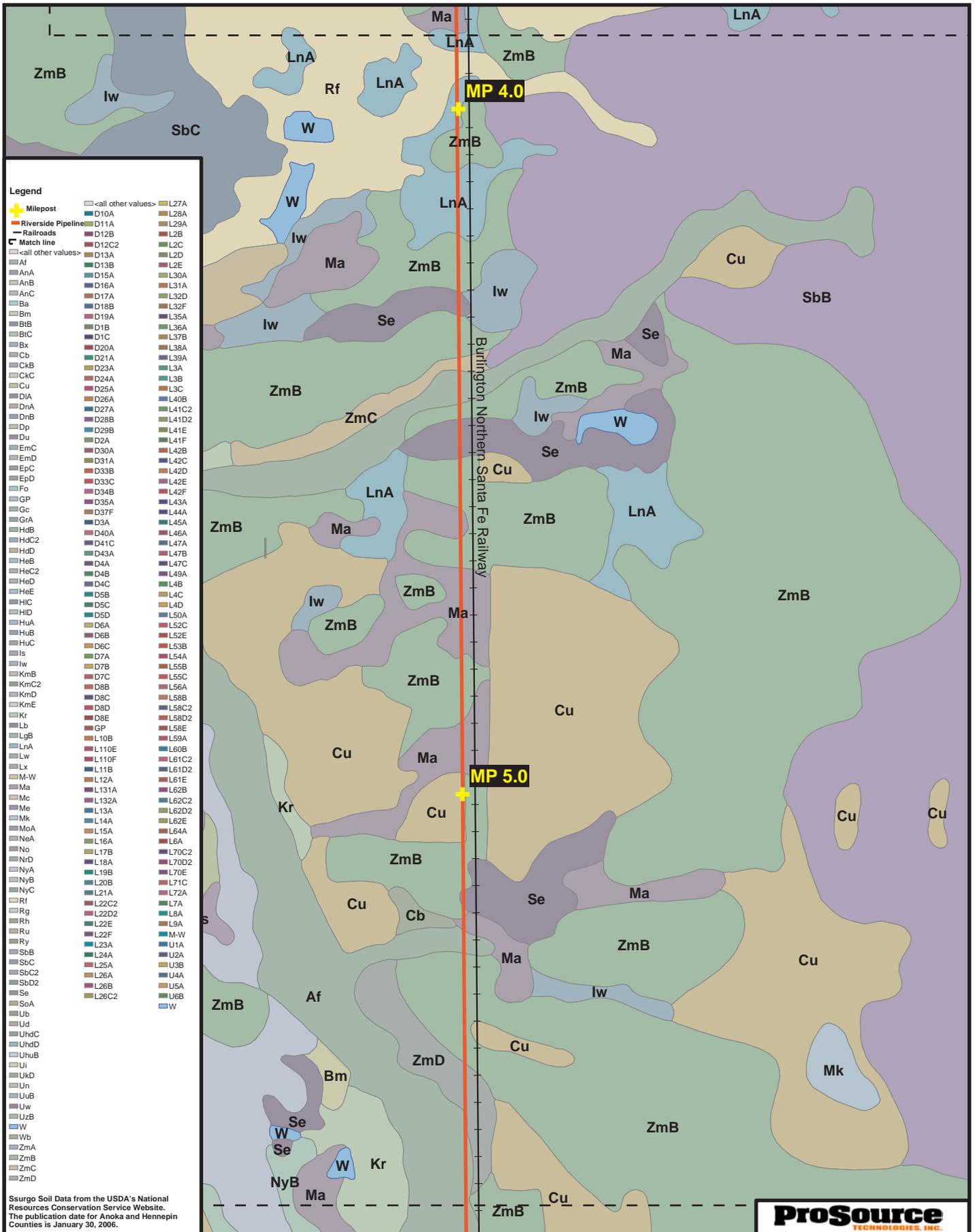
Cowardin Classification System:

| | | |
|--|--|---|
| <p>PEM – Palustrine Emergent PUB – Palustrine Unconsolidated Bottom PFO – Palustrine Forested PSS – Palustrine Scrub-shrub</p> <p>Subclass – Emergent</p> <ol style="list-style-type: none"> 1. Persistent 2. Non-Persistent <p>Subclass – Forested</p> <ol style="list-style-type: none"> 1. Broad-leaved Deciduous 2. Needle-leaved Deciduous 3. Broad-leaved Evergreen 4. Needle-leaved Evergreen 5. Dead <p>Subclass – Scrub-Shrub</p> <ol style="list-style-type: none"> 1. Broad-leaved Deciduous 2. Needle-leaved Deciduous 3. Broad-leaved Evergreen 4. Needle-leaved Evergreen 5. Dead | <p>Modifiers:</p> <p>A = Temporarily Flooded B = Saturated C = Seasonally Flooded F = Semipermanently Flooded G = Intermittently Exposed H = Permanently Flooded J = Intermittently Flooded K = Artificially Flooded U = Unknown Z = Intermittently Exposed/Permanent</p> | <p>Special Modifiers:</p> <p>b = Beaver d = Partially drained/ditched f = Farmed h = Diked/impounded r = Artificial substrate s = Spoil x = Excavated</p> |
|--|--|---|

Soil Cover Maps



| Legend | |
|--------|--------------------|
| | Milepost |
| | Riverside Pipeline |
| | Railroads |
| | Match line |
| | <all other values> |
| | AF |
| | Ana |
| | AnB |
| | AnC |
| | Ba |
| | Bm |
| | BtB |
| | BtC |
| | Bx |
| | Cb |
| | CkB |
| | CkC |
| | Cu |
| | DIA |
| | DnA |
| | DnB |
| | Dp |
| | Du |
| | EmC |
| | EmD |
| | EPC |
| | EPD |
| | Fo |
| | GP |
| | Gc |
| | GRA |
| | HdB |
| | HdC2 |
| | Hd |
| | HeB |
| | HeC2 |
| | HeD |
| | HeE |
| | HIC |
| | HID |
| | HuA |
| | HuB |
| | HuC |
| | Is |
| | Iw |
| | KmB |
| | KmC2 |
| | KmD |
| | KmE |
| | Kr |
| | Lb |
| | LgB |
| | LnA |
| | Lw |
| | Lx |
| | M-W |
| | Ma |
| | Mc |
| | Me |
| | Mk |
| | MoA |
| | NeA |
| | No |
| | NrD |
| | NyA |
| | NyB |
| | NyC |
| | Rf |
| | Rg |
| | Rh |
| | Ru |
| | Ry |
| | SbB |
| | SbC |
| | SbC2 |
| | SbD2 |
| | Se |
| | SoA |
| | Ub |
| | Ud |
| | UndC |
| | UndD |
| | UnuB |
| | Ui |
| | UKD |
| | Un |
| | UuB |
| | Uw |
| | UzB |
| | W |
| | Wb |
| | ZmA |
| | ZmB |
| | ZmC |
| | ZmD |
| | ZmE |
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| | ZmS |
| | ZmT |
| | ZmU |
| | ZmV |
| | ZmW |
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| | ZmAS |
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| | ZmAU |
| | ZmAV |
| | ZmAW |
| | ZmAX |
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| | ZmBV |
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| | ZmBX |
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| | ZmBZ |
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| | ZmCL |
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| | ZmEH |
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Ssurgo Soil Data from the USDA's National Resources Conservation Service Website. The publication date for Anoka and Hennepin Counties is January 30, 2006.

