

POSITION PAPER – SANDPIPER PIPELINE PROJECT

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Our home is on 800 front feet of lakeshore on the north end of Roosevelt Lake. The north end of Roosevelt Lake is just over one-half mile downstream from the proposed crossing of the Spire Valley by the Sandpiper Pipeline.

This document is intended to be a public document that will hopefully stimulate open discussion. Any wording herein may be used by anyone for any purpose favorable or unfavorable to the positions expressed.

NEED FOR A PIPELINE ACROSS MINNESOTA

In the recent past, there was an indication that approximately 4.8 million barrels of crude oil used in the United States every day comes from outside North America with much (or most) from Venezuela and Nigeria. Most of the remainder comes from within North America including the United States, Canada and Mexico. We strongly believe that it is essential that North America become energy independent. The Venezuelan government leaders are supporting unfriendly leaders to the United States in Cuba, Nicaragua, Peru, Ecuador, and Uruguay; and militant groups in Columbia that hamper efforts to reduce cocaine production. The leadership in Nigeria does nothing to hamper the criminal elements in that country that carry on fraudulent activities aimed at American citizens especially our more vulnerable elderly.

North American energy independence must include moving large quantities of petroleum from the western US and Canada to refineries in the US Midwest, eastern states and eastern Canada. The proposed Sandpiper Pipeline is intended to move some of that petroleum to refineries in the US Midwest and eastern Canada. Even though some of the oil transported from wells in North Dakota across Minnesota will be exported to Canada, it probably is good public policy to cross trade petroleum between the US and Canada.

Moving large quantities of petroleum from west to east cannot be accomplished by truck, railroad and/or water barge. In addition, it is safer and much cheaper to move petroleum through pipelines than by any other method. The petroleum must be transported by pipeline, and a route must be found for that pipeline.

For practical reasons, it makes sense to transport that petroleum through a pipeline across Minnesota. We should keep in mind; however, that transporting petroleum across Minnesota is good US national policy for the benefit of all Americans (and Canadian citizens in the east) while having no other direct benefit to the citizens of

Minnesota. The three refineries in Minnesota already have an adequate supply of crude oil from within North America. The citizens of Minnesota should not have to take on unnecessary risks or costs for the benefit of all of the citizens of the United States.

RISK ASSOCIATED WITH THE PROPOSED SANDPIPER PIPELINE PROJECT

Is there a reasonably high probability that there will be a Sandpiper pipeline rupture that will result in catastrophic damage to private property owners in Minnesota? If yes, is there another route that might be used as an alternative to the proposed route for the Sandpiper Pipeline? If there is no other reasonable route, can the potential damages of a rupture be mitigated through specific engineering and other requirements as part of the permit issued to North Dakota Pipeline Company, LLC (NDPC) for this pipeline? This section of this position paper addresses the risk probability issue.

Pipeline ruptures occur and they are not rare. There was a major rupture of a natural gas pipeline in Canada during the last week of January 2014 resulting in shortages of gas in much of the US Midwest.

Everyone wants to prevent spilling any petroleum anywhere and that includes NDPC. An NDPC letter to Cass County, City and Township Officials, dated December 11, 2013, states that “Enbridge designs, constructs, operates and maintains its facilities to comply with or exceed all appropriate regulations, federal laws and national standards.” Note that on December 16, 2013, the name of the permit applicant was changed from Enbridge to NDPC. The company has the goal of zero releases. Even with these major efforts there have been a significant number of spills from NDPC facilities and some of those had major negative impacts. There was a major NDPC petroleum spill in Cohasset, Minnesota several years ago and the Minnesota DNR had to burn the petroleum on the river to prevent it from reaching the Mississippi River. Another major NDPC petroleum spill went into the Kalamazoo River in Michigan and that is still being cleaned up ten years later. By one calculation, on average, NDPC has experienced one spill for each 21 miles of pipeline used by that company over an eleven year period.

