



414 Nicollet Mall
Minneapolis, MN 55401

November 30, 2016

—Via Electronic Filing—

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

RE: **Additional Information Regarding Potential to Impact Water Resources for the Black Dog Natural Gas Pipeline Project; Docket No. G002/GP-16-656**

Dear Mr. Wolf:

On August 18, 2016 Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy, submitted an Application for a Route Permit for the Black Dog Natural Gas Pipeline Project (Project) pursuant to the partial exemption procedures pursuant to Minnesota Rules Chapter 7852.0600. The purpose of this letter and attached report is to provide additional information about our analysis of the potential to impact nearby water resources.

Xcel Energy has received questions from representatives of the Lower Minnesota River Watershed District and the Minnesota Department of Natural Resources regarding analysis of potential impacts to nearby water resources including calcareous fens, Blanding's turtles and trout streams which are located near the project, but outside of the proposed route. Additional comments from the Minnesota Pollution Control Agency were recently filed to the docket. Sections 9.1.3 - *Water Resources* and 9.1.4 - *Biological Resources* in the final permit document discuss impacts to groundwater and the nearby fens and these features were shown in Figures 9 and 10 respectively. However, in response to comments received, Xcel Energy is providing more detail on our analysis of potential impacts to water resources and associated protected species in the enclosed report. As described in the report Project construction is not anticipated to have negative impacts on nearby waters or the turtles or plants dependent on them.

Please contact Ellen Heine at ellen.l.heine@xcelenergy.com or 612-330-6073 if you have questions or would like further information regarding this matter.

Sincerely,

A handwritten signature in blue ink that reads 'Ellen Heine'.

Ellen Heine
Xcel Energy
Sr. Land Agent

Black Dog Natural Gas Pipeline Project Additional Information Regarding Potential to Impact Water Resources

As described in the route permit application, the Black Dog Natural Gas Pipeline Project (Project) is an approximately 2.2 mile long natural gas pipeline with runs from the NNG Cedar Station to the Black Dog Generating Plant. The proposed pipeline alignment runs along local roads, a state highway and down an existing electric transmission line corridor. The Project is located south of the Minnesota River in an area that contains a number of water features including lakes, streams, wetlands and floodplain. Included in these features are Black Dog Lake, a number of designated trout streams, and protected calcareous fens. The Minnesota Natural Heritage Inventory also identifies historic occurrences of Blanding's turtles, a state threatened species, within two miles of the project site.

This report provides more detail on the planned construction methods and an analysis of potential impacts to water resources near the project. This report was developed in consultation with experts on horizontal directional drilling, soils, hydrology and calcareous fens.

Construction Methods

As described in the route permit application construction of the pipeline will be done using a combination of open trenching and directionally drilling as shown in Figure 1. Approximately two thirds of the proposed pipeline will be constructed using open trench installation. The trench will be excavated with a backhoe to a depth of approximately 6 feet and approximately 3 feet wide at the bottom. Any rocky locations will be padded as needed with gravel or sand to protect the pipe. Pipe will then be strung along the trench and welded before being lowered into the trench and backfilled. If there is significant rainfall or soils are very saturated some construction stormwater dewatering may be necessary to enable inspection of the bottom of the trench prior to lowering the pipe in. A Stormwater Pollution Prevention Plan (SWPPP) will be developed prior to start of construction. The SWPPP will identify best management practices (BMPs) to prevent sediment laden waters from leaving the site. If pumping is needed BMPs will include energy dissipating devices such as filter bags or straw bale structures that remove sediment from stormwater. Ditch checks may also be used during construction as well as following backfilling to prevent movement of stormwater along the trench. The SWPPP will also address any additional requirements for special or impaired waters located near the Project. The Lower Minnesota River Watershed District and the City of Burnsville have both asked that they be given the opportunity to review the SWPPP once it is developed. Xcel Energy will provide a draft SWPPP to both for review prior to finalizing.

The remaining one third of the pipeline is planned to be constructed using the horizontal directional drilling (HDD) method. This includes where the pipeline crosses beneath Highway 13, Cedar Bridge Ave and River Hills Drive and from the top of the bluff to the Black Dog Generating Plant. Directional drilling involves excavation of entry and exit pits and then setup of the drilling equipment adjacent to the entry pit. The drilling method involves using a small diameter steerable drill pilot head and guiding the boring to pre-determined depths to achieve required clearances and minimize contact with unstable soil layers. A pressurized bentonite slurry, also referred to as drilling mud, is pushed through the drill head which helps seal the boring walls and prevent caving in or water infiltration from any wet layers that the boring

travels through. The bentonite slurry carries the drilled material (cuttings) back to the entry pit where the bentonite is reclaimed and reused. The pilot head is followed by a reaming head which enlarges the pilot hole to the necessary diameter for installing the pipe. As with the pilot head the reaming assembly uses a pressurized bentonite slurry, so as the hole is made larger the bore walls are continually packed and sealed.

Once the diameter of the bore is large enough, pipe installation is done by attaching a section of pipe to the reaming assembly and pulling it back through the hole. For long crossings pieces of pipe will be welded onto the pipe string just before pulling them through the borehole. Once the pipe has been pulled back through, the annulus (space around the pipe) will be grouted to prevent preferential water flow along the pipeline. The use of pressurized drilling mud in the HDD method involves the risk of inadvertent releases, or frac-out, of the mud through porous soils or geologic seams. Because of this the drilling mud pressure will be monitored and cuttings will be evaluated continually throughout the drilling and reaming process to ensure integrity of the bore. The viscosity of the slurry can be adjusted as needed to address any decreases in pressure that could indicate that a fracture has been encountered. To address any potential inadvertent releases Xcel Energy will work with the drilling contractor to develop a site specific response plan which will address monitoring, response and containment. This plan will be included as a requirement in the request for bids for potential drilling contractors.