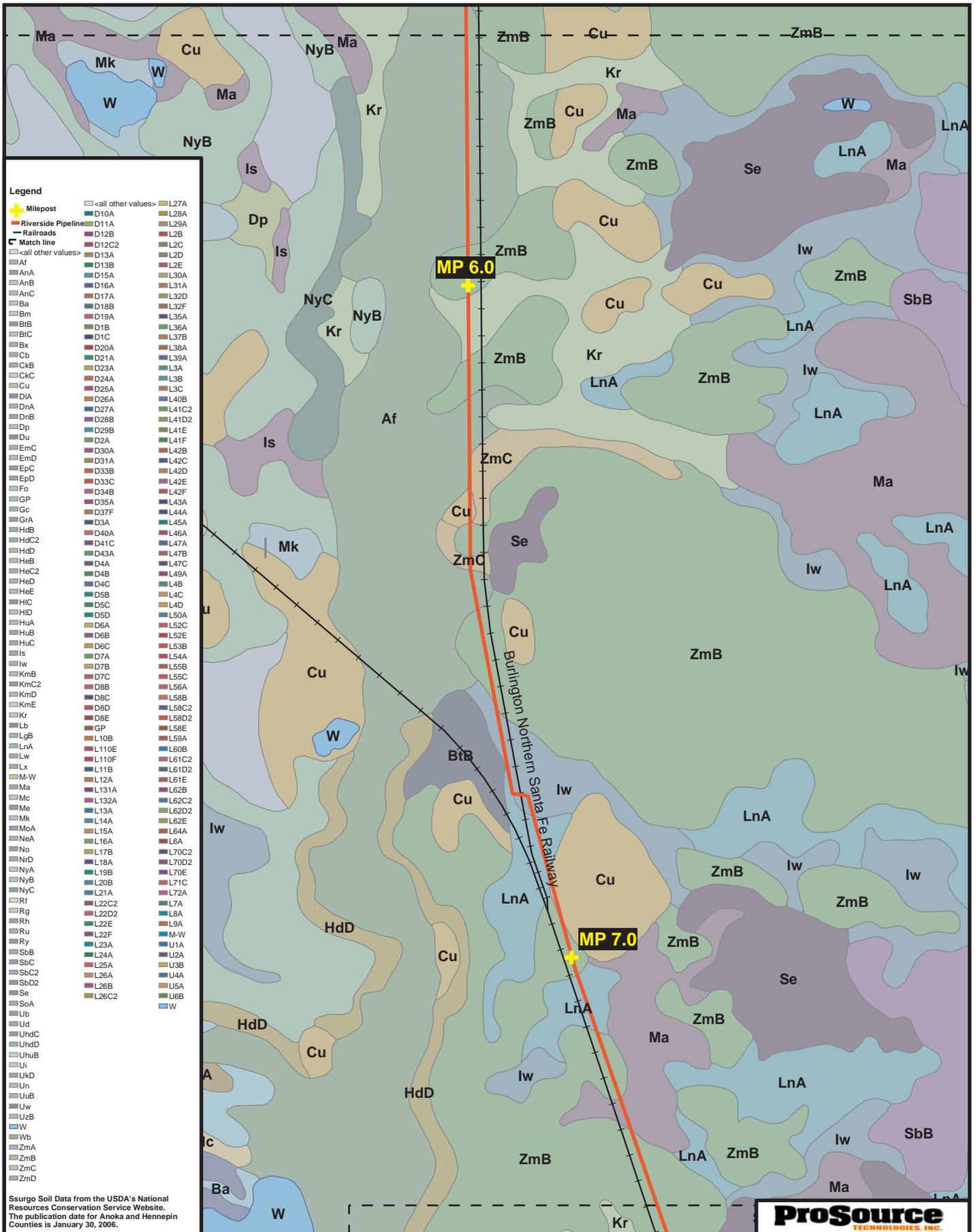


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- Legend**
- Milepost
 - Riverside Pipeline
 - Railroads
 - Match line
 - <all other values>
 - D10A
 - D11A
 - D12B
 - D12C2
 - D13A
 - D13B
 - D15A
 - D16A
 - D17A
 - D18B
 - D19A
 - D1B
 - D1C
 - D20A
 - D21A
 - D23A
 - D24A
 - D25A
 - D26A
 - D27A
 - D28B
 - D29B
 - D2A
 - D30A
 - D31A
 - D33B
 - D33C
 - D34B
 - D35A
 - D37F
 - D3A
 - D40A
 - D41C
 - D43A
 - D4A
 - D4B
 - D4C
 - D5B
 - D5C
 - D5D
 - D6A
 - D6B
 - D6C
 - D7A
 - D7B
 - D7C
 - D8B
 - D8C
 - D8D
 - D8E
 - D8F
 - L10B
 - L110E
 - L110F
 - L11B
 - L12A
 - L131A
 - L132A
 - L13A
 - L14A
 - L15A
 - L16A
 - L17B
 - L18A
 - L19B
 - L20B
 - L21A
 - L22C2
 - L22D2
 - L22E
 - L23A
 - L24A
 - L25A
 - L26A
 - L26B
 - L26C2
 - L27A
 - L28A
 - L29A
 - L2B
 - L2C
 - L2D
 - L2E
 - L30A
 - L31A
 - L32D
 - L32F
 - L35A
 - L36A
 - L37B
 - L38A
 - L39A
 - L3A
 - L3B
 - L3C
 - L40B
 - L41C2
 - L41D2
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 - L52E
 - L53B
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 - L55C
 - L56A
 - L58B
 - L58C2
 - L58D2
 - L58E
 - L59A
 - L60B
 - L61C2
 - L61D2
 - L61E
 - L62B
 - L62C2
 - L62D2
 - L62E
 - L64A
 - L6A
 - L70C2
 - L70D2
 - L70E
 - L71C
 - L72A
 - L7A
 - L8A
 - L9A
 - M-W
 - U1A
 - U2A
 - U3B
 - U4A
 - U5A
 - U6B
 - W

Ssurgo Soil Data from the USDA's National Resources Conservation Service Website. The publication date for Anoka and Hennepin Counties is January 30, 2006.

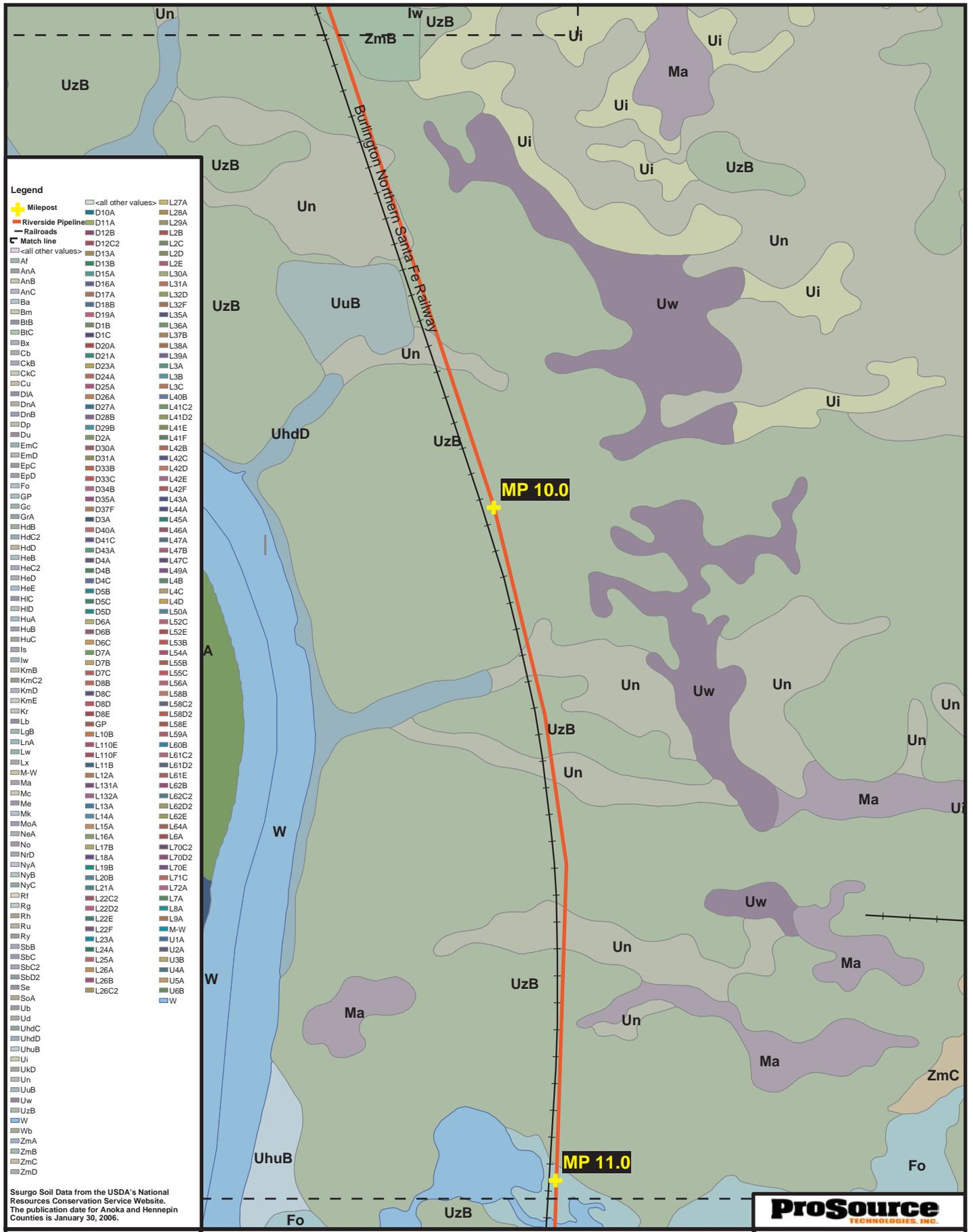


**CenterPoint Energy - Riverside Pipeline Project
Ssurgo Soils Map**



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Legend

| | | |
|---------------------|---------------------|-------|
| Milepost | -all other values-> | L27A |
| Riverside Pipeline | D10A | L28A |
| Railroads | D11A | L29A |
| Match line | D12B | L2B |
| -all other values-> | D12C2 | L2C |
| Af | D13A | L2D |
| Ana | D13B | L2E |
| AnB | D15A | L30A |
| AnC | D16A | L31A |
| Ba | D17A | L32D |
| Bm | D18B | L32F |
| BnB | D19A | L35A |
| BnC | D1B | L36A |
| Bx | D1C | L37B |
| Cb | D20A | L38A |
| CkB | D21A | L39A |
| CkC | D23A | L3A |
| Cu | D24A | L3B |
| DIA | D25A | L3C |
| DnA | D26A | L40B |
| DnB | D27A | L41C2 |
| Dp | D28B | L41D2 |
| Du | D29B | L41E |
| EmC | D2A | L41F |
| EmD | D30A | L42B |
| Epc | D31A | L42C |
| EpD | D33B | L42D |
| Fo | D33C | L42E |
| GP | D34B | L42F |
| Gc | D35A | L43A |
| Gra | D37F | L44A |
| HdB | D3A | L45A |
| HdC2 | D40A | L46A |
| Hd | D41C | L47A |
| HeB | D43A | L47B |
| HeC2 | D4A | L47C |
| HeD | D4B | L49A |
| HeE | D4C | L4B |
| HIC | D5B | L4C |
| HID | D5C | L4D |
| HuA | D5D | L50A |
| HuB | D6A | L52C |
| HuC | D6B | L52E |
| Is | D6C | L53B |
| Iw | D7A | L54A |
| KmB | D7B | L55B |
| KmC2 | D7C | L55C |
| KmD | D8B | L56A |
| KmE | D8C | L58B |
| Kr | D8D | L58C2 |
| Lb | D8E | L58D2 |
| LgB | GP | L58E |
| LNA | L10B | L59A |
| Lw | L110E | L60B |
| Lx | L110F | L61C2 |
| M-W | L11B | L61D2 |
| Ma | L12A | L61E |
| Mc | L131A | L62B |
| Me | L132A | L62C2 |
| Mk | L13A | L62D2 |
| MoA | L14A | L62E |
| NeA | L15A | L64A |
| No | L16A | L6A |
| Nrd | L17B | L70C2 |
| NyA | L18A | L70D2 |
| NyB | L19B | L70E |
| NyC | L20B | L71C |
| Rf | L21A | L72A |
| Rg | L22C2 | L7A |
| Rh | L22D2 | L8A |
| Ru | L22E | L9A |
| Ry | L22F | M-W |
| Sbb | L23A | U1A |
| Sbc | L24A | U2A |
| Sbc2 | L25A | U3B |
| Sbd2 | L26A | U4A |
| Se | L26B | U5A |
| SoA | L26C2 | U6B |
| Ub | W | W |
| Ud | | |
| UhdC | | |
| UhdD | | |
| UhuB | | |
| Ui | | |
| UKD | | |
| Un | | |
| UuB | | |
| Uw | | |
| UzB | | |
| W | | |
| Wb | | |
| ZmA | | |
| ZmB | | |
| ZmC | | |
| ZmD | | |