Pipeline ruptures must be expected. The Sandpiper project will require tens of thousands of sections of 30 inch diameter pipe and somewhere around 100,000 welds performed outdoors some in difficult weather conditions. Each weld will be nearly 100 inches in length performed in a vertical circle to connect pipes extending outward away from the welding area for many feet. The petroleum in the pipes is under pressure and the pipes are subject to occasional rapid up/down pressure fluctuations, expansion and contraction with changes in temperature and earth shifts due to such things as frost heaves. Steel pipe cannot be manufactured without some undetectable defects. The pipeline may pass a high pressure leak test prior to use to transport petroleum; however, a

defect in the steel of a section of pipe or a less than perfect weld can give way due to metal fatigue after a period of time being subject to those types of factors. It is a fact of life that spills cannot be prevented and sometimes they can occur where the damage is catastrophic.

The impacts of any pipeline spill depend on the amount of petroleum spilled and the location of the spill. Approximately six million barrels of crude oil are refined and used in the eastern third of the United States every day. NDPC plans to initially transport up to 375,000 barrels of petroleum over this proposed pipeline each day. It is reasonable to assume that NDPC will add one or more pipes in the future to increase the amount transported over time to at least 500,000 barrels and perhaps even as much as 1,000,000 barrels each day as there is added development of the oil deposits in North Dakota and surrounding areas. The remainder of the six million barrels per day will come from sources in eastern states, other pipelines from the western US and Canada, and large tanker ships from Mexico, the Gulf of Mexico and the gulf states of the US.

NDPC has demonstrated that company employees at monitoring and control centers have had difficulty determining that a spill has occurred. Many (maybe most) spills of petroleum from pipeline facilities are discovered by local residents and they may not be discovered for many hours (maybe over night) after the spill begins if the spill is in a remote area like those through which the NDPC preferred route passes and/or the spill is at a time when many recreational property owners are not in residence.

NDPC proposes that the initial pipe in this route be 30 inches in diameter. A quick calculation shows that there would be approximately 132,000 tons of petroleum moving through the 300 mile length of this pipe continuously. The mass of moving oil in that pipe is the equivalent of six 100 tank car trains fully loaded with petroleum. A high school course in physics includes study of Newton's laws of motion that shows that there is an enormous amount of kinetic energy in all of that moving petroleum. One way of putting it is things that are in motion tend to stay in motion. The point is that it is not possible to simply close a valve to instantly shut down the flow of the petroleum just as it is not possible to instantly stop a moving freight train by simply applying the train brakes. To do so would cause enormous pressure in the pipe that would most likely cause many ruptures. This all means that it takes a long time (hours) to shut down the flow of petroleum in a pipeline after a spill is detected and verified.

It is possible, therefore, that up to 250,000 barrels or 11 million gallons or approximately 30 acre-feet of petroleum or more could spill in a remote area before it is discovered and the pumps can be shut down one at a time in an orderly fashion and pipeline pressure reduced.

Thirty acre-feet of petroleum spilled into Daggett Creek just above Mitchell Lake or the Pine River just north of Norway Lake might quickly spread across the

Whitefish Chain of lakes to an average depth of 1/16 to 3/32 inches. That is enough to change the value of all lakeshore, off lake and business real property; boats and marine apparatus on and near the entire Whitefish Chain to worthless in one day. Aquatic birds, and in some seasons migratory birds, would suffer and die. The entire fish population along with other marine life including crayfish, fresh water clams and snails, and aquatic vegetation would all die. There would be no swimming, fishing or any form of boating on the entire Whitefish Chain. The odor of the petroleum would keep most people well away from the lake. It could take ten years or longer to recover significant value to this area and some marine life might never return.

A similar size rupture in the Spire Valley watershed would result in petroleum levels of about one inch on the north part of Roosevelt Lake if the spill is contained north of the Highway 6 Bridge in Outing or about 3/16 inch if the entire lake is covered.