HDD will not involve a significant amount of dewatering. If the smaller pilot head were to encounter a pressurized source of groundwater, such as is found in artesian conditions, the hole would be promptly sealed with bentonite and the drilling crew would back out and adjust the drill path to avoid the water source. Ongoing pumping to remove large amounts of water from such a bore is not feasible because of the impacts the pressurized water would have on the walls of the bore.

When the route permit application was submitted Xcel Energy did not yet have specific detail on depth to groundwater. Since that time soil borings have been completed and the preliminary report does show that there are some locations where there appear to be shallow perched lenses of water along the proposed pipeline alignment. Soil boring locations are shown in Figure 1. Boring logs showed that at soil boring #3 water was encountered at a depth of four feet (elevation 881). Water was encountered at similar elevations in borings 4 and 5 (approximately 878 and 872 respectively) however the depth from grade to the water in these locations was greater than 6 feet and wouldn't be encountered by trenching. The table below shows depth to water and elevation for each soil boring.

Boring Name	Water Depth from Surface (ft)	Water Level Elevation (ft)
SB1	Not encountered	NA
SB2	28	852
SB3	4	881
SB4	14.5	878
SB5	13	872
SB6	Not encountered	NA

Boring Name	Water Depth from Surface (ft)	Water Level Elevation (ft)
SB7	Not encountered	NA
SB8	Not encountered	NA
SB9	14.5	700
SB10	1	693

Based on these results it appears that there is a perched shallow lens of water located beneath Highway 13, but that it does not continue along the proposed alignment significantly beyond borings 3 and 5. Perched surface groundwater associated with the highway is not unexpected because of the amount of ditching and stormwater management associated with the highway. The pipeline will be horizontally drilled from an entry pit near soil boring 1, crossing beneath Highway 13 and Cedar Bridge Ave, and exiting near soil boring 4. The directional drilling methods, as described above, are expected to punch through this lens of water as it angles back up to the exit pit southwest of Cedar Bridge Ave. If water appears in the entry or exit bore pits some minor construction dewatering may be required in order to allow crews to see and access the equipment within the pits. As with trenching, any construction dewatering will employ appropriate BMPs to remove sediment.

Black Dog Lake

Black Dog Lake is located between the Minnesota River and the bluffs. Preliminary soil boring logs show that the basin of the lake is defined by a confining organic clay layer which lies atop sandy layers of soil. Beneath the sandy layers is dolostone bedrock which is part of the Prairie du Chien and Jordan aquifer. Because the lake will be crossed using HDD no impacts from the surface to the bed or shore of the lake are anticipated. Project engineers are using data from the soil borings and geologic maps to develop a drill path which provides adequate depth and support beneath the bed of the lake. To accomplish this the drill path will enter into the bedrock then run horizontally through the bedrock before curving back up to the Black Dog Plant. Maintaining a layer of bedrock, in addition to the clay layer, between the pipeline and the bed of the lake will provide greater integrity of the bore and significantly reduces the risk of a drilling fluid release beneath Black Dog Lake.

Black Dog Lake is a public water body as identified in the Public Waters Inventory. Crossing of a Public Water by a utility requires a License to Cross Public Waters from the MN DNR and Xcel Energy will work with DNR Lands and Minerals staff on application materials and will incorporate any special conditions into the construction plan. The lake is also listed on the Minnesota Pollution Control Agency (MPCA) Impaired Waters list. Construction near impaired waters involves more stringent protection requirements in the SWPPP such as shorter durations allowed before exposed soils must be stabilized and maintenance of buffer zones (the complete list is included in Appendix A of the MPCA CSW General Permit, attached). These requirements will be identified and addressed in the SWPPP when it is developed. No issues are anticipated regarding implementation of these enhanced stormwater treatment requirements.

Calcareous Fens

A calcareous fen is a rare type of wetland which is created when groundwater rich in calcium and magnesium bicarbonates wells up through peat to support a community of rare plants called calciphiles. Calcareous fen communities are extremely rare and are made up of a number of plant species which are listed as threatened or endangered by the State of Minnesota. Calcareous fens are also susceptible to disturbances such as changes in subsurface hydrology or surface impacts which can damage plants or introduce invasive species. More detail is included in the attached calcareous fen factsheet. Because of their rarity and sensitivity calcareous fens are legally protected in MN.

There are nine calcareous fen sites listed in Dakota County. This includes the Black Dog Lake Fens a, b, c, and North, Gun Club Lake North and South and Nicols Meadow Fens a, b, and c (partial list enclosed). These fens are largely affected by the upwelling and pressures of water originating in the Prairie du Chien Group and Jordon Sandstone aquifer. The depth of these aquifers ranges from 700 – 950 feet in elevation in Dakota County (see attached contour map). As shown on Figure 2, Black Dog Lake North is the fen closest to the proposed Project location. While fen boundaries tend to change over time approximate boundaries are represented on the map using Minnesota County Biological Survey (MCBS) data. At its closest point, just northwest of the Cedar Station, the distance from Black Dog Lake North fen to the Project is approximately 1800 feet. At the point where the proposed pipeline crosses beneath the railroad it is approximately 4600 feet (0.9 miles) from the fen (Figure 3). Black Dog Lake Fen c, to the SW, is approximately 1.5 miles away. The distance between the drilling path and the fens is so great that, in the unlikely event that a frac-out were to occur during drilling, no drilling mud would reach the fens. As stated previously, in such a case the inadvertent release plan would be implemented. Because of the Project's distance from the fens there will be no direct impacts as a result of construction.

