

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION BY)
TRANSCANADA KEYSTONE PIPELINE, LP) AMENDED FINAL DECISION
FOR A PERMIT UNDER THE SOUTH DAKOTA) AND ORDER; NOTICE OF
ENERGY CONVERSION AND TRANSMISSION) ENTRY
FACILITIES ACT TO CONSTRUCT THE)
KEYSTONE XL PROJECT) HP09-001

PROCEDURAL HISTORY

On March 12, 2009, TransCanada Keystone Pipeline, LP ("Applicant" or "Keystone") filed an application with the South Dakota Public Utilities Commission ("Commission") for a permit as required by SDCL Chapter 49-41B to construct the South Dakota portion of the Keystone XL Pipeline ("Project")¹. The originally filed application described the Project as proposed to be an approximately 1,702 mile pipeline for transporting crude oil from Alberta, Canada, to the greater Houston area in Texas, with approximately 1,375 miles to be located in the United States and 313 miles located in South Dakota.

On April 6, 2009, the Commission issued its Notice of Application; Order for and Notice of Public Input Hearings; and Notice of Opportunity to Apply for Party Status. The notice provided that pursuant to SDCL 49-41 B-17 and ARSD 20:10:22:40, each municipality, county, and governmental agency in the area where the facility is proposed to be sited; any nonprofit organization, formed in whole or in part to promote conservation or natural beauty, to protect the environment, personal health or other biological values, to preserve historical sites, to promote consumer interests, to represent commercial and industrial groups, or to promote the orderly development of the area in which the facility is to be sited; or any interested person, may be granted party status in this proceeding by making written application to the Commission on or before May 11, 2009.

Pursuant to SDCL 49-41B-15 and 49-41B-16, and its Notice of Application; Order for and Notice of Public Hearings and Notice of Opportunity to Apply for Party Status, the Commission held public hearings on Keystone's application as follows: Monday, April 27, 2009, 12:00 noon CDT at Winner Community Playhouse, 7th and Leahy Boulevard, Winner, SD, at which 26 persons presented comments or questions; Monday, April 27, 2009, 7:00 p.m. MDT at Fine Arts School, 330 Scottie Avenue, Philip, SD, at which 17 persons presented comments or questions; and Tuesday, April 28, 2009, 6:00 p.m. MDT at Harding County Recreation Center, 204 Hodge Street, Buffalo, SD, at which 16 persons presented comments or questions. The purpose of the public input hearings was to hear public comment regarding Keystone's application. At the public input hearings, Keystone presented a brief description of the project, following which interested persons appeared and presented their views, comments and questions regarding the application.

On April 29, 2009, Mary Jasper (Jasper) filed an Application for Party Status. On May 4, 2009, Paul F. Seamans (Seamans) filed an Application for Party Status. On May 5, 2009, Darrell Iversen (D. Iversen) filed an Application for Party Status. On May 8, 2009, the City of Colome (Colome) and Glen Iversen (G. Iversen) filed Applications for Party Status. On May 11, 2009, Jacqueline Limpert (Limpert), John H. Harter (Harter), Zona Vig (Vig), Tripp County Water User District (TCWUD), Dakota Rural Action (DRA) and David Niemi (David Niemi) filed Applications for

¹The Commission's Orders in the case and all other filings and documents in the record are available on the Commission's web page for Docket HP09-001 at: <http://puc.sd.gov/dockets/hydrocarbonpipeline/2009/hp09-001.aspx>

Party Status. On May 11, 2009, the Commission received a Motion for Extension of Time to File Application for Party Status from DRA requesting that the intervention deadline be extended to June 10, 2009. On May 12, 2009, Debra Niemi (Debra Niemi) and Lon Lyman (Lyman) filed Applications for Party Status. On May 15, 2009, the Commission received a Response to Motion to Extend Time from DRA and a Motion to Establish a Procedural Schedule from the Commission's Staff ("Staff").

