DAKOTA ACCESS PIPELINE PROJECT
SOUTH DAKOTA ADVERSE WEATHER PLAN

Submitted to: The South Dakota Public Utilities Commission

DAKOTA ACCESS, LLC

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1.0 INTRODUCTION

For the purposes of this Adverse Weather Plan (Plan), adverse weather is defined as severe or harsh weather events with a real or perceived potential to impact the construction activities associated with the Dakota Access Pipeline (DAPL) Project (Project) in South Dakota. Adverse weather can manifest in many forms but a project specific risk analysis identified the following major events and the direct and indirect effects which will be carried through the remainder of this document. The purpose of this Plan is to outline DAPL's strategy for forecasting, planning for, and mitigating the effects from each type of event listed below to avoid adverse impacts to construction activities, the general public, or the environment.

- Winter Construction
    - Low temperature/extreme freezing conditions
    - Considerable snow/ice precipitation event
- High Wind Conditions
- Significant Rainfall/Flooding Events

2.0 WEATHER FORECASTING/MODELING

Seasonal weather changes and conditions are fairly well documented for this region and DAPL has incorporated normal seasonal conditions into their baseline construction and mitigation measures. Adverse weather conditions are more difficult to predict with any great certainty well in advance of a specific event. That said, in this day and age there is often significant available data seven to 14 days in advance of most events. DAPL, and their designated contractors, will be monitoring weather conditions and local/regional forecasts throughout the construction period. This information will be used to anticipate upcoming adverse conditions and implement the mitigation measures outlined herein.

The following sites will be the primary forecasting sources utilized by DAPL and their contractors:

1. National Weather Service, Sioux Falls, SD Office- http://www.weather.gov/fsd/
2. The Weather Channel- http://weather.com/
3. KELO Weather- http://www.keloland.com/weather/home

3.0 WINTER CONSTRUCTION

DAPL currently intends to start construction activities, pending receipt of all permits and approvals, during the spring of 2016, allowing adequate time to complete major construction activities outside of the winter season. Regardless, adverse weather such as excessive snow fall or sub-freezing temperatures during the construction period has the potential to impact construction activities should late-season or early-season extreme events occur. Pipeline

construction typically can take place during difficult weather conditions, although construction progress may be slowed. To maintain the environmental objectives of DAPL, the construction mitigation techniques discussed in this section would be implemented as applicable during adverse winter weather conditions in the event that DAPL's normal best management practices (BMPs) are found to be inadequate or they cannot be implemented under the weather conditions.

The winter construction period applies when any of the following conditions occur:

- The ground is frozen and plating of topsoil occurs;
- Equipment slippage from operating on frozen ground results in scalping plant root systems;
- Vehicles slide outside established right-of-way (ROW) clearing limits;
- Topsoil is frozen and cannot be separated from sub-grade material;
- Backfill material freezes to the extent that adequate compaction becomes difficult; or
- Topsoil stockpiles are frozen and cannot be uniformly redistributed across disturbed areas.

In general, the following procedures and considerations will be implemented during frozen soil conditions, defined for DAPL as when frost has penetrated the depth of the boundary between topsoil and subsoil on most agricultural lands.

3.1 Snow and Cold Weather Management

- Snow, when present, may be stored over the trench line prior to excavation to prevent deep frost penetration in areas requiring excavation. Remove this snow to the edge of the ROW prior to topsoil removal and trenching activities.
- Snow not packed or used to prevent deep frost should be graded/pushed off the ROW to ensure sufficient workspace. Gaps in the windrowed snow should be left at obvious drainage crossings.
- Snow may be removed from the travel lane prior to grading to improve driving conditions.
- Consider adding additional temporary workspace (ATWS), as needed on the working side to store snow.
- Soils and snow should not be mixed when clearing access roads.
- Leave gaps in windrowed snow at drainage crossings in access roads.
- Limit snow removal from the spoil side until trenching activities begin.
- Place subsoil on straw layer to minimize soil mixing in the event the spoil pile freezes and is left over winter.
- Remove excess snow that could interfere with trench backfilling operations.