The trenching and directional drilling above the bluff are unlikely to have any impact on the hydrology due to the distance from the fens and the shallow and temporary nature of the disturbance. There is also considerable water storage in the pore spaces of the unconsolidated geological deposits in the area, which would dampen any temporary limited construction dewatering. Regarding the directionally drilled segment that passes beneath Black Dog Lake, as described in the construction methods section there will be no water appropriation/drawdown used in HDD. If any pressurized water-bearing layers are encountered that drill path will be grouted (plugged) and a new path taken. Where the pipeline runs though the bedrock there will be water-bearing seams which are part of the aquifer, however these are likely not under pressure and the drilling process is able to accommodate this type of water source. Water within the aquifer will be able to flow above and below the pipeline similar to a wire in a stream. The pipeline itself is not a large enough obstacle to have any impact on aquifer flow. Therefore the Project is not anticipated to result in any indirect impacts to groundwater sources which support fen hydrology.

Though we do not anticipate the need for a water table drawdown (water appropriation) on any part of the Project, were it to be implemented it would likely only impact groundwater within 500-700 feet of the location of the pumping. Drawdown decreases logarithmically as the distance from the site increases, so at distances of 1800 feet (Black Dog North) or greater any drawdown would be unlikely to be measurable.

For the reasons described in this section no impacts to nearby fens are anticipated as a result of project construction and a fen management plan is not needed.

Trout Streams

There are various restrictions on the use of or impacts to designated trout streams (listed in MN Rule 6264.0050, partial list attached) in order to protect and foster the propagation of trout. These restrictions include the prohibition of any activities which alter the current, course or cross section of the stream. Alteration of the current (flow) could result if a project involved significant water appropriation such as the placement of large wells near the stream or site dewatering which draws down the local water table. The trout stream nearest the Project, Unnamed Stream #4, is approximately 2300 feet (0.4 miles) from the Project at its nearest point (Figure 3). Unnamed Stream #7 is approximately 1 mile SW (Figure 2). At these distances there will be no direct impacts to the current, course or cross-sections of the streams. As described in the Construction Methods and Calcareous Fen sections above, no water appropriation is planned or anticipated for this project. Therefore there are no indirect impacts to the streams anticipated as a result of this project.

Note: MN DNR designated trout stream data from 2013 identified the longer Public Water Stream shown on the map as the designated trout stream. DNR staff noticed some errors in the 2013 data and the entire dataset has gone through a quality review process. The trout streams shown on the maps are based on the 2016 final corrected data.

Other Wetlands/Floodplain Impacts

At the bottom of the bluff a wetland system surrounds Black Dog Lake between the railroad tracks and the Black Dog Plant. The entry pit for the HDD is located at the top of the bluff above the wetlands and the exit pit is on upland at the Plant. Therefore these wetlands will not be impacted by the project. Two small wetlands identified by field delineation are located along the electric transmission line corridor above the bluff. The locations are shown in Figure 3. These small wetlands will be temporarily impacted by Project construction and Xcel Energy is preparing a notice letter for the US Army Corps of Engineers and the City of Burnsville Water Resources to request approval for these impacts.

The area between the railroad and the Black Dog Generating Plant is part of the Minnesota River floodplain. Because there will not be above ground work or facilities located in this section of the project the City of Burnsville has indicated that a Conditional Use Permit is not required. Xcel Energy will provide a FEMA Elevation Certificate and a No Rise Certificate to the City as well as as built plans as requested by the City.

Blanding's Turtles

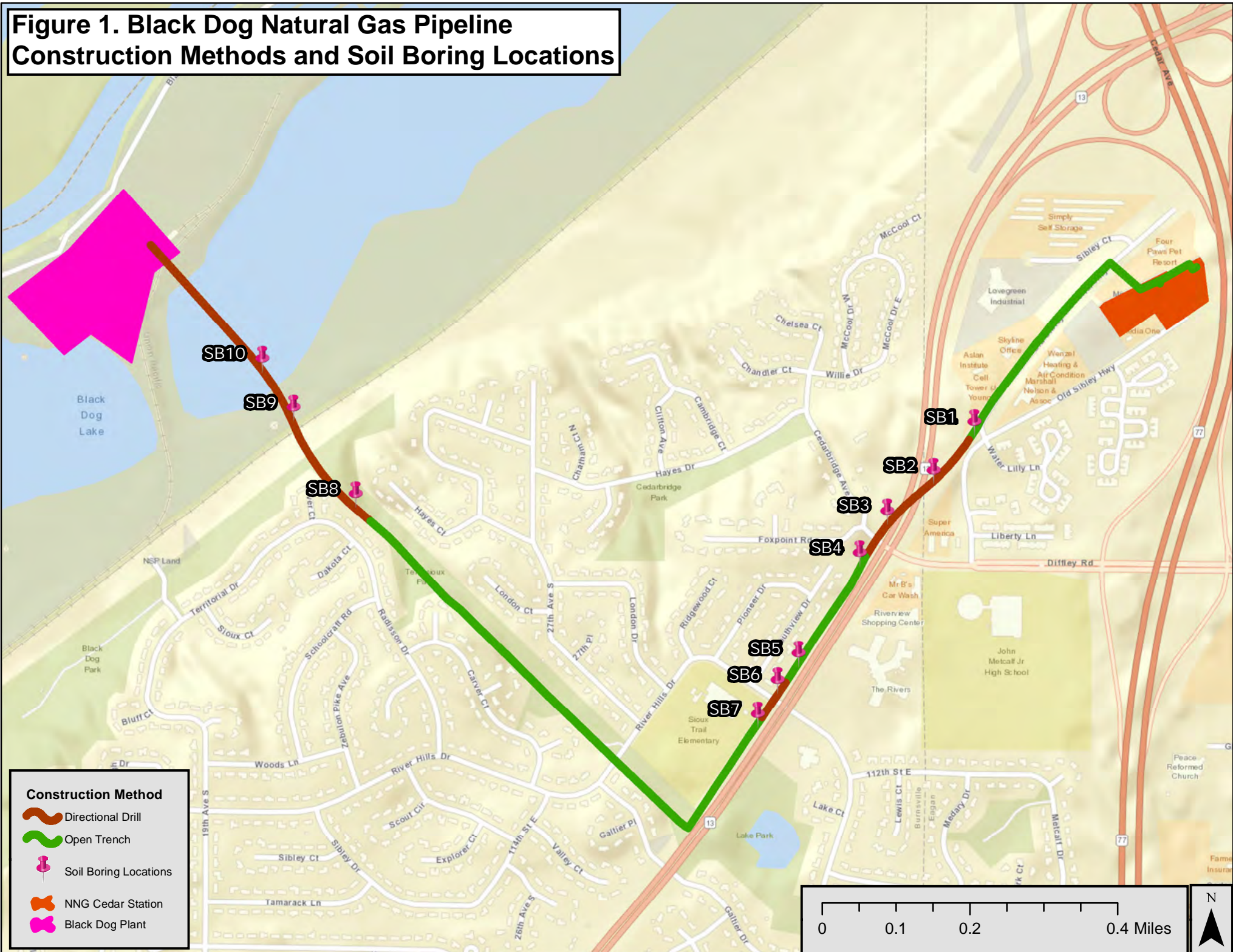
Blanding's turtles utilize both wetland and upland habitat. They have a preference for calm, shallow water bodies that have mud bottoms and abundant aquatic vegetation such as Black Dog Lake and the surrounding wetlands. The MN DNR has noted that there could possible encounters with the Blanding's turtle due to the proximity of wetlands and suitable habitat for

