

Comments of the Nebraska Wildlife Federation on the US State Department Draft Environmental Impact Statement for the proposed Keystone XL Pipeline

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The Nebraska Wildlife Federation is a state-wide organization dedicated to environmental education, fish and wildlife conservation, and common sense public policy in Nebraska. The following are our comments on the Draft Environmental Impact Statement prepared by the US State Department for the proposed Keystone XL pipeline.

Overview

The proposed pipeline raises some very important issues for the future direction of America's energy and climate policy, the impact of the project on migratory birds that would be harmed by the associated tar sands oil development in Canada, and the risk to natural resources in Nebraska. As we explain below, we do not believe the Draft Environmental Impact Statement (DEIS) adequately addresses these issues, do not believe the project as currently conceived is one that meets proper environmental tests of law, and do not believe building of the pipeline as conceived would be in the national interest of the United States of America.

We generally associate ourselves with the comments submitted by the National Wildlife Federation, but would also offer the following comments which largely reflect the likely environmental impact on natural resources in Nebraska. These include:

- Risks to the Ogallala Aquifer
- Risks in the Sandhills
- Risks to Nebraska Wetlands
- Risks to Whooping Cranes and other Migratory Birds
- Risks to Nebraska Surface Waters
- Climate Change Implications
- Lack of Specific Mitigation Commitments
- Lack of Adequate Time to Assess Likely Impacts

Risks to the Ogallala Aquifer

In the DEIS, Table 3.3.1-2 shows over 100 miles of pipeline route in Nebraska where groundwater is less than 50 feet from surface. In addition, floodplains and flowing rivers would be expected to have groundwater less than 50 feet from surface. Sandhills ranchers often tell of hitting groundwater when digging holes for fence posts.

The Ogallala aquifer underlies the Sandhills, and is fed by rainfall that moves through its porous soils. The Ogallala aquifer stretches south through the Great Plains to Texas, and serves as a key underground water source for irrigation, industry and drinking water throughout that area.

Should the pipeline leak or break in the segments where aquifers are close to the surface, the result would be contamination of a portion of the aquifer. Given the difficulty of cleaning up groundwater, the best-case response could be simply containing the spill and monitoring the resulting plume.

We were unable to find in the DEIS information on the specific gravity of the fluids moving through the pipeline, including the chemicals to be used to improve the flow of the oil. Experts we have consulted with caution that the oil is not akin to light oil that would float to the surface when exposed to water. In the event of a pipeline break or leak, the oil and its constituent chemicals could mix in with and contaminate groundwater, and would almost certainly contaminate rivers, wetlands or other surface water should the spill occur in proximity to those resources.

The questions raised by TransCanada's application to use thinner than standard steel and higher pressures in the Keystone XL pipeline, and allegations only now coming to light about the use of weaker or potentially defective materials in the first Keystone pipeline, heighten our concern about the risks to the Ogallala aquifer and other groundwater in Nebraska.

Risks in the Sandhills

The pipeline would cut across the Nebraska Sandhills, one of the most fragile ecosystems in North America. The Sandhills is the largest sand sea in the western hemisphere¹. The sand dunes, now stabilized by prairie except where they have been disturbed, were formed by wind-blown sand. Some of the dune formations are several hundred feet deep.

The fragile nature of the Sandhills can be seen from the scars on the land from the 1970's, when native range was plowed and center pivot systems installed. Decades after the irrigation systems were abandoned and the land 'restored', the impacts are still visible. The areas 'restored' are still subject to substantial wind erosion.

¹ Mark Sweeney and David Loope, *Holocene Dune-Sourced Alluvial Fans in the Nebraska Sand Hills*, University of Nebraska Lincoln, 2000.