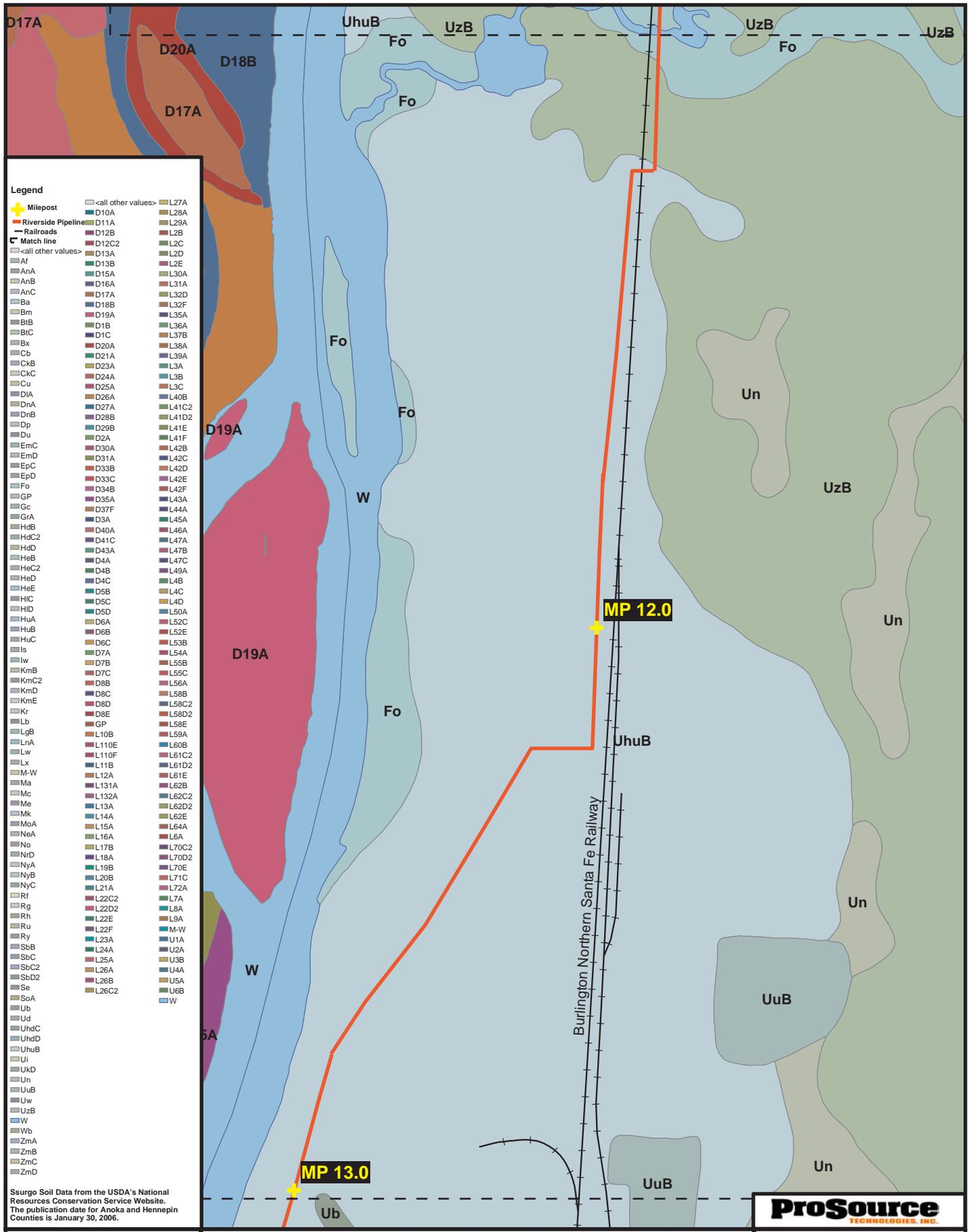
Ssurgo Soil Data from the USDA's National Resources Conservation Service Website. The publication date for Anoka and Hennepin Counties is January 30, 2006.



**CenterPoint Energy - Riverside Pipeline Project
Ssurgo Soils Map**



| |
|--------------------------------|
| DATE ISSUED: 04/04/06 |
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| SERIES: Map 6 of 9 |



- Legend**
- Milepost
 - Riverside Pipeline
 - Railroads
 - Match line
- | | | | |
|---------------------|-------|-------|-------|
| -all other values-> | D13A | L27A | L28A |
| AF | D13B | L29A | L2B |
| Ana | D15A | L2C | L2D |
| AnB | D16A | L2E | L3A |
| AnC | D17A | L30A | L31A |
| Ba | D18B | L32D | L32F |
| Bm | D19A | L35A | L36A |
| BnB | D1B | L37B | L38A |
| BnC | D1C | L39A | L3A |
| Bx | D20A | L41C2 | L3B |
| Cb | D21A | L41D2 | L3C |
| CkB | D22A | L41E | L40B |
| CkC | D23A | L41F | L41C2 |
| Cu | D24A | L42B | L41D2 |
| DIA | D25A | L42C | L41E |
| DnA | D26A | L42D | L41F |
| DnB | D27A | L42E | L42B |
| Dp | D28B | L42F | L43A |
| Du | D29B | L43A | L44A |
| EmC | D2A | L44A | L45A |
| EmD | D30A | L45A | L46A |
| EpC | D31A | L46A | L47A |
| EpD | D33B | L47B | L47C |
| Fo | D33C | L47C | L49A |
| GP | D34B | L48B | L4B |
| Gc | D35A | L4C | L4D |
| Gra | D37F | L4D | L50A |
| HdB | D3A | L50A | L52C |
| HdC2 | D40A | L52C | L52E |
| HdD | D41C | L52E | L53B |
| HdE | D43A | L53B | L54A |
| HeC2 | D4A | L54A | L55B |
| HeD | D4B | L55B | L55C |
| HeE | D4C | L55C | L56A |
| HIC | D5B | L56A | L58B |
| HID | D5C | L58B | L58C2 |
| HuA | D5D | L58C2 | L58D2 |
| HuB | D6A | L58D2 | L58E |
| HuC | D6B | L58E | L59A |
| HuC | D6C | L59A | L60B |
| Is | D7A | L60B | L61C2 |
| Iw | D7B | L61C2 | L61D2 |
| KmB | D7C | L61D2 | L61E |
| KmC2 | D8B | L61E | L62B |
| KmD | D8C | L62B | L62C2 |
| KmE | D8D | L62C2 | L62D2 |
| Kr | D8E | L62D2 | L62E |
| Lb | D8P | L62E | L64A |
| LgB | GP | L64A | L6A |
| LNA | L10B | L6A | L70C2 |
| Lw | L110E | L70C2 | L70D2 |
| Lx | L110F | L70D2 | L70E |
| M-W | L11B | L70E | L71C |
| Ma | L12A | L71C | L72A |
| Mc | L131A | L72A | L7A |
| Me | L132A | L7A | L8A |
| Mk | L13A | L8A | L9A |
| MoA | L14A | L9A | M-W |
| NeA | L15A | M-W | U1A |
| No | L16A | U1A | U2A |
| Nrd | L17B | U2A | U3B |
| NyA | L18A | U3B | U4A |
| NyB | L19B | U4A | U5A |
| NyC | L20B | U5A | U6B |
| Rf | L21A | U6B | W |
| Rg | L22C2 | W | |
| Rh | L22D2 | | |
| Ru | L22E | | |
| Ry | L22F | | |
| SBB | L23A | | |
| SBC | L24A | | |
| SBC2 | L25A | | |
| SBD2 | L26A | | |
| Se | L26B | | |
| SoA | L26C2 | | |
| Ub | | | |
| Ud | | | |
| UhdC | | | |
| UhdD | | | |
| UhuB | | | |
| Ui | | | |
| UKd | | | |
| Un | | | |
| UuB | | | |
| Uw | | | |
| UzB | | | |
| W | | | |
| Wb | | | |
| ZmA | | | |
| ZmB | | | |
| ZmC | | | |
| ZmD | | | |

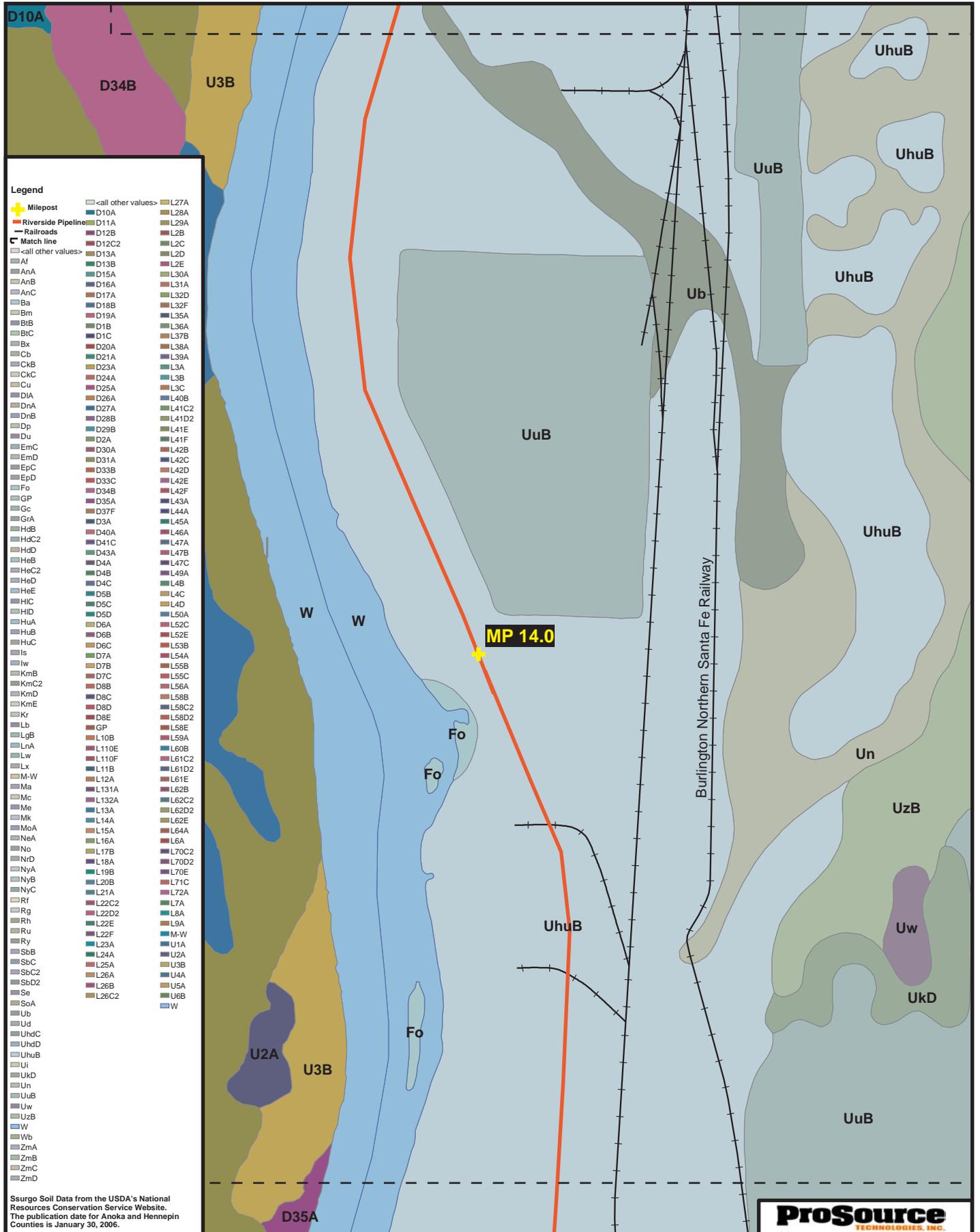
Ssurgo Soil Data from the USDA's National Resources Conservation Service Website. The publication date for Anoka and Hennepin Counties is January 30, 2006.