upland nesting. Because water will not be appropriated for the Project there will be no hydrological impacts to any Blanding's turtles that may be located near the project. Xcel Energy will notify all construction contractors of the potential for turtles to become trapped in trenches and to inspect for turtles prior to backfilling. If any erosion control blanketing is needed wildlife-friendly (non-welded) blanket will be used.






Conclusion

Based on the location of the project in relation to these water resources and the construction practices that will be used Project construction is not anticipated to have negative impacts on any of these waters or the turtles or plants dependent on them.

Figure 1. Black Dog Natural Gas Pipeline Construction Methods and Soil Boring Locations




Construction Method

-  Directional Drill
-  Open Trench
-  Soil Boring Locations
-  NNG Cedar Station
-  Black Dog Plant

0 0.1 0.2 0.4 Miles

N



**Figure 2. Black Dog Natural Gas Pipeline
Nearby Water Resources**

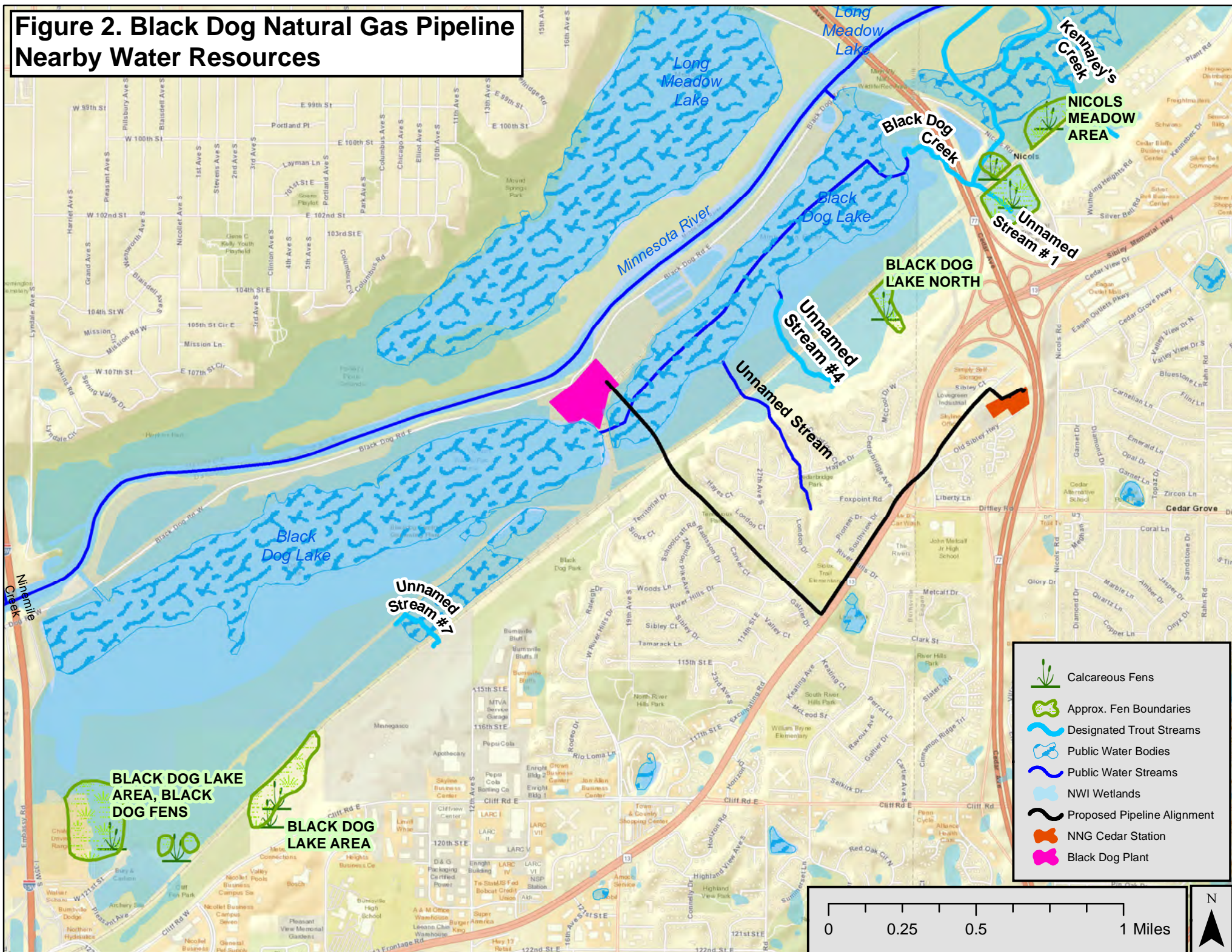
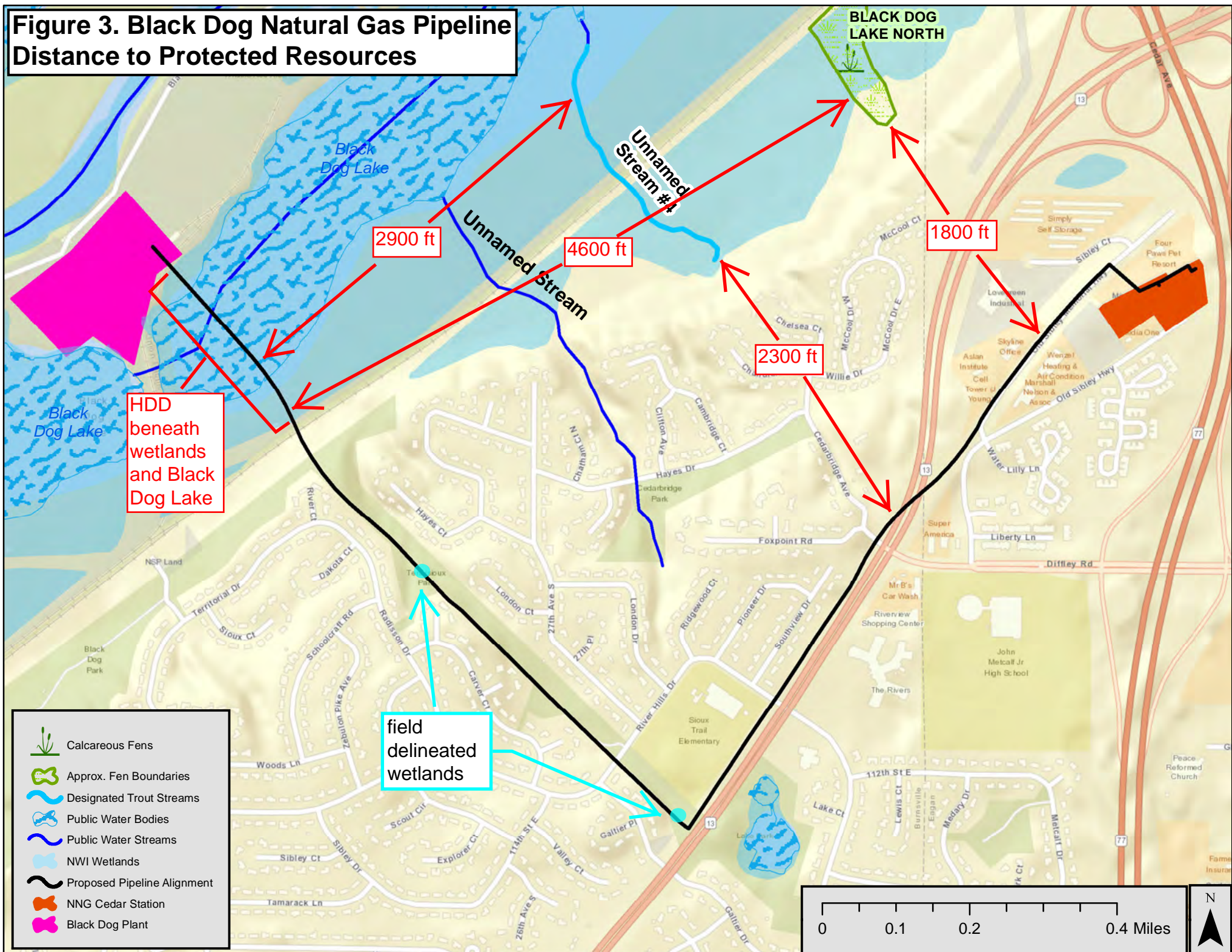


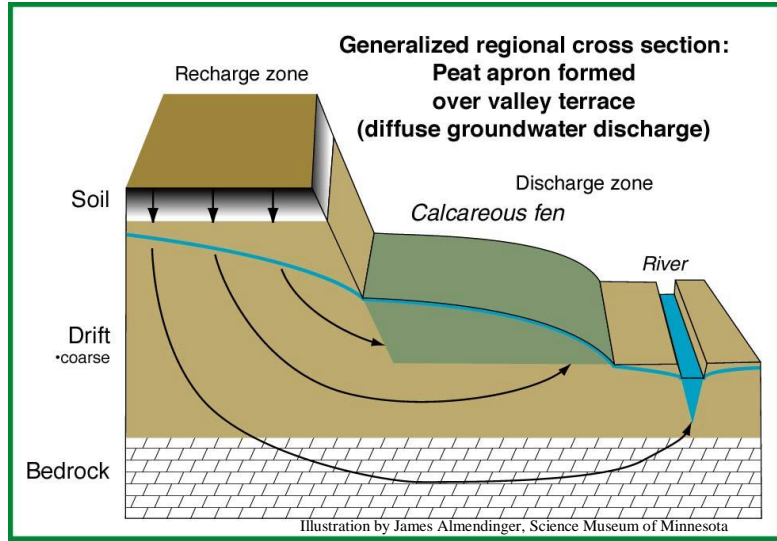
Figure 3. Black Dog Natural Gas Pipeline Distance to Protected Resources



WHAT IS A CALCAREOUS SEEPAGE FEN?