This discussion of impacts after a spill is not limited to Daggett Brook, the Pine River and the creek in the Spire Valley. It should be understood that the impacts discussed herein can result from a spill anywhere in the watersheds of Daggett Brook, the Pine River, the creek in the Spire Valley, the Washburn Lake watershed south and east of that lake, or the Roosevelt Lake watershed northeast of Lewis and Leavitt Lakes, a distance of approximately 26 miles along the proposed pipeline route. In Aiken County the Sandy River could carry spilled petroleum into Big Sandy Lake. In fact there are side-by-side similar watersheds all the way along most of the proposed route across all of and more than Hubbard, Cass and Aiken Counties and spills there can impact areas in surrounding counties like Crow Wing, Wadena, Clearwater and Becker Counties. The NDPC Sandpiper Project preferred route also crosses the Mississippi River twice, once southwest of Bemidji and once northeast of Aiken.

Minnesota has 10,000 or so lakes, however, they are not distributed evenly over the state and most people would not consider all lakes of even value. Most of the lakes in Minnesota are located in two groups one west of the Twin Cities out to Willmar and the other from the general area of Alexandria and Fergus Falls to Grand Rapids and Aiken. Most Minnesotans consider the northern group to be the best lakes. There are approximately 320,000 Minnesota families with recreational lake property so that when all members of those families are included there are many hundreds of thousands (probably more than a million) of citizens of this state that more or less consider the lakes in the north central area of the state to be Minnesota's crown jewels. Lakeshore property in this area is among the highest price real property in the entire state of Minnesota and the NDPC preferred Sandpiper route closely passes some of the very best lakes with all things considered including the driving distance from the Twin Cities. A 100 foot wide, undeveloped lot on the Whitefish Chain of lakes will be priced at from \$250,000 to \$500,000.

The value of real property on the Whitefish Chain lakeshore and the immediate surrounding areas is approximately one billion dollars. One billion dollars of loss in real property values will mean an instant reduction of approximately ten million dollars each year in property taxes paid to Crow Wing County, other subdivisions of the state in Crow Wing County including Crosslake and Manhattan Beach, the school districts, and other special taxing districts. Government officials need to understand that this result is not a loss of tax revenue for one year but loss of that revenue every year for many years. The total dollar loss of tax revenue would be less but have a similar impact on the budgets of Crooked Lake Township and Cass County, and possibly of the City of Emily, if all of Roosevelt Lake is covered with Petroleum, as the budgets of those entities is smaller than those around the Whitefish Chain in Crow Wing County. There will be other tax dollar losses as well including sales tax receipts payable to the state of Minnesota and to other entities including cities like Emily.

I have no idea who the owners and controlling parties are of the legal entity North Dakota Pipeline Company, LLC and I have no idea what net assets they control. In the past, however, there have been too many situations in which after the fact it is discovered that an entity that is responsible for a disastrous event simply walks away and it is found that there are almost no net assets available to pay those parties that were damaged. The responsible entity's assets are pledged as collateral for huge loans and the liability shielded parent owner entity drained earnings from the responsible entity for years in management fees. Often most if not all of the small net assets of the responsible entity are used to pay legal and accounting fees and expenses. In any event, it is normally the fact that it takes years for damaged parties to receive any compensation. I could not help but observe that Freedom Industries in Charleston West Virginia filed for bankruptcy without hiring a single defense attorney after the first law suit was filed against the company for the chemical spill that entered the drinking water supply for the Charleston Metropolitan Area in December 2013.

Private property owners will be unable to claim loss in value of their lake front property on their home owners insurance policy. Those policies are written to compensate the insured against damages to structures and the contents of structures along with some small coverage for some consequential losses only. Petroleum spilled and spread across the lake in front of their structures does not cause any damage to the structures or the contents.

In addition to tax dollar losses to governments, there may be widespread failures of most businesses in the Crosslake and surrounding areas if the spill impacts the Whitefish chain or in the Outing/Emily areas if the spill impacts Roosevelt Lake. Banks that have made mortgage loans on business, home and lakeshore recreational properties may fail as property owners walk away from worthless properties for which they have not been compensated at anywhere near an amount equal to the remaining principal amount of the mortgage. Crosslake or

Outing or other towns might become ghost towns like those in Nevada, Colorado and other western states.