**CenterPoint Energy - Riverside Pipeline Project
Ssurgo Soils Map**



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|--------------------------------|
| DATE ISSUED: 04/04/06 |
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| SERIES: Map 7 of 9 |



- Legend**
- ★ Milepost
 - Riverside Pipeline
 - Railroads
 - Match line
 - <all other values>
 - AF
 - Ana
 - AnB
 - AnC
 - Ba
 - Bm
 - BtB
 - BtC
 - Bv
 - Cb
 - CkB
 - CkC
 - Cu
 - DIA
 - Dna
 - DnB
 - Dp
 - Du
 - EmC
 - EmD
 - EpC
 - EpD
 - Fo
 - GP
 - Gc
 - Gra
 - HdB
 - HdC2
 - HdD
 - HeB
 - HeC2
 - HeD
 - HeE
 - HIC
 - HID
 - HuA
 - HuB
 - HuC
 - Is
 - Iw
 - KmB
 - KmC2
 - KmD
 - KmE
 - Kr
 - Lb
 - LgB
 - Lna
 - Lw
 - Lx
 - M-W
 - Ma
 - Mc
 - Me
 - Mk
 - MoA
 - NeA
 - No
 - NrD
 - Nya
 - NyB
 - NyC
 - Rf
 - Rg
 - Rh
 - Ru
 - Ry
 - SbB
 - SbC
 - SbC2
 - SbD2
 - Se
 - SoA
 - Ub
 - Ud
 - UdC
 - UdD
 - UhuB
 - Ui
 - UkD
 - Un
 - UuB
 - Uw
 - UzB
 - W
 - Wb
 - ZmA
 - ZmB
 - ZmC
 - ZmD
 - <all other values> L27A
 - D10A
 - D11A
 - D12B
 - D12C2
 - D13A
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 - D16A
 - D17A
 - D18B
 - D19A
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 - L60B
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 - L61D2
 - L61E
 - L62B
 - L62C2
 - L62D2
 - L62E
 - L64A
 - L6A
 - L70C2
 - L70D2
 - L70E
 - L71C
 - L72A
 - L7A
 - L8A
 - L9A
 - M-W
 - U1A
 - U2A
 - U3B
 - U4A
 - U5A
 - U6B
 - W

Ssurgo Soil Data from the USDA's National Resources Conservation Service Website. The publication date for Anoka and Hennepin Counties is January 30, 2006.



**CenterPoint Energy - Riverside Pipeline Project
Ssurgo Soils Map**

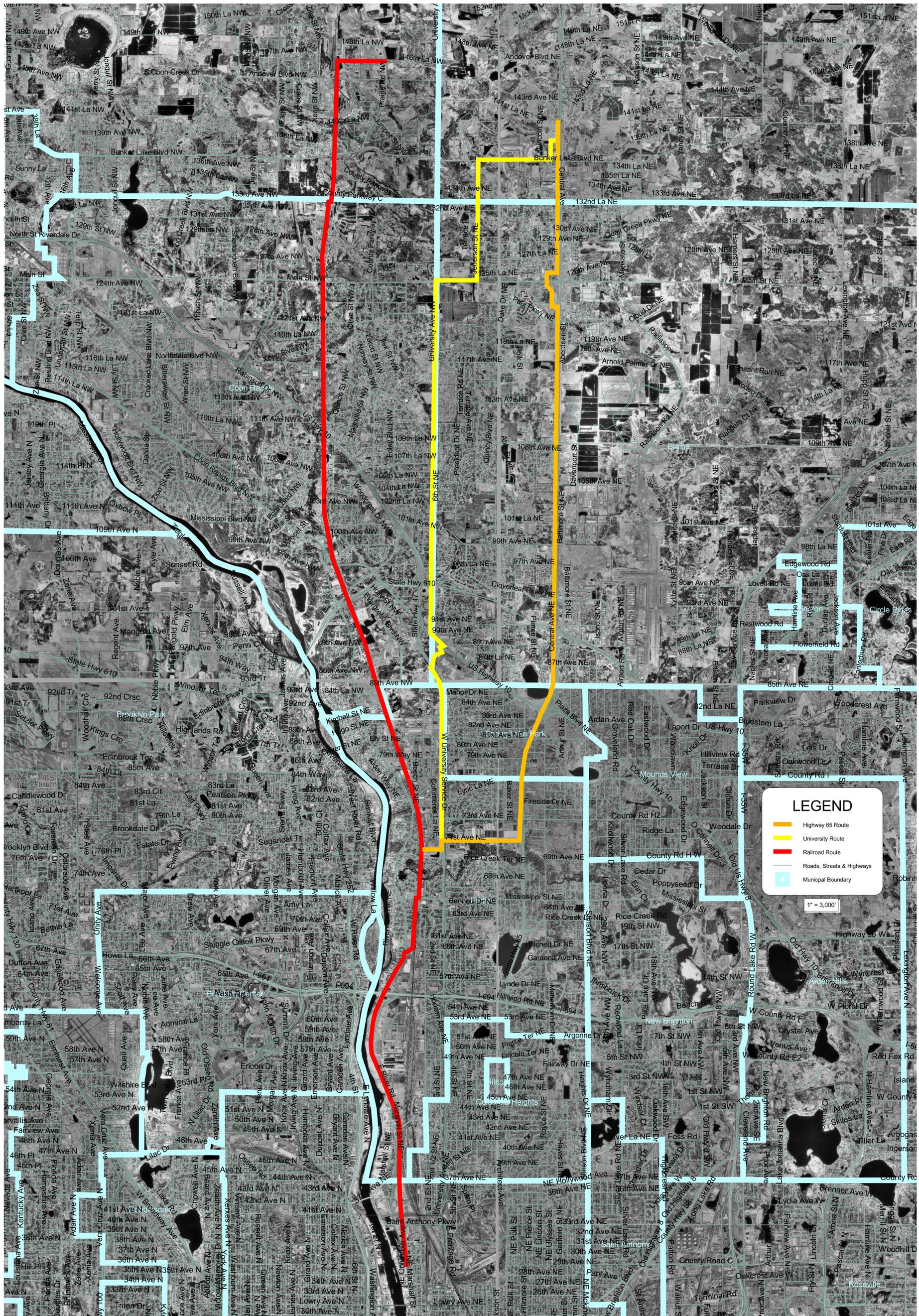


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|--------------------------------|
| DATE ISSUED: 04/04/06 |
| DATE REVISED: |
| SCALE: 1:12,000 |
| DRAWN BY: Sheri Roadfeldt, EIT |
| SERIES: Map 8 of 9 |

Soils Map – Key

| | |
|---|---|
| Sb – Sartell fine sand | Mc – Marsh |
| LnA – Lino loamy fine sand | Un – Urban land – Lino complex |
| Rf – Rifle mucky peat | UzB – Urban land-Zimmerman complex |
| Af – Alluvial land, mixed, frequently flooded | Fo – Fordum-Winterfield complex |
| Zm – Zimmerman fine sand | W- Water |
| Iw – Isanti fine sandy loam | UhuB – Urban land-Hubbard complex |
| Ma – Markey muck | D34B – Urban land – Hubbard complex |
| Se – Seelyeville muck | D31A – Urban land – Duelm complex |
| Cu – Cut and fill land | U3B – Udorthents (cut and fill land), 0 – 6 percent slopes |
| Kr – Kratka loamy fine sand | U4A – Urban land-Udipsamments (cut and fill land) complex, 0-2 percent slopes |
| Uw – Urban land-Udorthent, wet substratum complex | |

Route Alternatives Map



LEGEND

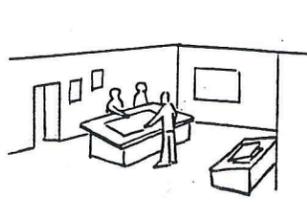
- Highway 65 Route
- University Route
- Railroad Route
- Roads, Streets & Highways
- Municipal Boundary

1" = 3,000'

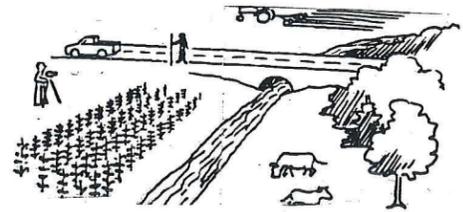
Appendix C – Typical Drawings

- **Typical Stages of Construction**
- **Cross-Section Typical Drawings**
- **Erosion Control Typical Drawings**

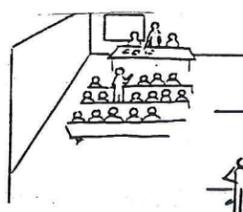
Typical Stages of Construction



CENTERPOINT ENERGY AND PROSOURCE TECHNOLOGIES, INC. PLAN THE PROJECT.



THE RIGHT-OF-WAY IS SURVEYED AND LANDOWNERS ARE CONTACTED.



PROSOURCE PERFORMS ENVIRONMENTAL REVIEW OF LAYOUT AND CHARACTERISTICS OF LAND ALONG RIGHT-OF-WAY.



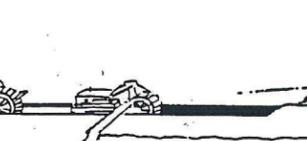
PROSOURCE CONTACTS REGULATORY AGENCIES IN PREPARATION FOR REVIEW AND PUBLIC MEETINGS.



ENGINEERS DESIGN THE PIPELINE WITH ENVIRONMENTAL PROTECTION SAFEGUARDS.



PROSOURCE RIGHT-OF-WAY AGENTS CONTACT LANDOWNERS. ARRANGEMENTS ARE MADE FOR SITE-SPECIFIC NEEDS.



CONSTRUCTION BEGINS WITH CLEARING AND GRADING. SPECIALIZED AND LOCAL CONSTRUCTION WORKERS ARE HIRED.



TOPSOIL IS SEPERATED AS NECESSARY AND EROSION CONTROL MEASURES ARE PUT IN PLACE. ENVIRONMENTAL AND SAFETY INSPECTIONS BEGIN.



SPECIAL CROSSING PROCEDURES USED TO SAFEGUARD THE ENVIRONMENT.



CONSTRUCTION CREWS PREPARE THE DITCH FOR THE PIPE.

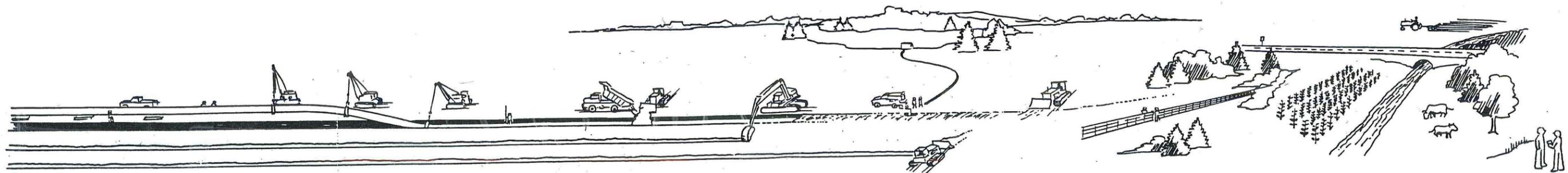
CREWS LAY OUT PIPE SECTIONS.

PIPE IS BENT TO FIT THE TERRAIN OR MEET SPECIAL NEEDS.

WELDERS JOIN THE PIPES TOGETHER.

SAFETY AND PIPELINE INTEGRITY PROCEDURES INCLUDE X-RAY INSPECTION AND WELD CERTIFICATION.

PIPELINE JOINTS ARE COATED AND INSPECTED.



WORKERS LOWER PIPE INTO SPECIALLY PREPARED DITCH.

THE DITCH IS BACKFILLED AND TOPSOIL REPLACED.