The DEIS indicates that “During Project operations, there could be risks associated with pipeline exposure due to lateral or vertical scour at water crossings during floods.²” However, the DEIS does not appear to recognize that the potential for blowouts to occur in fragile, disturbed Sandhills soils also provides a significant risk of pipeline exposure. Should that happen, the pipeline would be exposed to the potential for the ground to actually blow out from under the pipeline.

We appreciate that the DEIS recognizes the need for special considerations and measures to be taken in the Sandhills during construction due to the highly erodible nature of the soils. However, the risk to the Sandhills is not limited to the construction phase of the project. Once in place, the pipeline would be subject to wind erosion from blowouts, a risk that would be increased because of the disturbance of the native prairie that now stabilizes the sand dunes, and that would be disturbed during construction.

This risk could be made worse by two important factors. The pipeline itself is designed to move tar sands oil at elevated temperatures designed to improve the flow of the oil. As the DEIS notes, “Due to the relatively high temperature of the oil in the pipeline, increased pipeline operation temperatures may cause a very localized increase in soil temperatures and a decrease in soil moisture content.³”

“Operation of the Project would cause slight increases in soil temperatures at the soil surface of 4 to 8° F primarily during January to May and November to December along the pipeline route in Montana, South Dakota, and Nebraska.... Operation of the Project would cause increases in soil temperature 6 inches below the surface of 10 to 15 °F with the largest increases during March and April in the Steele City Segment of the Project⁴.”

“While many plants, especially herbaceous annuals, would not produce root systems that would penetrate much below 6 inches, some plants, notably native prairie grasses, trees, and shrubs, have root systems penetrating well below 6 inches. Soil temperatures closer to the pipeline burial depth of 6 feet may be as much as 40° F warmer than the ambient surrounding soil temperatures.⁵”

The temperature increase and loss of soil moisture could have significant impacts in the already-fragile soils of the Sandhills. The native prairie species that stabilize the Sandhills include deeply rooted prairie grasses and forbs that are adapted to the relatively arid climate of the region. The “localized increase in soil temperature” and loss of soil moisture would impact the vegetation that grows right over the pipeline. That could impair the ability of the vegetation to continue to stabilize the soil that is intended to protect the pipeline from exposure.

A second factor that could impact the Sandhills is climate change. According to the National Academy of Sciences, “the compelling case that climate change is occurring and is

² DEIS, 5-2.

³ DEIS, 3.2-11.

⁴ Keystone 2009c, Appendix L

⁵ Keystone 2009c, Appendix L, p. 3.4-10.

caused in large part by human activities is based on a strong, credible body of evidence.⁶ According to the mid-range projections for Nebraska, the average December-February temperatures in Nebraska are expected to increase by 3° to 5° F by about 2050, while the average summer (June-August) temperatures are expected to increase by 5° to 6° F by that time⁷. Those expected summer temperatures imply a summer climate in Nebraska similar to current summers in Oklahoma and West Texas.

The result of higher temperatures, especially in the summer, would logically be reduced soil moisture, especially in the top layers of soil. In the case of the Nebraska Sandhills, that has implications for vegetative cover – and continued stabilization of the sand dunes – that have yet to be well studied. However, the potential for more substantial mobilization and movement of the sand dunes in the Sandhills in the coming decades is an important risk factor. This issue needs much further study before conclusions of “no impact” like those drawn in the DEIS can be justified.

Risks to Nebraska Wetlands

The DEIS cites at least 89.4 miles of pipeline impacting the Rainwater Basin, and at least 10 Rainwater Basin “wetlands of special concern or value” crossed by the project (Table 3.4.2-1). This is in addition to 37 “wetlands of special concern or value” in the Sandhills that are impacted by the project.

The DEIS relies on the proposed project’s restoration activities as a basis to conclude that there will be no major impacts to wildlife. In fact, as we note below, the commitments to restoration of disturbed wetlands or other habitat to pre-construction conditions includes little detail and is very conditional. Given that lack of clear commitment, the DEIS is wrong in concluding that the pipeline’s impacts on wildlife will be minor.