Calcareous fens are rare and distinctive wetlands characterized by a substrate of non-acidic peat and dependent on a constant supply of cold, oxygen-poor groundwater rich in calcium and magnesium bicarbonates. This calcium-rich environment supports a plant community dominated by “calciphiles,” or calcium-loving species. These fens typically occur on slight slopes where upwelling water eventually drains away and where surface water inputs are minimal. Sometimes they occur as domes of peat that grow to the

height of the hydraulic head. These settings create an unusual wetland regime where the substrate is almost always saturated to the surface, but flooding is rare and brief. Shallow pools of water in which marl precipitates are typically present surrounded by low, tussocky, grass- and sedge-dominated vegetation. The substrate is springy or quaking underfoot. The figures above and below illustrate the geologic features and groundwater flows that lead to the formation of calcareous seepage fens.

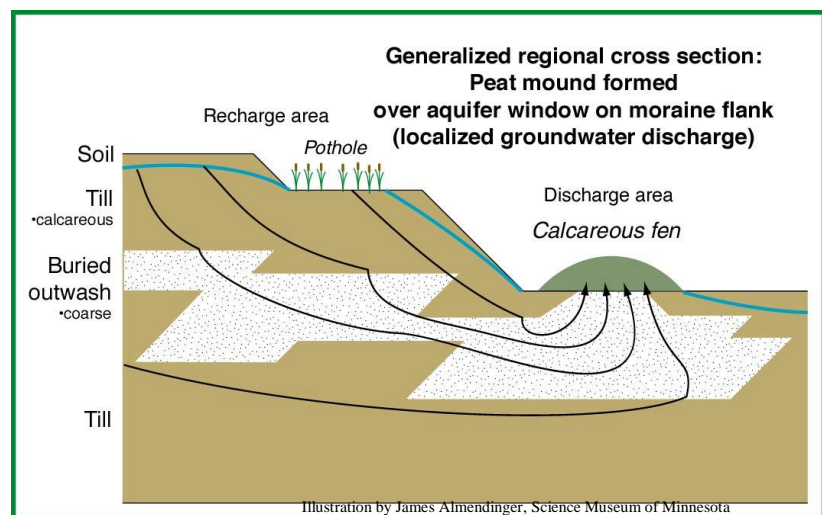


HOW RARE ARE CALCAREOUS SEEPAGE FENS?

Calcareous seepage fens are one of the rarest natural communities in the United States. These fens have been reported from 10 states, mostly in the Midwest.

Approximately 200 are known in Minnesota, most of which are only a few acres in extent. They are concentrated at the bases of terrace escarpments in river valleys in southeastern Minnesota, on the sides of morainal hills and valley

sideslopes in southern and west-central Minnesota, and on the downslope side of beach ridges in the Glacial Lake Agassiz basin in the northwest. There are also a few in northern Minnesota where upwelling groundwater reaches the surface within large, more acidic peatlands.





WHY ARE CALCAREOUS SEEPAGE FENS PROTECTED?

In addition to the rarity of the community itself, calcareous seepage fens support a disproportionately large number of rare plant species in Minnesota, four of which (*) occur almost exclusively in this community. Eight state-listed, rare plant species are known from calcareous seepage fens:

<i>Carex sterilis</i> *	Sterile sedge	State threatened
<i>Cladium mariscoides</i> *	Twig-rush	State special concern
<i>Rhynchospora capillacea</i> *	Fen beak-rush	State threatened
<i>Fimbristylis puberula</i> *	Hairy fimbristylis	State endangered
<i>Scleria verticillata</i>	Nut-rush	State threatened
<i>Eleocharis rostellata</i>	Beaked spike-rush	State threatened
<i>Valeriana edulis</i>	Valerian	State threatened
<i>Cyripedium candidum</i>	Small white lady's slipper	State special concern

Calcareous seepage fens are highly susceptible to disturbance. Reduction in the normal supply of groundwater results in oxidation of the surface peat, releasing nutrients and fostering the growth of shrubs and tall, coarse vegetation that displaces the fen plants. Nitrogen-rich surface water runoff into



fens promotes the invasion of aggressive exotic plants, especially reed canary grass, that also outcompete the fen plants. Flooding drowns the fen plants. The soft, saturated character of the peat makes almost any level of activity within them, by humans or domestic livestock, highly disruptive.

HOW ARE CALCAREOUS SEEPAGE FENS PROTECTED?

Under the Minnesota Wetlands Conservation Act (WCA), impacts to calcareous seepage fens are regulated by the Department of Natural Resources. According to the WCA, calcareous fens may not be filled, drained, or otherwise degraded, wholly or partially, by any activity, unless the commissioner of natural resources, under an approved management plan, decides some alteration is necessary (Minn. Statutes 103G.223).

In addition to the protection afforded by the WCA, destruction of any state-threatened plants occurring on a calcareous fen may be regulated under Minnesota's endangered species law (Minn. Statutes 84.0895). For additional information, see the DNR website at:

<http://www.dnr.state.mn.us/ets/index.html>.

The DNR maintains a list of known calcareous fens, which is available at the DNR's website at:

http://files.dnr.state.mn.us/publications/waters/calcareous_fen_list_nov_2009.pdf

Landowners or others proposing activities that may affect a calcareous fen or that are interested in protecting or managing a calcareous fen should contact the DNR, Ecological and Water Resources Division at 651-259-5125.

Department of Natural Resources

Identification of Known Calcareous Fens

Pursuant to the provisions of *Minnesota Statutes*, section 103G.223, the following described lands contain calcareous fens as defined in *Minnesota Rules*, part 8420.0935, subpart 2. These calcareous fens have been identified by the commissioner by written order published in the State Register on March 14, 2005 (29 SR 1061-1065), June 2, 2008 (32 SR 2148-2154), August 31, 2009 (34 SR 278), December 7, 2009 (34 SR 823-824), and July 5, 2016 (40 SR 8).