THE FINAL PHASE OF CONSTRUCTION INCLUDES TESTING OF THE PIPELINE, PIPELINE INSPECTION AND START-UP.

LAND IS RESEED, CONTOURED AND RESTORED WITH LANDOWNERS APPROVAL.

PROSOURCE CONTACTS LANDOWNERS TO DISCUSS ANY CONCERNS.



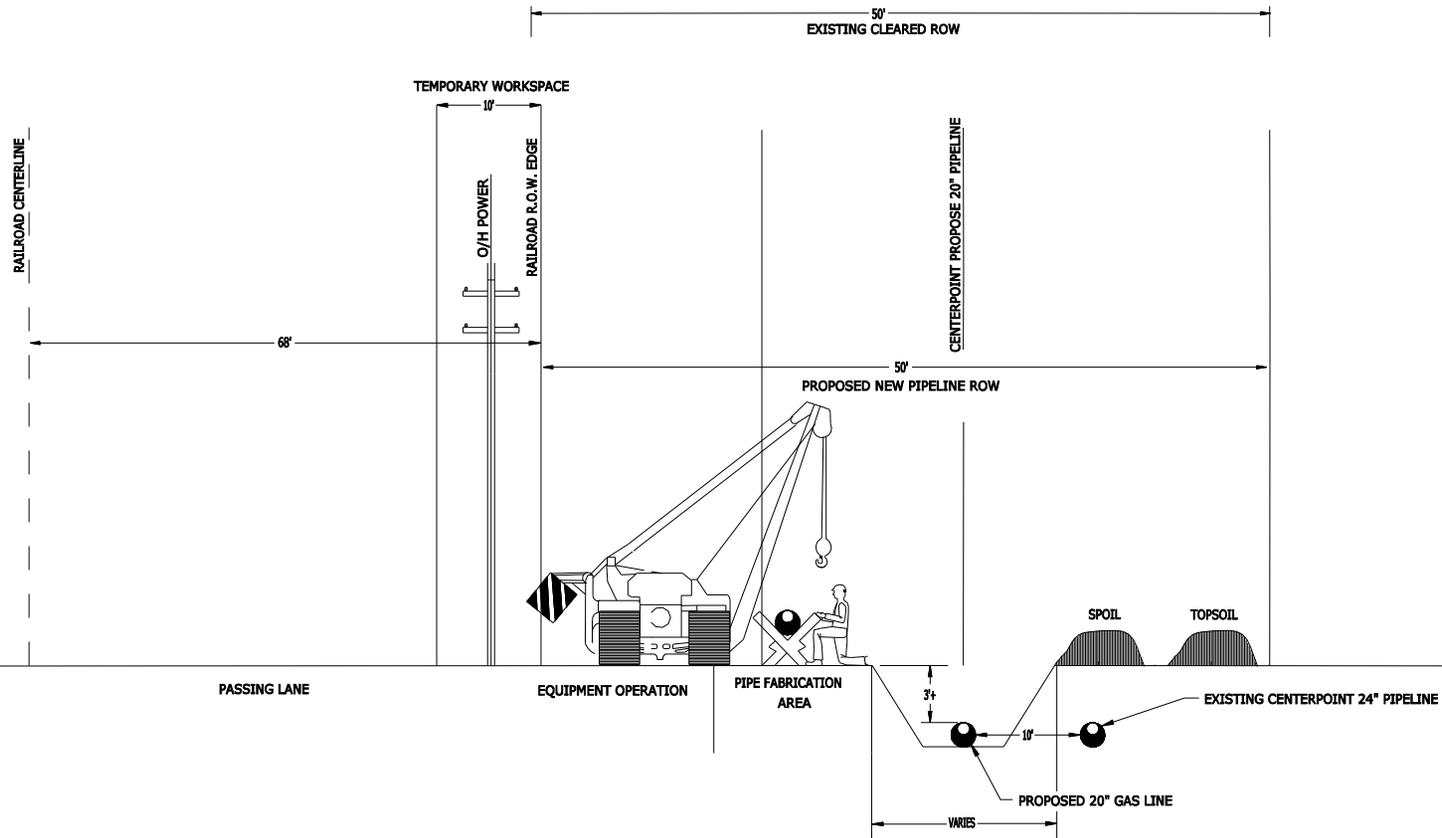
TYPICAL STAGES OF PIPELINE CONSTRUCTION



CENTERPOINT ENERGY
Riverside Pipeline Project
ProSource Project No.: 1001-00

Cross-Section Typical Drawings

PRELIMINARY CONSTRUCTION DRAWING ADJACENT TO RAILROAD



CONSTRUCTION CROSS SECTION



NOTE: THIS IS NOT A SCALE DRAWING.

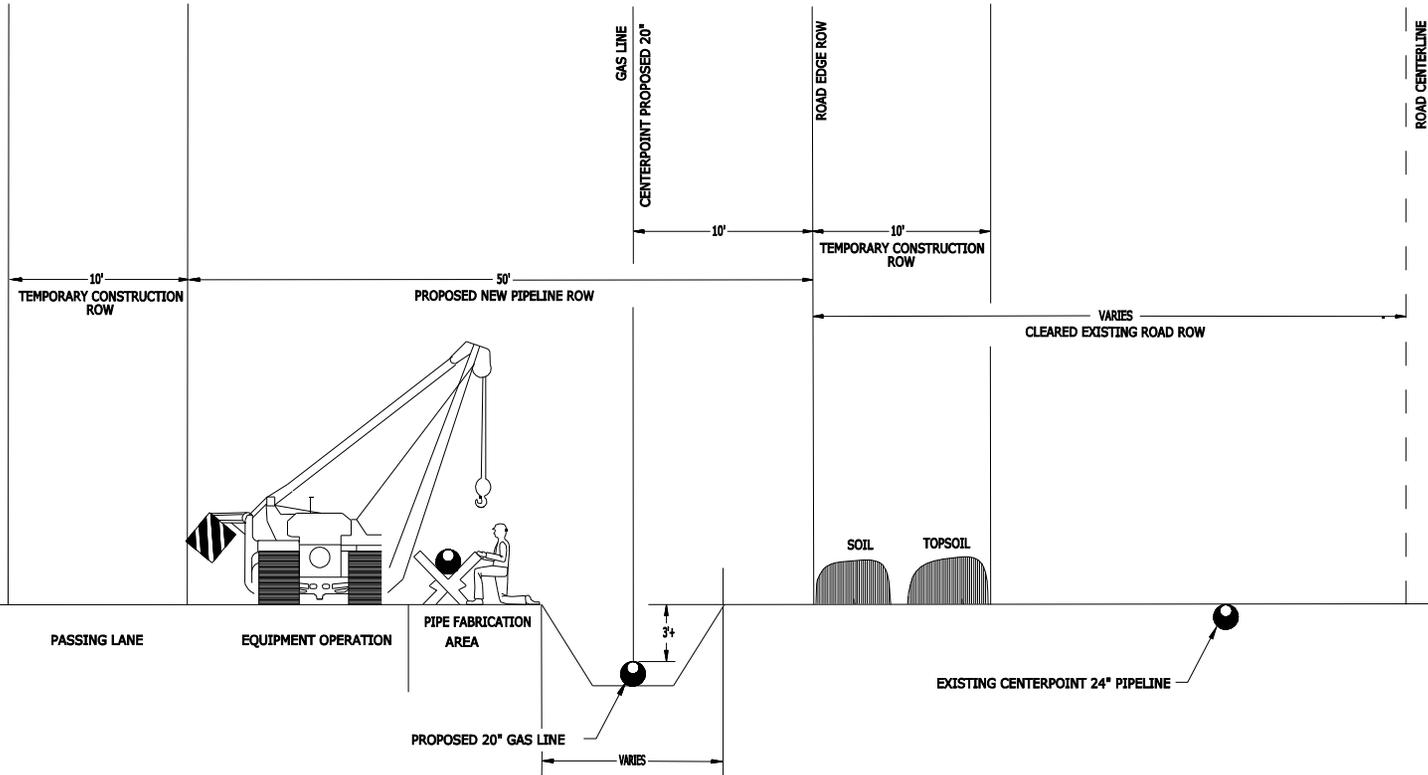
DATE: 3/3/06

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Riverside Pipeline Project
ProSource Project No.: 1001-00

TYPICAL RIGHT-OF-WAY
CROSS SECTION
ADJACENT TO RAILROAD



PRELIMINARY CONSTRUCTION DRAWING
ADJACENT TO ROAD



CONSTRUCTION CROSS SECTION



NOTE: THIS IS NOT A SCALE DRAWING.

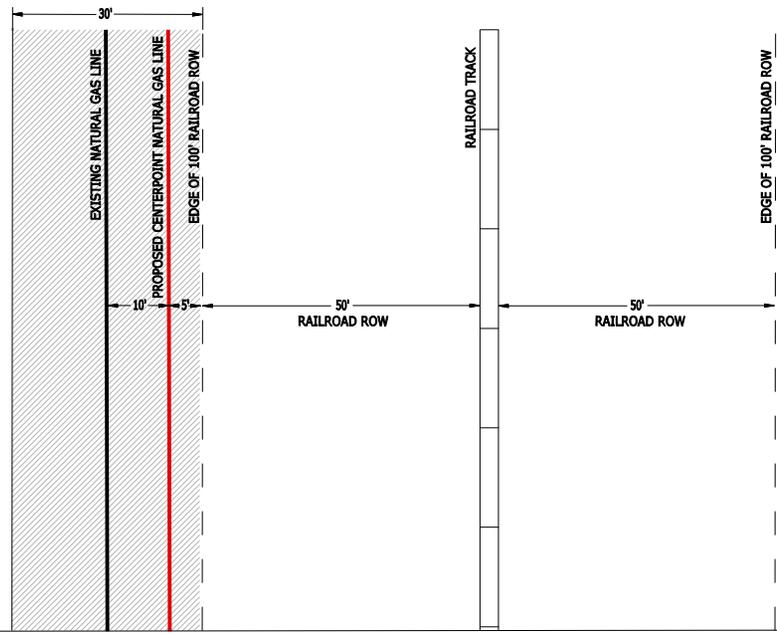
DATE: 3/3/06

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Riverside Pipeline Project
ProSource Project No.: 1001-00

TYPICAL RIGHT-OF WAY
ADJACENT TO ROAD



PRELIMINARY ROUTE DRAWING
ADJACENT TO RAILROAD ROW



TOPVIEW - 100' RAILROAD RIGHT OF WAY



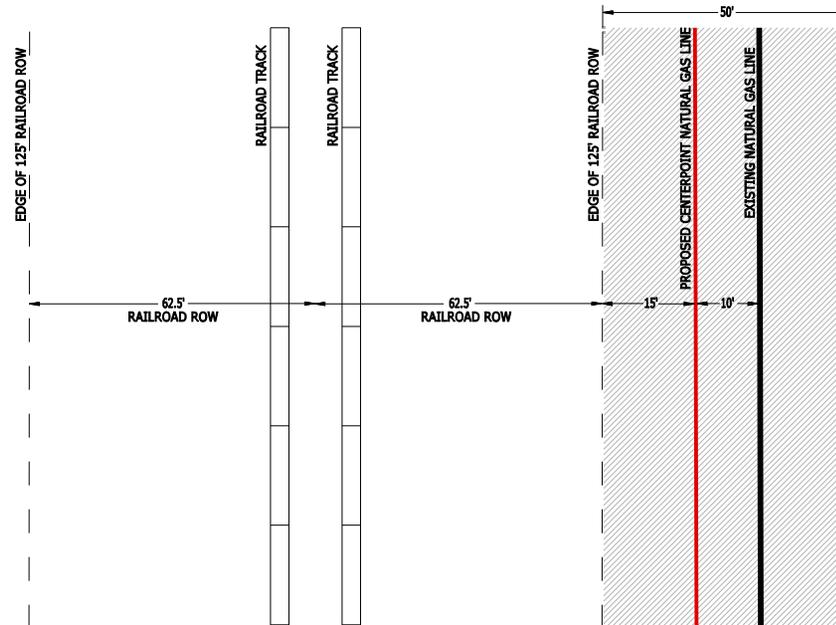
NOTE: THIS IS NOT A SCALE DRAWING.
DATE: 4/3/06

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Riverside Pipeline Project
ProSource Project No.: 1001-00

TYPICAL PIPELINE LOCATION
ADJACENT TO WEST
SIDE OF RAIL



PRELIMINARY ROUTE DRAWING
ADJACENT TO RAILROAD ROW



TOPVIEW - 125' RAILROAD RIGHT OF WAY



NOTE: THIS IS NOT A SCALE DRAWING.