The DEIS relies for wetland mitigation largely on the U.S. Army Corps of Engineers Section 404 permits, and equivalent state wetland permit programs, under the theory that those permits will accord an appropriate level of protection for wetlands. Unfortunately, the State of Nebraska does not have a wetland permitting program, and the Nebraska Game & Parks Commission has estimated that some two-thirds of Nebraska’s wetlands now fall outside the jurisdiction of the Corps of Engineers.

Instead, the Nebraska Department of Environmental Quality (NDEQ) protects many wetlands from degradation as “waters of the state.” It does not issue permits, but operates a consultation process whereby landowners or project sponsors can ask for a consultation on suggested mitigation for wetland impacts. The consultation typically results in a letter from the Department outlining any mitigation recommendations that, if followed, should protect the landowner from subsequent fines or penalties. The consultation is voluntary, and following the mitigation recommendations is voluntary, although the landowner risks a fine or penalty if they

⁶ National Research Council, *Advancing the Science of Climate Change*, 2010.

⁷ Projections are taken from mid-point projections developed by The Nature Conservancy, the University of Washington, and the University of Southern Mississippi, and published at www.ClimateWizard.com, 2010.

fill or degrade a wetland without going through the consultation process and following the recommendations. The Department has few resources committed to the program, and few field personnel who seek out violations.

We were unable to find in the DEIS any commitment (or indication) that TransCanada will consult with the NDEQ on Nebraska wetland impacts for wetlands not under the Corps of Engineers' jurisdiction, and no commitments that it would comply with any resulting mitigation recommendations. In fact, according to the DEIS, "Wetland impacts that affect non-jurisdictional wetlands under the CWA Section 404 would not require mitigation."⁸

Given the situation and lack of effective enforcement mechanisms at the state level, we believe the State Department does not have adequate justification to believe that wildlife, water quality, and other environmental impacts from draining or damage of wetlands in Nebraska will be fully mitigated.

The DEIS also does not adequately account for the changes to wetlands that likely will occur in future years, during the useful life of the pipeline, that would make the project's impacts on wetlands even more severe. According to research by Dr. W. Carter Johnson at South Dakota State University⁹, wetlands in the Prairie Potholes region (in Montana, North Dakota, South Dakota, Minnesota, and northern Iowa and Nebraska) "would be particularly vulnerable to climate change, even if precipitation were to continue at historic levels. Only a substantial increase in precipitation would counterbalance the effects of a warmer climate."

The US State Department's own analysis from 2002 echoes this concern: "Prairie potholes, which provide important habitat for ducks and other waterfowl, are likely to become much drier in a warmer climate."¹⁰ The DEIS does not adequately address the implications of these additional pressures on wetlands, which will make the loss, drainage or degradation of wetlands that result from the project even more important.

In Nebraska's Rainwater Basin, a critically important migratory stopover for waterfowl in the Central Flyway, impacts similar to those anticipated in the Prairie Pothole region would be expected. In fact, conservation organizations in the area are already building these anticipated impacts into their planning¹¹.

Studies estimate that less than 10% of the historic Rainwater Basin wetlands have survived the draining and filling of the last century¹². That makes each remaining wetland extremely important. The Rainwater Basin wetlands are considered "endangered" by the

⁸ DEIS Environmental Impacts section, page 3.4-4.

⁹ W. Carter Johnson et al, *Vulnerability of Northern Prairie Wetlands to Climate Change*, Bioscience, Vol. 55 No. 10, p. 863

¹⁰ U.S. Department of State, *2002 United States Climate Action Report*, May 2002, p. 110.

¹¹ Personal communication, Andy Bishop, Rainwater Basin Joint Venture, December, 2009.

¹² Nebraska Game & Parks Commission, *Guide to Nebraska's Wetlands and Their Conservation Needs*, 2005, p. 18.