Additional sites may be added to this list as new calcareous fens are discovered and existing sites may be removed from the list if it is determined that the wetland no longer meets the definition of a calcareous fen. Future revisions to the list will be published in the *State Register* and the current list of fens is posted on the Department of Natural Resources web site.

County Calcareous Fen Site Name	Fen ID No.	Located in:		
		Township	Range	Section(s)
Becker				
Spring Creek WMA South	251	T142N	R42W	SWNE12, NWSE13, NENE13
White Earth 5	34594	T142N	R41W	NW05
White Earth 6	34595	T142N	R41W	NW06
Waubun WMA South	19190	T142N	R42W	NENE01
Anderson WPA	28540	T139N	R42W	NWNE01
Pederson WPA	34161	T142N	R41W	SWNW29
Hamden 36	34839	T140N	R42W	NWNW36
Big Stone				
Stony Run	19784	T121N	R45W	ESENE19
Blue Earth				
Lime 30	38219	T109	R26W	SWSW30
		T109	R27W	SESE25, NESE25
Carver				
Seminary Fen	20977	T116N	R23W	SWNESE34, SW35 NESWSW35
Chippewa				
Chippewa River Fen	18688	T118N	R41W	SWSE23
Kragero 26	26001	T119N	R42W	NESW26
Watson Sag East - a	18689	T119N	R42W	SE36
Tunsberg 10	25999	T118N	R41W	SWNW10
Montevideo Fen	26005	T117N	R41W	NESW01
Rosewood 31	25195	T118N	R40W	NESE31
Watson Sag SW	18687	T118N	R41W	SESW16

County Calcareous Fen Site Name	Fen ID No.	Located in:		
		Township	Range	Section(s)
Watson Sag East - b	18692	T118N	R41W	NWNW06
Zion Church Prairies	18686	T118N	R41W	NSW06
		T118N	R42W	SESWNE01, NENESE01
Clay				
Barnesville Swamp Humboldt 1	13722	T137N	R45W	SESE01
Barnesville Swamp Tansem 18NW	246	T137N	R44W	NWNW18
Barnesville Swamp Tansem 18SW	6625	T137N	R44W	SWSW18
Barnesville Swamp Tansem 7a	18814	T137N	R44W	SESWSW07
Barnesville Swamp Tansem 7b	1973	T137N	R44W	NSW07
Felton Prairie B Bar B Ranch	252	T141N	R46W	E13
Felton Prairie County Land	7726	T142N	R45W	SNW31
Felton Prairie Felton WMA	247	T142N	R46W	ESE36
Felton Prairie Flowing 24	7723	T141N	R46W	WNWSE24
Haugtvedt WPA South Unit	21259	T137N	R44W	SWSE32
Clearwater				
Clearbrook Fen	249	T149N	R37W	NW17
Cottonwood				
Delton 20	31977	T107N	R35W	SESE20
Amo 2	35483	T106N	R37W	SESE02
Amo 13	31985	T106N	R37W	SWSW13
Storden 21	33992	T107N	R37W	SWNW21
Storden 34	35383	T107N	R37W	NENE34
Dakota				
Black Dog Lake Fen - a	242	T027N	R24W	NW34, NWNE34
Black Dog Lake Fen - b	14373	T027N	R24W	NNW34
Black Dog Lake Fen - c	31929	T027N	R24W	SESE27, NENE34
Black Dog Lake North	16550	T027N	R24W	SENE24
Gun Club Lake North	20941	T028N	R23W	WSE33
Gun Club Lake South	244	T027N	R23W	W04
Nicols Meadow Fen - a	243	T027N	R23W	NESW18
Nicols Meadow Fen - b	20942	T027N	R23W	NWSESW18
Nicols Meadow Fen - c	20943	T027N	R23W	SWSESW18
Dodge				
Pheasants Forever WMA	28257	T107N	R17W	SWSE24
Wasioja WMA	28258	T107N	R17W	SESWSESW17

6264.0050 RESTRICTIONS ON DESIGNATED TROUT LAKES AND STREAMS.

Subpart 1. **Restrictions on designated trout lakes.** The lakes described in this part are inhabited by trout other than lake trout. In order to protect and foster the propagation of trout, the following restrictions on fishing in these lakes apply:

- A. taking of fish is prohibited, except during the open season;
- B. not more than one line may be used for angling at any time, including when angling through the ice;
- C. taking of minnows is prohibited, except under special permit issued by the commissioner; and
- D. possession or use of minnows as bait, except live leeches and processed minnows in a dried, frozen, or pickled condition, is prohibited.

Subp. 2. **Listing of designated trout lakes.** The following described lakes are designated as trout lakes:

	Name	Location		
		Section	Township	Range
A.	Aitkin County:			
(1)	Loon (Townline) Lake	7	50	22W
		12, 13	50	23W
(2)	Taylor Lake	16	52	25W
B.	Anoka County:			
	Cenaiko Lake (Unnamed)	26	31	24W
C.	Becker County:			
	Hanson Lake	6	139	39W
D.	Beltrami County:			
	Benjamin Lake	7, 18	148	30W
		13	148	31W
E.	Carlton County:			
	Corona Lake	11, 12	48	19W
F.	Carver County:			

Subp. 3. **Restrictions on designated trout streams.** In order to protect and foster the propagation of trout, the following restrictions apply to fishing in these streams:

A. taking of fish is prohibited, except during the open season; and

B. taking of minnows in the waters designated as trout streams by this rule is prohibited at all times, except under special permit issued by the commissioner.