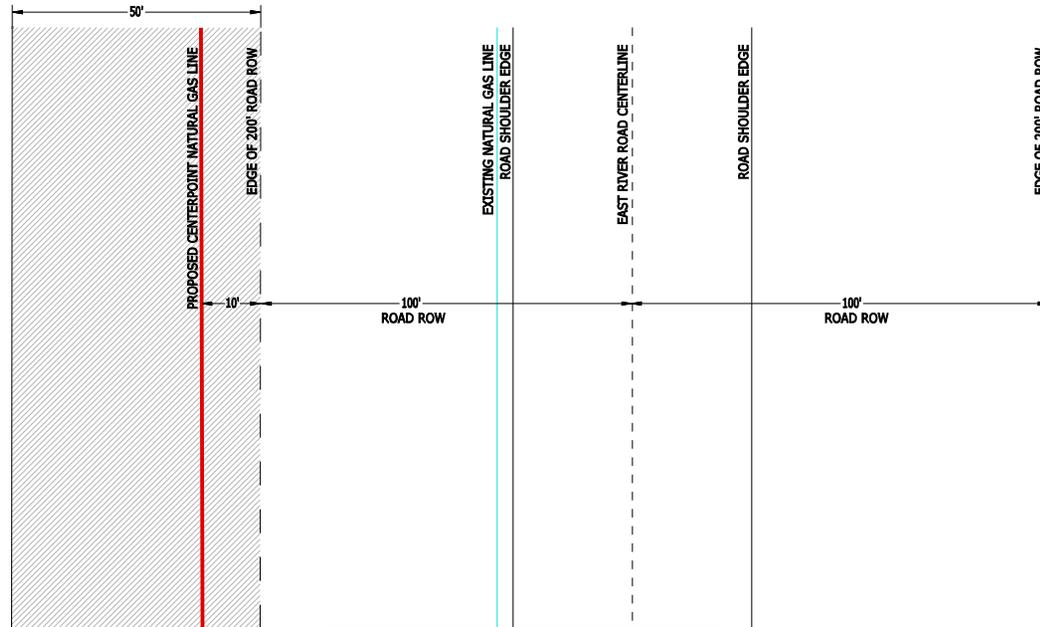
DATE: 4/3/06

CENTERPOINT ENERGY
Riverside Pipeline Project
ProSource Project No.: 1001-00

TYPICAL PIPELINE LOCATION
ADJACENT TO EAST
SIDE OF RAIL



PRELIMINARY ROUTE DRAWING
ADJACENT TO EAST RIVER ROAD ROW



TOPVIEW - 200' EAST RIVER ROAD RIGHT OF WAY



NOTE: THIS IS NOT A SCALE DRAWING.

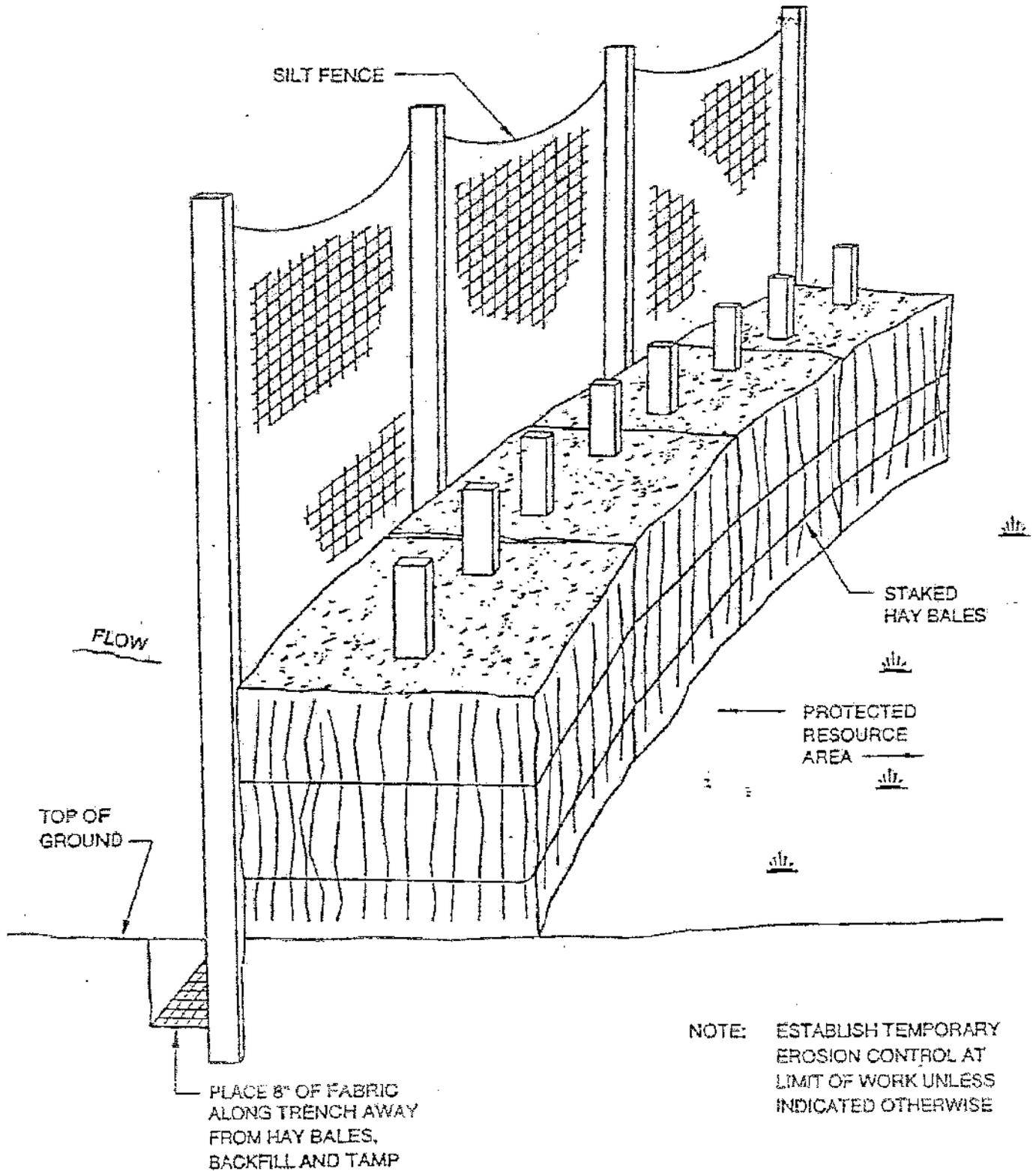
DATE: 4/3/06

CENTERPOINT ENERGY
Riverside Pipeline Project
ProSource Project No.: 1001-00

TYPICAL PIPELINE LOCATION
ADJACENT TO WEST SIDE
OF EAST RIVER ROAD



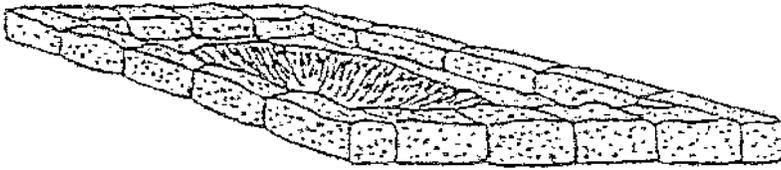
Erosion Control Typical Drawings



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 Riverside Pipeline Project
 ProSource Project No.: 1001-00

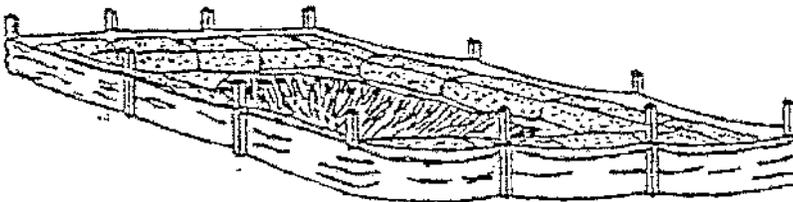
HAY BALE & SILT
 FENCE EROSION CONTROL





STEP 1

ON LEVEL LAND, DIG A SUMP DEPENDING ON ACTUAL FLOW RATES APPROXIMATELY 200 SQ. FT., WHICH IS 2' DEEP AT THE CENTER. LAY A LAYER OF STRAW BALES AS SHOWN, TO COMPLETELY SURROUND THE SUMP.

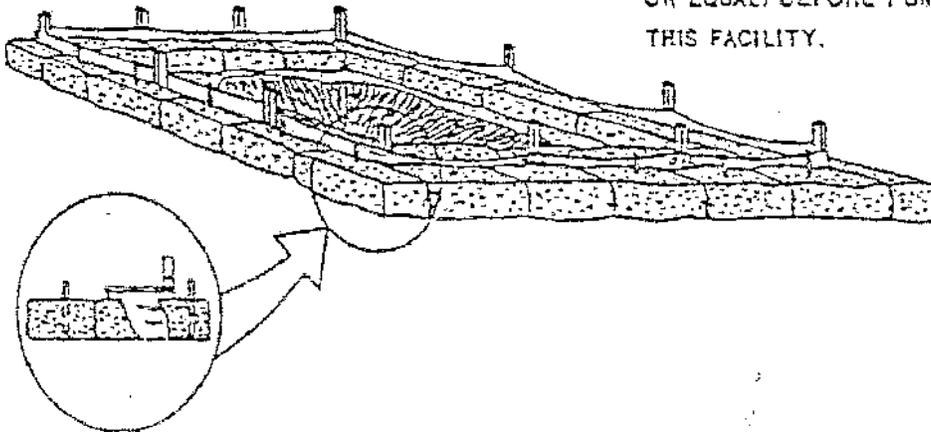


STEP 2

INSTALL SILT FENCE ALL AROUND THE HAY BALES. (IF LAND IS LEVEL) DIG IN SILT FENCE 6"

STEP 3

INSTALL AN OUTER LAYER OF BALES AROUND THE SILT FENCE, AND SECURE EACH BALE USING EITHER A REBAR OR WOODEN STAKE. COVER THE ENTIRE SUMP WITH HI-VELOCITY EROSION CONTROL FABRIC (CURLEX OR EQUAL) BEFORE PUMPING THE WATER INTO THIS FACILITY.