Nebraska Game & Parks Commission, and the U.S. Fish and Wildlife Service identified them as one of nine areas in the U.S. of critical concern for wetland loss¹³.

Risks to Whooping Cranes and Other Migratory Birds

In addition to the risks to migratory birds from potential impacts to wetlands in Nebraska (and other states) resulting from pipeline construction and operation, the project would impact migratory birds that rely on boreal forests in Canada. The tar sands geologic formation lies beneath approximately 149,000 square kilometers of Alberta's northeastern boreal forest. The boreal forest is a permanent or temporary home to many species that migrate across the U.S./Canada border.

In considering the reasonably foreseeable impacts of the project, the pipeline itself cannot be separated from the production of tar sands oil that is proposed to be moved through the pipeline. Existing capacity in current pipelines (including the original Keystone pipeline) can already handle far more than the oil production capacity in place. The Keystone XL pipeline would substantially increase the capacity to transport tar sands oil from Alberta. It only makes sense as part of a strategy to substantially increase the capacity to produce oil from the tar sands region. That huge increase in tar sands oil production will increase the destruction of boreal forest, wetland loss and other impacts in Alberta.

Even where the land and water impacts are limited to Canada, there will be impacts on migratory birds that travel between Alberta and the United States, including Nebraska.

The open pit mining associated with tar sands production turns this valuable ancient forest into a wasteland, destroying acres of forest and polluting waters. Drilling in the tar sands requires a complex network of wells, roads, and pipes in areas where drilling is taking place. Although the companies involved assert that the land is reclaimed after mining, there has not yet been any mine fully reclaimed.¹⁴ Forest, peatlands, and wetlands ecosystems are highly complex, and it is unlikely they will regenerate in areas filled with mine waste.¹⁵ Mining and drilling operations in the tar sands have severe impacts on water supply and quality in Alberta.

The tar sands region is rich in wetlands in the form of bogs, fens, shallow ponds, shoreline marshes, and river delta systems, such as the Peace-Athabasca Delta just downstream from the tar sands (to the north). Mining operations require dredging wetlands and taking large amounts of water from the rivers. Changes to Alberta's rivers and underground reservoirs could have profound impacts on the hundreds of thousands of birds that are dependent on the wetland habitats in the tar sands and Peace-Athabasca Delta and other parts of the Mackenzie River watershed,¹⁶ and that includes waterfowl and other birds that migrate across the U.S. Canada border.

¹³ Nebraska Game & Parks Commission, *Ibid*, p. 18.

¹⁴ Canadian Parks and Wilderness Society, *A Response to the Mineable Oil Sands Strategy*, December 14, 2005.

¹⁵ *Ibid*.

¹⁶ Jeff Wells, *Danger in the Nursery: Impact on Birds of Tar Sands Oil Development in Canada's Boreal Forest*, Natural Resources Defense Council, December, 2008.

Among the birds that are threatened by the loss of the Boreal Forest habitat are Whooping Cranes, which are protected under the Endangered Species Act and one of the rarest birds in North America. Less than 400 Whooping Cranes survive in the wild, including about 265 in the only naturally remaining migratory population. That population winters in and near the Aransas National Wildlife Refuge on the Texas Gulf Coast, and nests in and near the Wood Buffalo National Park just north of the tar sands mines. The birds' primary migration route takes them through Nebraska, including critical migratory habitat along the Central Platte River in Nebraska¹⁷.

Birds from this population migrate over the Boreal Forest and occasionally use wetland habitat in their migrations.¹⁸ Their breeding success is jeopardized in dry years, and most climate change scenarios predict more dry years within the region where they nest.¹⁹ Further, heavy water withdrawals for the extraction of the tar sands may eventually impact the hydrology of the area enough to reduce the water supply in the wetlands on which the Whooping Cranes depend.