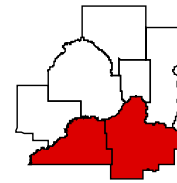
Subp. 4. Listing of designated trout streams. The following described streams and portions of streams and their tributaries within the section specified are designated as trout streams and counties whose names appear in parentheses contain portions of those streams:

	Name	Location		
		Township	Range	Section
A.	Aitkin County:			
(1)	Libby Brook	50	23	5, 6
		50	24	1, 2
(2)	Long Lake Creek	46	25	10, 15
(3)	Morrison Brook (Itasca)	52	26	4, 9, 10, 14, 15
(4)	Two Rivers Springs	51	23	19
		51	24	24, 25, 26
B.	Becker County:			
(1)	Dead Horse Creek	138	38	3, 4, 7, 8, 9, 16
(2)	Elbow Lake Creek (Clearwater)	142	38	6
(3)	Straight Creek, Upper	140	36	6
		141	36	30, 31
		141	37	24, 25
(4)	Straight Lake Creek	140	36	6
		140	37	1, 2
(5)	Straight River (Hubbard)	139	36	1
		140	36	28, 29, 33, 34, 35, 36
(6)	Sucker Creek	138	40	18
		138	41	13
(7)	Toad River	138	38	6, 7, 18, 19, 30
		139	38	30, 31

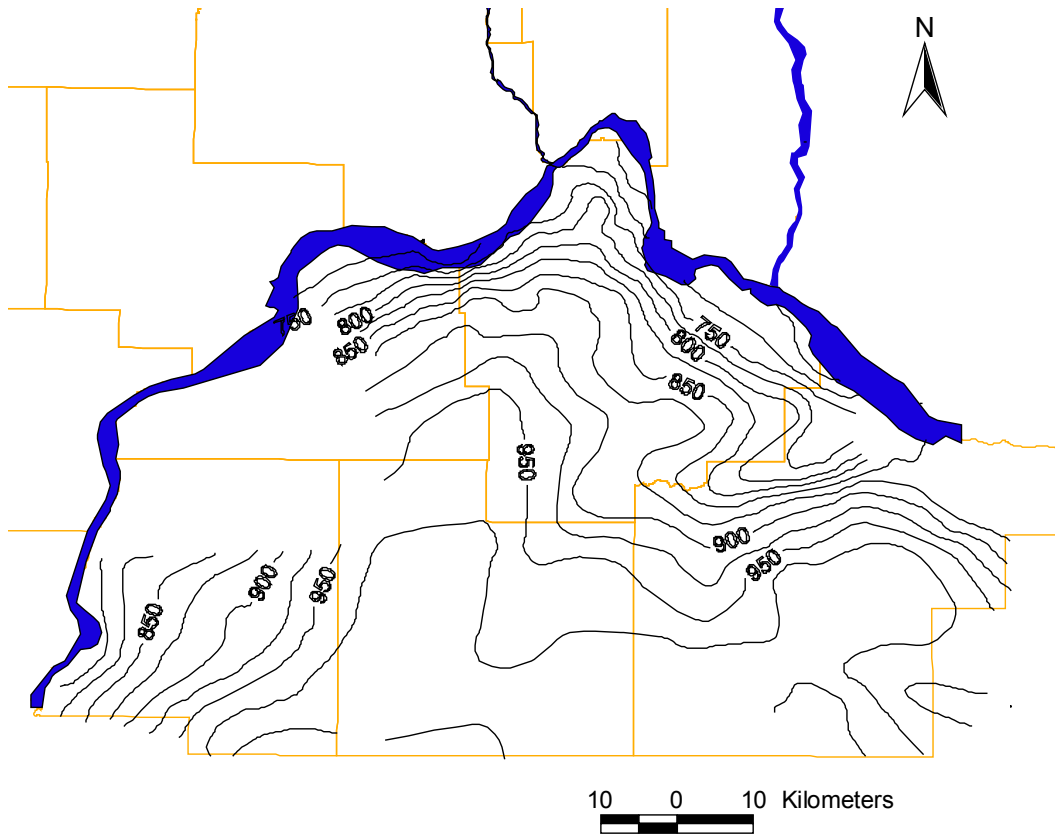
(2)	Black Bear Brook	44	28	7, 8
(3)	Blackhoof Creek	46	29	16
(4)	Borden Creek	44	28	8, 9, 17, 20
(5)	Camp Creek	43	28	4, 5
(6)	Cullen Brook	136	28	18, 19, 30
		136	29	13
(7)	Long Brook, Lower South	44	30	12, 13
(8)	Long Brook, Upper South	44	29	6, 7
(9)	Round Creek	43	31	14, 15
(10)	Sand Creek	45	30	2, 3, 11, 13, 14
		46	30	34
(11)	Spring Brook	138	28	27, 34
(12)	Van Sickle Brook	138	26	14, 15, 23, 24
(13)	Whitley's Creek	45	30	16, 17, 20, 21
Q.	Dakota County:			
(1)	Kennaley's Creek	27	23	18
(2)	Pine Creek	113	17	31
		113	18	25, 26, 35, 36
(3)	Trout Brook (Goodhue)	113	17	26, 27, 35, 36
(4)	Unnamed #1	27	23	18
		27	24	13
(5)	Unnamed #4	27	24	24
(6)	Unnamed #7	27	24	26
(7)	Vermillion River	113	20	1, 2, 3, 4, 9
		114	18	19, 20
		114	19	21, 22, 23, 24, 28, 29, 30, 31
		114	20	33, 34, 35, 36
(8)	Vermillion River, South Branch	113	19	1
		114	18	29, 30, 31

Groundwater Contours in the Prairie Du Chien/Jordan Aquifer- Layer 3

South Province



Twin Cities Area
South Province



Andrew Streit, 800

Explanation

850 Groundwater Contours
25 foot interval

Minnesota Pollution Control Agency
Metro Groundwater Model