CONCEPTUAL VISION FOR AN ALTERNATE ROUTE

At some past time there was brief consideration of adding pipeline facilities to an existing pipeline route generally along US Highway 2. There was no significant analysis of that route as consideration of it was dropped quickly as sufficient right-of-way space was not reasonably available even with the right of eminent domain. As a result, only one route across Hubbard and Cass Counties has received any serious analysis attention and that seems to be limited to NDPC deciding whether or not that company can get what it needs along that single route. NDPC did analyze three routes across Aiken County. Maybe it exists, however, I have seen no analysis to determine if the NDPC preferred route across Hubbard, Cass and Aiken Counties can be designed and constructed in a manner that will reasonably protect the greater public interest.

Much of the NDPC selected route follows existing electrical power transmission lines. Quite often that makes sense as those lines are often away from most public view, there are access roads in-place, and they already have wide openings through the wilderness for long distances. Locating petroleum pipelines next to electric power lines is not always the best choice; however, as electric power does not spill into watersheds when a tower blows over in a storm.

Might there be an alternate route that should receive analysis that would show that route to be far less damaging to private property owners and governments in the event of a major spill?

Might that second route begin somewhere around Thief River Falls and be routed north of the Red Lake Indian Reservation, then southeast across Koochiching County to somewhere around Togo, then south to the continental divide, past Hibbing, and continuing south past a point east of Floodwood or continuing south of Hibbing along railroad right-of-way? This route may require some north/south juggling to avoid some scattered parcels of the Red Lake Indian Reservation north of Upper Red Lake. I know of no impediment to obtaining the needed route right-of way for this route as the state will grant NDPC the right of eminent domain.

It should be noted that this conceptual route does not cross the Mississippi River.

The concept of this route is shown in this map.



SOME SUGGESTED CRITERIA FOR ROUTE SELECTION

NDPC refers to 17 what they call Environmental Features used to identify the best route for a petroleum pipeline. NDPC personnel can calculate an internal dollar cost or political consequence for each of those features and use the results to show the best route for NDPC, however, private property owners and governments may have little interest in that analysis.

I suggest that there are only two criteria that should be considered in selection of a route for a new pipeline. They are:

1. What is the feasibility of a route for construction of a petroleum transporting pipeline? Feasibility must include the ability to obtain the needed right-of-way with the power of eminent domain and it should include a cost comparison (not necessarily the lowest cost) between alternative routes.
2. What are the comparative possible risks to property for the alternative routes, especially private property, after a major spill of petroleum?

In regard to the first criteria, NDPC personnel may point to two factors that might increase the cost to construct the Sandpiper Pipeline along the conceptual route described herein. Those two factors are a general lack of access roads across much of Beltrami and Koochiching Counties and the need for many more miles of winter construction. NDPC may be able to take some advantage of existing township roads in those two counties even if they will need improving at NDPC expense. Access road improvement and construction, and winter construction will likely make the conceptual alternative route more expensive over no more than 150 miles of pipeline.

Assuming that the extra cost will be \$2,000,000 per mile (unlikely that much) for 150 miles, the conceptual alternative route may cost \$300,000,000 more to construct than the NDPC selected preferred route. This pipeline may have a useful life of 50 years or more but for purposes of this discussion assume that the life of the pipeline to abandonment will be 20 years and assume that NDPC borrows all of the money needed to construct Sandpiper at 6% interest with the loan plus interest on the remaining principle paid in equal annual payments over 20 years. If these assumptions are realistic, the annual extra cost to NDPC for the conceptual alternative route will be a little more than \$26,000,000 per year or about \$71,300 per day. \$71,300 per day is only 19 cents per 42 gallon barrel of petroleum when the pipeline carries 375,000 barrels a day.

An extra 19 cents of transport cost per barrel is insignificant especially when by NDPC's own statements the Sandpiper Pipeline is not planned for advantage to the company in a competitive environment but is an absolute need for the oil well drillers in North Dakota. An additional cost of 19 cents per barrel will add less than ½ cent to the cost of a gallon of refined gasoline and diesel fuel, lubricants, and propane; and petroleum used in fertilizers, plastics and pharmaceuticals.