Another associated risk is the construction and operation of new power distribution lines to provide electricity to pumping stations along the pipeline. In Nebraska, this includes the construction of several new 115,000 volt power transmission lines that all appear to be within (or very near) the 100-mile wide corridor that includes most of the confirmed sitings of Whooping Cranes migrating through Nebraska. This corridor also includes the heart of the Central Flyway used by many species of migratory birds.

According to the DEIS: "Collision and electrocution impacts on birds resulting from construction of distribution lines would be reduced by the agencies with regulatory authority requiring that electrical power distribution line providers implement the following mitigation measures..." which include insulation materials, visibility devices, raptor proof designs, and routes that avoid leks and other habitat. However, the DEIS does not indicate that TransCanada has committed to implementing these measures, *unless* ordered to do so by those agencies.

In Nebraska's case, In June, 2010, the Nebraska Power Review Board approved an application from Nebraska Public Power District to build the three transmission lines. We are not aware that the Board conditioned approval on the use of the measures, although we were not able to obtain a copy of the NPPD application or the Board's decision in time to determine which, if any, of the measures noted in the DEIS were required for these lines.

¹⁷ Canadian Wildlife Service and U.S. Fish and Wildlife Service. *International recovery plan for the whooping crane*, 2005. Ottawa: Recovery of Nationally Endangered Wildlife (RENEW), and U.S. Fish and Wildlife Service, Albuquerque, New Mexico.

¹⁸ Jeff Wells, *Danger In the Nursery: Impact on Birds of Tar Sands Oil Development in Canada's Boreal Forest*, December 2008.

¹⁹ *Ibid.* at 20.

Risks to Nebraska Surface Waters

Nearly every major river system in Nebraska fails to meet federal and state water quality standards. That includes the Niobrara (impaired by bacteria), Loup (bacteria), Middle Platte (bacteria), and West Fork Big Blue (bacteria, Selenium and Dieldrin), all to be crossed by the pipeline. As the DEIS notes, Prairie Creek and the Big Blue River are impaired by low dissolved oxygen. We do not believe the pipeline construction will worsen problems like E coli bacteria, but the increased suspended solids and other construction-related pollutants that could result could provide additional stresses to waterways already impaired during construction, and after construction to the extent restoration efforts are not completely successful. With respect to Prairie Creek and the Big Blue, additional turbidity from construction on the river or upstream tributaries could contribute to making the low dissolved oxygen problems worse.

In our view, the methods proposed in the DEIS for water body and wetland crossings are unnecessarily destructive in many instances. In addition to the perennial streams, the pipeline would cross many intermittent water bodies. In the event that these intermittent water bodies are dry or stagnant at the time of crossing, the DEIS says conventional upland cross-country construction techniques would be used. However, the pipeline would be installed with the open-cut wet crossing method if water is flowing at the time of installation. The open-cut wet crossing method is potentially more harmful to wildlife and wildlife habitat than other methods by causing the discharge of suspended solids and other pollutants into waters, many of which are already impaired. The DEIS fails to explain why commitments are not made to ensure crossings at times when a less harmful method can be used, or the likely impacts of the more harmful methods.

Given the size and scope of the project, and the likelihood that contractors and equipment will be moving throughout the states involved in the project, we think it is reasonable to expect problems with respect to invasive aquatic species, both plants and critters. We recognize the DEIS calls for some efforts to reduce the likelihood of transporting invasive species from location to location (Section 3.7). For example, measures to thoroughly clean equipment in areas where zebra mussels are known to occur. However, a lack of intensive surveys means public agencies only have a rough idea of where zebra mussels and other invasive species are actually found, so measures that apply only in areas “where zebra mussels are known to occur” may not stop such transfers from occurring

If the project will not take preventive measures to stop invasive species from spreading except where they are known to be present, then there is a real risk that such species will be spread and that risk must be examined. Also, what constitutes a “thorough cleaning” is pretty subjective and apparently up to the operator of the equipment, so there are risks that such procedures may not remove all invasive species that could be contained in equipment and subsequently spread to other waterbodies. The utmost precaution should be taken in preventing the spread of invasive species, since they are a pollutant that spreads exponentially over time, and once established, are nearly impossible to eradicate and incredibly costly to manage.