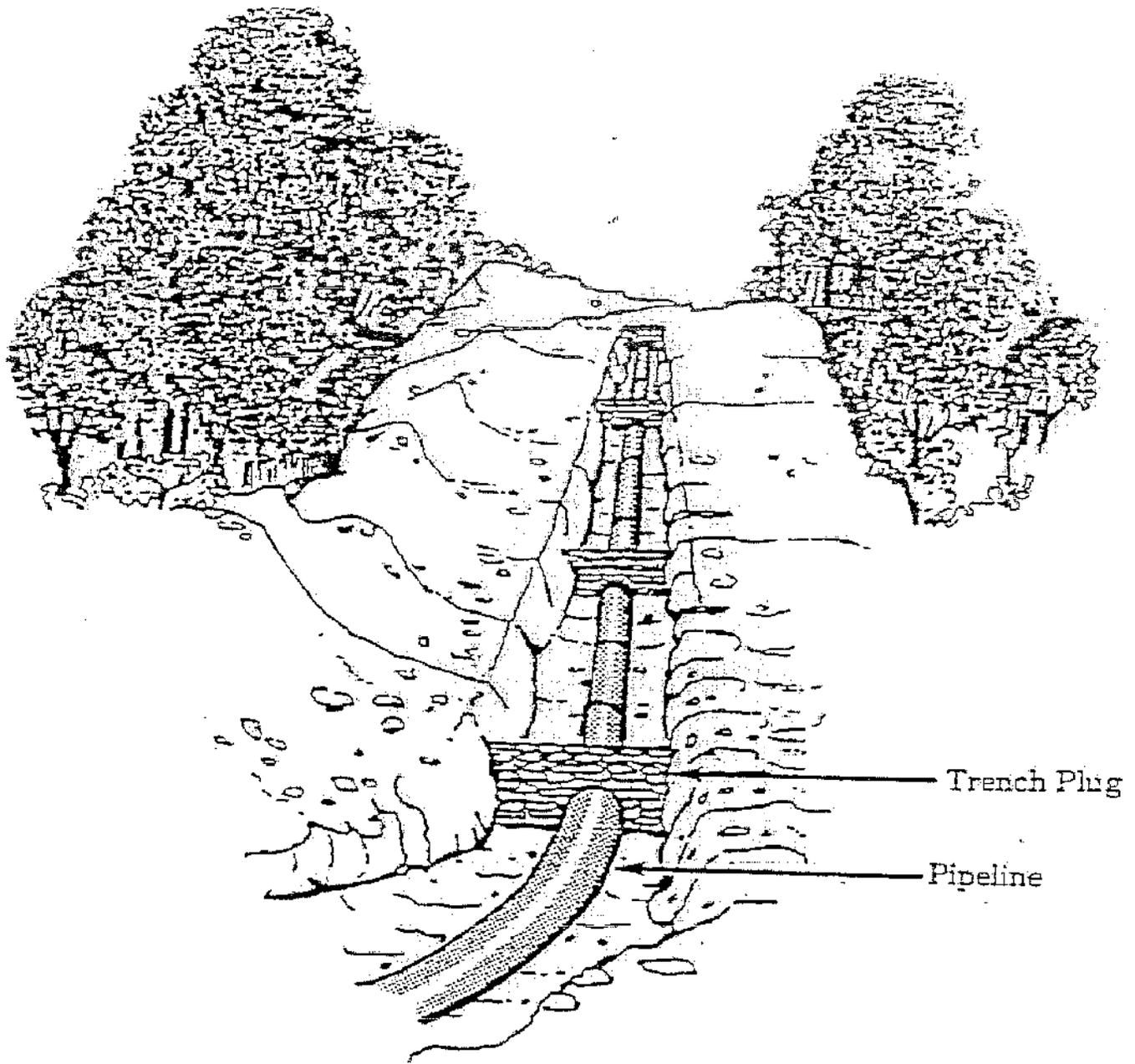
NOTE: PUMP INTAKE HOSE MUST NOT BE ALLOWED TO REST ON THE TRENCH BOTTOM THROUGHOUT DEWATERING. PROVISIONS MUST BE MADE TO ELEVATE THE INLET HOSE TO AT LEAST ONE FOOT ABOVE THE TRENCH BOTTOM UNTIL BOTTOM DEWATERING IS NECESSARY.



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EROSION CONTROL &
HYDROSTATIC TEST
DEWATERING





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ProSource Project No.: 1001-00

TRENCH BREAKERS

ProSource
TECHNOLOGIES, INC.

Appendix D – Tables

- **Stream Crossing**
- **Wetland Crossing**
- **Soils**

Stream Crossing Table



Riverside Pipeline Project - Stream Crossing Table

| Stream Name | Approximate Mile Post | Intermittent/Perennial * |
|-----------------------------------|------------------------------|---------------------------------|
| Unnamed tributary | 0.8 | Intermittent |
| Unnamed tributary/County Ditch 20 | 0.9 | Intermittent |
| Coon Creek | 1.5 | Perennial |
| Sand Creek | 4.4 | Perennial |
| Unnamed tributary | 5.2 | Intermittent |
| Coon Creek | 5.5 | Perennial |
| Unnamed tributary | 5.8 | Intermittent |
| Unnamed ditch | 6.1 | Intermittent |
| Unnamed tributary | 6.9 | Intermittent |
| Unnamed tributary | 8.1 | Intermittent |
| Unnamed tributary/Ditch No. 17 | 9.0 | Intermittent |
| Unnamed tributary | 9.8 | Intermittent |
| Rice Creek | 11.0 | Perennial |

* According to United States Geological Survey 7.5 – Minute Topographic Series Maps – Coon Rapids and Minneapolis North Quadrangle Maps.

Wetland Crossing Table



Riverside Pipeline Project - Wetland Crossing Table

| Approximate Milepost | Wetland Type ^A | Approximate Crossing Distance (feet) | Area Affected by Temporary Workspace (acres) ^B | Area Affected by Permanent Right-of-Way (acres) ^C |
|----------------------|---------------------------|--------------------------------------|---|--|
| 0.95 | PEMcd | 465 | .11 | .53 |
| 1.53 | PEMC | 312 | .07 | .36 |
| 1.63 | PEM/SS1C | 300 | .07 | .34 |
| 2.24 | PSS1/EMB | 300 | .07 | .34 |
| 3.83 | PSS6Cd | 400 | .09 | .46 |
| 4.0 | PEMcd | 640 | .15 | .73 |
| 4.4 | PSS1C | 140 | .03 | .16 |
| 4.53 | PSS1/EMB | 150 | .03 | .17 |
| 4.58 | PSS1/EMB | 250 | .06 | .29 |
| 4.67 | PEM/F01Bd | 610 | .14 | .70 |
| 4.95 | PF01/EMB | 580 | .13 | .67 |
| 5.21 | PUBF | 100 | .02 | .11 |
| 5.45 | PF01B | 660 | .15 | .76 |
| 5.58 | PSS1/EMB | 700 | .16 | .80 |
| 5.83 | PSS1B | 240 | .06 | .28 |
| 7.0 | PEM/FO1B | 200 | .05 | .23 |
| 9.0 | PEMFd | 400 | .09 | .46 |
| 9.32 | PEMcd | 120 | .03 | .14 |
| 11.0 | PUBGh | 300 | .07 | .34 |
| Totals | | 6,867 feet | 1.58 acres | 7.87 acres |

Notes:

A. Cowardin Classification System:

- PEM – Palustrine Emergent
- PUB – Palustrine Unconsolidated Bottom
- PFO – Palustrine Forested
- PSS – Palustrine Scrub-shrub

Subclass – Emergent

1. Persistent
2. Non-Persistent

Subclass – Forested

1. Broad-leaved Deciduous
2. Needle-leaved Deciduous
3. Broad-leaved Evergreen
4. Needle-leaved Evergreen
5. Dead

B. Temporary Workspace -

Acreage Based on 10 foot-wide temporary workspace.

Subclass - Scrub-shrub

1. Broad-leaved Deciduous
2. Needle-leaved Deciduous
3. Broad-leaved Evergreen
4. Needle-leaved Evergreen
5. Dead

C. Permanent Right-of-Way -

Acreage Based on 50-foot-wide permanent right-of-way.

Soils Table



Riverside Pipeline Project – Soils Table

| Approximate Beginning Milepost | Approximate Ending Milepost | Soil Code | Approximate Distance (feet) |
|--------------------------------|-----------------------------|-----------|-----------------------------|
| 0.00 | 0.53 | SbB | 2795 |
| 0.53 | 0.54 | LnA | 81 |
| 0.54 | 1.00 | Rf | 2380 |
| 1.00 | 1.47 | SbB | 2529 |
| 1.47 | 1.57 | Af | 508 |
| 1.57 | 1.59 | ZmC | 87 |
| 1.59 | 1.63 | ZmB | 247 |
| 1.63 | 1.67 | lw | 204 |
| 1.67 | 1.70 | SbC2 | 161 |
| 1.70 | 1.77 | ZmB | 378 |
| 1.77 | 2.14 | SbB | 1954 |
| 2.14 | 2.19 | lw | 260 |
| 2.19 | 2.23 | LnA | 195 |
| 2.23 | 2.27 | lw | 196 |
| 2.27 | 2.35 | SbD2 | 440 |
| 2.35 | 2.39 | SbC2 | 226 |
| 2.39 | 2.45 | SbD2 | 290 |
| 2.45 | 2.54 | SbB | 454 |
| 2.54 | 2.65 | SbD2 | 587 |
| 2.65 | 2.93 | SbB | 1488 |
| 2.93 | 3.08 | SbC2 | 827 |
| 3.08 | 3.16 | SbB | 380 |
| 3.16 | 3.40 | SbC2 | 1309 |
| 3.40 | 3.52 | ZmB | 590 |
| 3.52 | 3.54 | lw | 113 |
| 3.54 | 3.68 | ZmB | 764 |
| 3.68 | 3.78 | Rf | 508 |
| 3.78 | 3.83 | ZmB | 269 |
| 3.83 | 3.90 | Ma | 352 |
| 3.90 | 3.92 | LnA | 148 |
| 3.92 | 3.97 | Rf | 229 |
| 3.97 | 4.04 | LnA | 361 |
| 4.04 | 4.10 | ZmB | 325 |
| 4.10 | 4.19 | LnA | 504 |
| 4.19 | 4.28 | ZmB | 434 |
| 4.28 | 4.31 | Se | 178 |
| 4.31 | 4.37 | ZmB | 326 |
| 4.37 | 4.39 | ZmC | 95 |
| 4.39 | 4.44 | Af | 265 |
| 4.44 | 4.46 | ZmB | 112 |