3.2 Soil Handling and Trenching

- Minimize the amount of open trench.
- Limit frozen topsoil stripping activities to equipment capable of accurately stripping variable depths of topsoil.
- Include breaks at drainage crossings in the topsoil or spoil piles left over-winter to allow runoff and snowmelt to be diverted and minimize interference with spring runoff.
- Suspend final clean-up activities and topsoil placement if stored/reserved topsoils are frozen and cannot be uniformly redistributed across the ROW.
- Apply normal temporary ROW stabilization procedures as ground conditions permit.
- Where final clean up and restoration has not been completed, leave the ROW in a significantly roughened condition to reduce potential for erosion during snowmelt.

3.3 Temporary and Permanent Erosion Control Methods

- When soils are frozen, utilize erosion control measures such as trench interceptor excavated across slope, mulching, silt fence, straw bales, sandbags in lieu of slope breakers.
- Install silt fence in frozen soils with "ditch witch" trencher, placing silt fence and wooden stakes (hammered below frost line) in the narrow trench, then backfill and tamp with trench cuttings.
- Anchor hay bales with rebar instead of wooden stakes as needed.
- Install erosion control devices (ECDs) at locations indicated in the erosion control procedures within Section 3.1 of the DAPL Stormwater Pollution Prevention Plan (SWPPP) filed with the Public Utilities Commission. Consider winter/spring rains and snowmelt when sizing, locating, and installing and ECDs.
- Stabilize unreclaimed soil surfaces and remaining soil piles left over winter or for more than 7-21 days (depending on slope).
- As applicable, remove temporary bridges and mats before the contractor leaves the ROW for the winter. Store temporary bridges on the ROW in a secure upland area near the crossing for spring re-installation.
- Engineer equipment crossings remaining in place for spring/summer cleanup to handle maximum predicted spring runoff flows.

3.4 Lowering in and Backfill

- Clear the pipeline trench of snow prior to lowering in, but limit the mixing of snow with spoil material.

- Backfill trench with unfrozen soil as practical. The first several inches of frozen subsoil may have to be removed from the spoil piles to expose unfrozen soil.
- If subsoil on the spoil side is substantially frozen, backfill the trench with frozen subsoil, broken up as practical. Repair settled areas the following spring using the spoil (previously protected with mulch or functional equivalent) that remains.
- Backfilling activities should immediately follow lowering-in activities, to prevent the infill of snow and reduce excessive freezing of spoil piles. Regrade ROW immediately following backfilling.
- The final clean-up schedule will vary, depending on ground conditions and time of construction. The EI should determine if spring thaw reclamation activities are required.

3.5 Hydrostatic Testing/Dewatering

- Carefully consider the locations where hydrostatic testing water and trench water are discharged.
- Depending upon the temperature, filter bags may be subject to freeze and straw bale dewatering structures may need to be replaced daily due to freezing.
- Consider the volume of water discharged and the resulting frozen temporary pond. This area may remain until spring thaw.
- If discharge occurs on agricultural land consult with ROW and landowner to obtain permission for winter discharge of dewatering or hydrostatic test water.

3.6 Post-Construction Monitoring

- Identify ECDs requiring repair, areas of slope instability, and areas where significant levels of erosion are occurring.
- The extent of inspections will be based on precipitation events, runoff amounts, and thawing. When snow melts or the ground thaws, the potential for erosion increases and the frequency of inspections would increase.
- Corrective actions may be deferred until spring where no sensitive resources are impacted, where access is not feasible, or where damage from accessing the site would outweigh the benefits of correcting the issue during the winter.

3.7 Thawing Conditions

- In areas where topsoil and subsoil mixing is not a concern standard operations will be continued, identified, and monitored. In these areas additional reclamation practices (i.e. deep ripping passes) may be required.
- Attempt to work in non-problem areas, such as well drained, dry sites or in shaded and frozen areas until conditions improve.

- Install mats in problem areas until conditions improve.
- Plan construction activities during periods when ground conditions are appropriate (i.e. frozen soils).
- Suspend construction activities in unsuitable areas until appropriate conditions are established or alternatives identified.

4.0 HIGH WIND CONDITIONS

High wind conditions and excessive wind gust, including tornadic events could occur during construction activities. The potential for tornados to be spawned from extreme storm systems exists throughout the pipeline route; typically from May to September. High wind conditions could occur throughout construction activities and will be managed based on site specific conditions. As previously noted, DAPL and their contractors will monitor the weather and try to obtain as much advance notice as possible to allow for implementation of this Plan.