Should not the citizens of Minnesota be able to ask the users of products manufactured from petroleum in the eastern third of the United States to anti-up ½ cents per gallon to provide an enormous reduction in risk to some of the world's greatest attributes, our premium lakes, streams and woodlands? The cost per gallon will be less if NDPC adds more capacity in barrels per day transported over this route in the future. A ½ cent increase in cost for petroleum may be even less of concern as refined petroleum products increase in price due to inflationary pressures and a general decrease in the reserves of petroleum in the ground over time.

Therefore, the route selection criteria is really searching for the balance between extra cost and reduction in risk. I believe that a far greater risk far outweighs the added construction costs.

**SUGGESTED PERMIT REQUIREMENTS IF THE EXISTING NDPC
PREFERRED ROUTE IS SELECTED FOR THE SANDPIPER PIPELINE
PROJECT BY THE MINNESOTA PUBLIC UTILITIES COMMISSION**

This part of this position paper includes discussion of some conceptual ideas that might be considered for inclusion in any permit granted for the Sandpiper Pipeline Project if the NDPC preferred route across Hubbard and Cass Counties is finally selected for approval by the Minnesota Public Utilities Commission. These conceptual ideas are mine alone and I know nothing about the design and construction of petroleum pipelines. Therefore, these ideas may have little or no value for engineering design but may at least stimulate further discussion of ways to mitigate the risks for a major disaster in the future.

Included with this discussion is a sketch of a concept idea that might protect Roosevelt Lake from damage from a rupture/spill in the Spire Valley. That sketch envisions two berms across the valley, one on either side of the pipeline right-of-way with a large (perhaps eight or ten foot diameter) conduit to carry the creek water past the pipeline right-of-way. A large conduit may be needed to keep water from spilling over the northern berm during a 50 year flood event. The culvert will keep petroleum from a spill from reaching the creek water until the petroleum level exceeds the height of the lower berm. The berms may need to extend at a relatively low elevation out to the edges of the watershed area that drains into the Spire Valley. A detector/alarm between the berms could detect the presence of petroleum before the level builds to the height of the lower berm. The alarm signal can be sent over a fiber link to a pumping monitoring station, or better to an automatic pump shut down device. A means to drain off water that may collect between the berms may need to be included.

Another conceptual idea is can double piping be used at least through the areas of greatest risk? By double piping I mean an inner pipe transporting the petroleum with an outer pipe to contain at least some oil if a spill occurs. There

should also be oil detectors at low spots along the inside of the outer pipe to be used to alarm of a spill at a monitoring/control center.

Pipeline companies have been in business for a long time and they hopefully have one or more better ways to protect against spills in geographic situations like those suggested here. Also, the double berm concept shown in the sketch will not provide any protection for wide area watersheds like that feeding Daggett Brook north of Mitchell Lake or the area north and east of Lewis and Leavett Lakes that drain into Roosevelt Lake unless low elevation berms extend all across the watershed.

How can Roosevelt Lake, the Whitefish Chain of Lakes and many others near the NDPC preferred route be protected if there is a spill in one of these drainage basins? Should the cost to provide those protective elements in the design and construction of the pipeline be considered the cost of an insurance policy to protect against very large possible losses caused by a major pipeline spill in a sensitive location?

NDPC should also be required to provide hydrologic studies by qualified, properly educated and experienced engineers of the surface and subsurface water drainage where the Sandpiper proposed pipeline passes approximately one-half mile from the east edge of Itasca State Park. The area of Itasca Park, Lake Itasca and the beginning of the Mississippi River is the number one international tourist attraction in the state of Minnesota. There should be no risk of damage to this area by an oil spill from the pipeline.

With or without design elements to protect against risks along and near the preferred route, can NDPC be required to maintain a liability insurance policy of as much as \$1.5 billion to pay the lawyers and accountants and to protect the private property owners that may suffer loss of all or most of the value of their property after a spill from the Sandpiper Pipeline?