| Approximate Beginning Milepost | Approximate Ending Milepost | Soil Code | Approximate Distance (feet) |
|--------------------------------|-----------------------------|-----------|-----------------------------|
| 4.46 | 4.52 | Se | 304 |
| 4.52 | 4.59 | ZmB | 386 |
| 4.59 | 4.63 | Ma | 230 |
| 4.63 | 4.68 | ZmB | 226 |
| 4.68 | 4.81 | Ma | 682 |
| 4.81 | 4.90 | ZmB | 494 |
| 4.90 | 4.98 | Ma | 409 |
| 4.98 | 5.08 | Cu | 529 |
| 5.08 | 5.15 | ZmB | 365 |
| 5.15 | 5.17 | Se | 130 |
| 5.17 | 5.19 | ZmB | 95 |
| 5.19 | 5.21 | Ma | 91 |
| 5.21 | 5.24 | Af | 174 |
| 5.24 | 5.40 | ZmB | 851 |
| 5.40 | 5.47 | ZmD | 373 |
| 5.47 | 5.96 | Af | 2565 |
| 5.96 | 6.03 | ZmB | 395 |
| 6.03 | 6.12 | Kr | 473 |
| 6.12 | 6.18 | ZmB | 295 |
| 6.18 | 6.28 | Af | 526 |
| 6.28 | 6.32 | ZmC | 208 |
| 6.32 | 6.36 | Cu | 234 |
| 6.36 | 6.41 | ZmB | 269 |
| 6.41 | 6.43 | ZmC | 100 |
| 6.43 | 6.49 | Af | 304 |
| 6.49 | 6.63 | ZmB | 760 |
| 6.63 | 6.73 | lw | 517 |
| 6.73 | 6.76 | LnA | 168 |
| 6.76 | 6.81 | lw | 281 |
| 6.81 | 6.90 | LnA | 451 |
| 6.90 | 6.97 | Cu | 378 |
| 6.97 | 7.05 | ZmB | 433 |
| 7.05 | 7.14 | LnA | 464 |
| 7.14 | 7.24 | ZmB | 542 |
| 7.24 | 7.30 | Ma | 274 |
| 7.30 | 7.71 | ZmB | 2172 |
| 7.71 | 7.78 | LnA | 397 |
| 7.78 | 7.93 | Se | 783 |
| 7.93 | 8.02 | lw | 452 |
| 8.02 | 8.05 | ZmB | 155 |
| 8.05 | 8.23 | lw | 965 |
| 8.23 | 8.28 | ZmB | 258 |
| 8.28 | 8.35 | lw | 364 |
| 8.35 | 8.59 | ZmB | 1258 |
| 8.59 | 8.67 | LnA | 443 |
| 8.67 | 8.68 | lw | 65 |
| 8.68 | 8.84 | LnA | 828 |
| 8.84 | 8.98 | Uw | 771 |
| 8.98 | 9.10 | Mc | 589 |

| Approximate Beginning Milepost | Approximate Ending Milepost | Soil Code | Approximate Distance (feet) |
|--------------------------------|-----------------------------|-----------|-----------------------------|
| 9.10 | 9.15 | ZmB | 287 |
| 9.15 | 9.18 | LnA | 139 |
| 9.18 | 9.30 | ZmB | 645 |
| 9.30 | 9.47 | UzB | 914 |
| 9.47 | 9.52 | Un | 251 |
| 9.52 | 9.54 | UzB | 129 |
| 9.54 | 9.64 | Un | 492 |
| 9.64 | 9.77 | UzB | 717 |
| 9.77 | 9.82 | Un | 243 |
| 9.82 | 10.24 | UzB | 2205 |
| 10.24 | 10.29 | Un | 258 |
| 10.29 | 10.41 | UzB | 641 |
| 10.41 | 10.44 | Un | 194 |
| 10.44 | 10.63 | UzB | 996 |
| 10.63 | 10.69 | Un | 317 |
| 10.69 | 11.01 | UzB | 1672 |
| 11.01 | 11.09 | Fo | 438 |
| 11.09 | 11.10 | W | 57 |
| 11.10 | 11.14 | Fo | 208 |
| 11.14 | 11.29 | UzB | 786 |
| 11.29 | 15.22 | UhuB | 20765 |
| 15.22 | 15.24 | D34B | 70 |
| 15.24 | 15.33 | D31A | 494 |
| 15.33 | 15.52 | U4A | 1002 |
| 15.52 | 15.77 | U3B | 1295 |
| 15.77 | 16.32 | U4A | 2921 |

*** Soil Unit Name**

Sb – Sartell fine sand

Mc – Marsh

LnA – Lino loamy fine sand

Un – Urban land – Lino complex

Rf – Rifle mucky peat

UzB – Urban land-Zimmerman complex

Af – Alluvial land, mixed, frequently flooded

Fo – Fordum-Winterfield complex

Zm – Zimmerman fine sand

W- Water

Iw – Isanti fine sandy loam

UhuB – Urban land-Hubbard complex

Ma – Markey muck

D34B – Urban land – Hubbard complex

Se – Seelyeville muck

D31A – Urban land – Duelm complex

Cu – Cut and fill land

U3B – Udorthents (cut and fill land), 0 – 6 percent slopes

Kr – Kratka loamy fine sand

U4A – Urban land-Udipsamments (cut and fill land) complex, 0-2 percent slopes

Uw – Urban land-Udorthent, wet substratum complex

Appendix E – Riverside Repowering Project

Fact Sheet

RIVERSIDE REPOWERING PROJECT

Introduction

In May 2002, Xcel Energy proposed a bold and visionary plan called the Minnesota Metro Emissions Reduction Project (MERP) to significantly reduce air emissions from three Twin Cities coal-powered generating plants while increasing the amount of electricity they can produce. The Minnesota Public Utilities Commission authorized our proposal in December 2003.

Through MERP, Xcel Energy will install state-of-the-art emissions control equipment at the Allen S. King plant in Oak Park Heights, Minn., and convert the High Bridge plant in St. Paul and Riverside plant in Minneapolis from coal to natural gas. The package of improvements, valued at nearly \$1 billion, will be completed in 2009.

This fact sheet provides information about the Riverside Repowering Project.

Riverside Repowering Project Summary

The Riverside generating plant has been a fixture and visible presence in Minneapolis since 1911, and it remains a critical source of electricity for downtown Minneapolis and the surrounding communities.

The Riverside Repowering Project involves repowering our existing Riverside coal fired power plant with a natural gas combined cycle power plant. The repowered plant will utilize two combustion turbines with their corresponding heat recovery steam generators to supply steam to the existing Unit 7 steam turbine. The other steam turbine as well as the existing coal fired boilers will be removed from service upon completion of the project.

The combustion turbines, heat recovery steam generators and accessory equipment will be located in previously retired areas of the plant. Xcel Energy has begun the work to prepare these areas for demolition this winter with the intent of starting new construction in the summer of 2006.

The new unit will operate cleaner and more efficiently than the existing coal-powered units. As a result, air emissions will be significantly reduced, while electricity output from the Riverside site will be increased by approximately 73 megawatts – enough electricity to supply more than 70,000 typical homes.

Environmental benefits

The Riverside project will reduce annual air emissions from the site by approximately the following amounts:

Sulfur dioxide (SO₂) – 99%

Nitrogen oxide (NO_x) – 96%

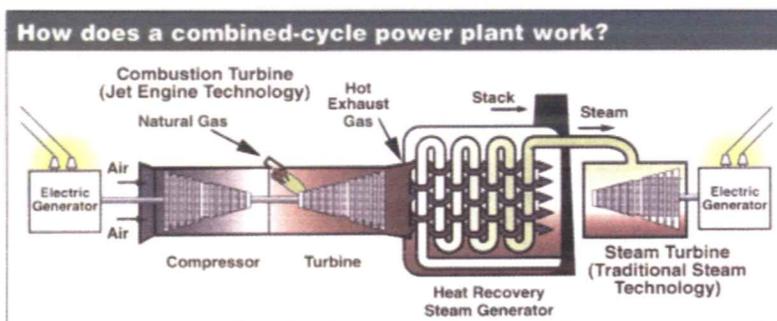
Particulates – 86%

Mercury – 100%

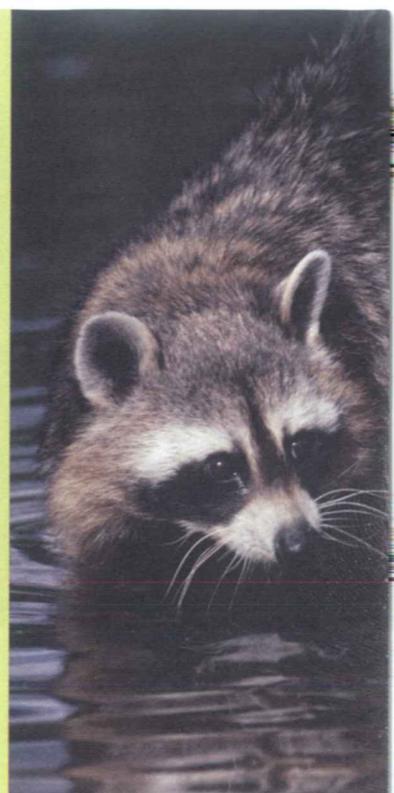
Combined cycle turbine design

A natural gas-fired, combined-cycle plant produces electricity by two processes of energy instead of one. Natural gas is used as the fuel in a combustion turbine, which operates on technical principles similar to a jet engine. Exhaust gases from the combustion turbine are also used to make steam in a heat recovery steam generator. Both processes then drive turbines and electric generators to produce electricity (see diagram).

Integrating combustion turbine and steam turbine technology provides an extremely efficient electricity production process. Combined-cycle technology is about 60 percent more efficient than a traditional coal-fired steam power plant.



Xcel Energy®





Existing Riverside plant



Design concept of new Riverside plant

Project schedule

Estimated dates

| | |
|-------------------------------------|-----------------------------|
| Secure necessary permits | January – June 2006 |
| Award major equipment contracts | April – December 2006 |
| Site preparation | August 2006 – April 2007 |
| Major equipment delivery | April – December 2007 |
| Startup and testing | September 2008 – March 2009 |
| Commercial operation | May 2009 |
| Demolition and removal of old plant | June 2009 – December 2010 |

Site considerations

The natural gas powered combustion turbine generators will be installed in a new building on the Riverside site built over the location presently occupied by decommissioned power plant units. The new facility will be constructed to be compatible with other riverfront industrial developments, and the project will be carried out in accordance with all federal, state and city permits.

QUESTIONS OR CONCERNS

Contact:

Ken Beadell
Riverside Plant Director
(612) 520-6873

More MERP Information:

xcelenergy.com



800 Nicollet Mall
 Minneapolis, MN 55402
 1-800-328-8226
xcelenergy.com