4.1 Tornado Advisory

If a tornado advisory is put in place by the National Weather Service for any County or counties along the DAPL ROW, where active construction is on-going, some or all of the measures below will be implemented.

1. Install caps on all feasible pipe sections to minimize lift potential.
2. Bundle all skids and other minor objects on ROW and tie with #9 wire to secure them to protect the job site as well as the public from flying debris.
3. All road signs will be removed and stored in a secure location.
4. As feasible, any available pipe will be lowered into open ditch lines and pipe will not be left suspended on skids.
5. All mobile construction equipment will be congregated in designated areas along the ROW.
6. Portable equipment or cans will be tied down to the ground, either with rope or #9 wire, or removed and stored in a secure location.
7. Portable toilets will be tied down to the ground, either with rope or #9 wire, or removed and stored in a secure location.
8. As time allows, all crews will gather at the contractor's yard for an evaluation meeting over the situation to assess additional protection measures, evaluate risks, and formulate a plan for post-event activities.
9. A post-event assessment will be made and appropriate landowner or regulatory agency notifications will be made if damages or inadvertent releases occur.

4.2 Wind Erosion/Soil Loss

Any major adverse wind events, and to some degree lesser events, have potential to increase the wind erosion potential along the project ROW. DAPL has incorporated normal BMPs to manage wind erosion into their construction plan and the Environmental and Agricultural Inspectors on the Project will ensure implementation. These normal activities include use of water trucks and use of temporary cover seeding where prolonged exposure will occur. As feasible based on advance notice, stockpiled spoil will be covered, additionally compacted, or returned to any open ditch prior to a major wind event occurring.

5.0 SIGNIFICANT RAINFALL/FLOODING EVENTS

There is potential for significant rainfall events to produce adverse conditions along the Project ROW and cause risks to the general public, private property, and increase the potential for inadvertent releases into environment. While rainfall itself is typically not detrimental, the secondary effects of extreme saturation or flooding have the potential to significantly impact construction activities. The Project risk assessment identified two major secondary effects which are described below, along with the proposed mitigation measures that DAPL will implement.

It should be noted that the Project has a SWPPP as stated in Section 3.0 that will be implemented to handle normal rainfall events during construction. This document, and specifically this section, is not intended to supersede or replace the BMPs outlined in that document.

5.1 Inundation of Equipment

As previously noted, DAPL will be constantly monitoring the federal and local weather forecasts for adverse weather systems with the potential to cause flood events and severe inundation of low lying areas along the Project ROW. Equipment left in the path of flood waters has the potential to be carried downstream and release lubricants or fuels into the environment. As such, DAPL developed the following mitigation measures that will be implemented during construction:

1. All mobile equipment will be removed from the 100 year floodplain in advance of anticipated flood events.
2. Stationary equipment, especially those associated with directional drilling activities, which are located within the 100 year floodplain, will be secured, sealed, and left reasonably free of hydrocarbon residue.
3. Any bridges or timber mats with potential to be carried off ROW or downstream will be secured with cabling or removed from the 100 year floodplain, as feasible.

4. All portable equipment, materials, or fuel storage cans will be removed from the 100 year floodplain and stored.

5.2 Saturated Ground

Adverse weather systems and flooding have the potential to cause saturated soil conditions in areas along the ROW. Saturated soil conditions can lead to rutting, soil compaction, the mixing of topsoil and subsoil, and unsafe working conditions. DAPL will implement the following conditions, which are similar to working in areas with rapidly thawing snow.

1. DAPL will attempt to work in well drained or dry areas along the ROW until conditions improve.
2. DAPL will install and work off of timber mats until conditions improve if topsoil and subsoil mixing is likely.
3. DAPL will conduct compaction tests along the ROW in areas where saturated soil conditions were documented during construction and the potential exists for negative impacts.
4. In areas where rutting occurs the ruts will be regraded prior to soil replacement.
5. Mechanized decompaction will be implemented where necessary to allow for successful revegetation or for normal landuse practices to resume.
6. Final restoration work will not occur during saturated soil conditions, except in areas that normally exhibit these conditions (i.e. wetlands).