In addition to the suggestions above for dealing with some of the risks to Nebraska surface waters, we would note that Nebraska has a state-wide volunteer stream monitoring

program, *Adopt a Stream*, that could prove useful in monitoring stream crossings should the pipeline be built. Some other states also have similar programs. Nebraska's agency water quality monitoring program is small and largely dependent upon federal funds, which may or may not continue to be available in the future, so it is likely not a useful tool for monitoring potential impacts during construction or operation. However, Adopt a Stream volunteers, with appropriate on-line or in-person training, might be helpful in such stream monitoring efforts.

Climate Change Implications

An EIS must consider the cumulative impacts of the proposed federal agency action together with past, present and reasonably foreseeable future actions, including all federal and non-federal activities. As we noted above in our comments concerning migratory birds, we believe the Keystone XL pipeline project cannot be considered in isolation from the tar sands oil production in Alberta that the pipeline is designed to serve. The presence of the pipeline, once constructed, will provide capacity that will enable -- and 'sunk costs' of investment that will actually spur -- greatly expanded development of tar sands oil production.

In their comments, groups like the National Wildlife Federation (NWF) have made important arguments about the likely impact of the project in increasing greenhouse gas emissions. We believe those arguments are sound, and believe the State Department failed to adequately assess or address these impacts. The DEIS does not adequately analyze the impacts of expanded U.S. pipeline carrying capacity and refining of heavy crude from the Canadian tar sands. The DEIS does not consider the environmental impacts of tar sands extraction or the indirect end use impacts of increased consumption of tar sands oil. Thus we agree with NWF's view that the DEIS fails to satisfy NEPA's indirect and cumulative analysis requirement.

Lack of Specific Mitigation Commitments

Throughout the DEIS, the language makes it clear in many cases that the project sponsor has provided no guarantee that impacts that should be mitigated will, in fact, be mitigated. For instance, with respect to impacts from electrical distribution or transmission lines, the DEIS states that "[p]otential impacts to wildlife from connected actions are direct mortality due to collision with or electrocution by electrical distribution and transmission lines, and reduced survival and reproduction for ground nesting birds due to the creation of perches for raptors in grassland and shrub land habitats. To reduce these impacts, power providers *may* incorporate standard, safe designs, as outlined in Suggested Practice for Avian Protection on Power Lines (issued by the Avian Power Line Interaction Committee [APLIC] in 2006) into the design of electrical distribution lines in areas of identified avian concern.²⁰"

The use of the permissive word "may," as opposed to must or shall, means that these measures may not be taken in all – or any – instances. As we noted above with respect to electric power lines, and as we discussed with respect to wetland mitigation, there is no assurance that

²⁰ DEIS executive summary, p. 12.

TransCanada will employ the appropriate mitigation discussed in the DEIS, and therefore no basis for the State Department to conclude that there will be no environmental impact.

Lack of Adequate Time to Assess Likely Impacts

As we noted in oral testimony we provided May 6, the State Department provided a very short window for organizations and individuals to read, digest, assess and understand a very long and complex Draft Environmental Impact Statement. That is especially true for small state and local organizations, like ours, that have only a small staff and very limited resources.

We appreciate the Department of State's willingness to extend the current comment deadline to July 2. Without that extension, even the limited comments we provided above would not have been possible. However, there were other issues we wanted to investigate, such as the potential impact on Nebraska fisheries, including rare species like the northern redbelly dace that occurs in the Nebraska Sandhills, but were unable to because of the limited time provided to review the DEIS and craft comments.

We believe further time for the State Department, federal and state agencies, organizations and individuals to assess and understand the many issues raised by the project and the DEIS is certainly warranted.

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