At its regularly scheduled meeting of May 19, 2009, the Commission voted unanimously to grant party status to Jasper, Seamans, D. Iversen, Colome, G. Iversen, Limpert, Harter, Vig, TCWUD, DRA, David Niemi, Debra Niemi and Lyman. The Commission also voted to deny the Motion for Extension of Time to File Application for Party Status, and in the alternative, the Commission extended the intervention deadline to May 31, 2009. On May 29, 2009, Ruth M. Iversen (R. Iversen) and Martin R. Lueck (Lueck) filed Applications for Party Status. At its regularly scheduled meeting of June 9, 2009, the Commission voted unanimously to grant the Motion to Establish a Procedural Schedule and granted intervention to R. Iversen and Lueck.

On August 26, 2009, the Commission received a revised application from Keystone. On September 3, 2009, the Commission received a Motion for Extension of Time to Submit Testimony from DRA. At its regularly scheduled meeting of September 8, 2009, the Commission voted unanimously to grant the Motion for Extension of Time to Submit Testimony to extend DRA's time for filing and serving testimony until September 22, 2009.

On September 18, 2009, Keystone filed Applicant's Response to Dakota Rural Action's Request for Further Discovery. On September 21, 2009, DRA filed a Motion to Compel Responses and Production of Documents Addressed to TransCanada Keystone Pipeline, LP Propounded by Dakota Rural Action. At an ad hoc meeting on September 23, 2009, the Commission considered DRA's Motion to Compel and on October 2, 2009, issued its Order Granting in Part and Denying in Part Motion to Compel Discovery. By letter filed on September 29, 2009, Chairman Johnson requested reconsideration of the Commission's action with respect to DRA's Request 6 regarding Keystone documents pertaining to development of its Emergency Response Plan for the Project. At its regularly scheduled meeting on October 6, 2009, the Commission voted two to one, with Commissioner Hanson dissenting, to require Keystone to produce to DRA via email the References for the Preparation of Emergency Response Manuals before the close of business on October 6, 2009, that DRA communicate which documents on the list it wished Keystone to produce on or before the close of business on October 8, 2009, and that Keystone produce such documents to DRA on or before October 15, 2009.

On October 2, 2009, Staff filed a letter requesting the Commission to render a decision as to whether the hearing would proceed as scheduled commencing on November 2, 2009. Staff's letter stated that rescheduling the hearing would result in significant scheduling complications for Staff's expert witnesses whose scheduling and travel arrangements had been made months earlier based on the Commission's Order Setting Procedural Schedule issued on June 30, 2009. At its regular meeting on October 6, 2009, the Commission considered Staff's request. At the meeting, all parties agreed that the hearing could proceed on the scheduled dates. DRA requested that its date for submission of pre-filed testimony be extended from October 14, 2009, until October 22, if possible, or at least until October 20, 2009. After discussion, the parties agreed on an extension for DRA's pre-filed testimony until October 20, 2009, with Applicant's rebuttal to be filed by October 27, 2009. The Commission voted unanimously to approve such dates and issued its Order Setting Amended Procedural Schedule on October 8, 2009.

On October 15, 2009, the Commission issued its Order for and Notice of Hearing setting the matter for hearing on November 2-6, 2009, and its Order for and Notice of Public Hearing for an

additional informal public input hearing to be held in Pierre on November 3, 2009, commencing at 7:00 p.m. CST. On October 19, 2009, DRA requested that the time for commencement of the public hearing be changed from 7:00 p.m. CST to 6:00 p.m. CST to better accommodate the schedules of interested persons. On October 21, 2009, the Commission issued an Amended Order for and Notice of Public Hearing amending the start time for the public hearing to 6:00 p.m. CST.

On October 19, 2009, Keystone filed a second revised application ("Application") containing minor additions and amendments reflecting refinements to the route and facility locations and the most recent environmental and other planning evaluations.

In accordance with the scheduling and procedural orders in this case, Applicant, Staff and Intervenor David and Debra Niemi filed pre-filed testimony. The hearing was held as scheduled on November 2-4, 2009, at which Applicant, DRA and Staff appeared and participated. The informal hearing was held as scheduled on the evening of November 3, 2009, at which 23 persons presented comments and/or questions. A combined total of 326 persons attended the public input hearings in Winner, Phillip, Buffalo and Pierre. As of February 26, 2009, the Commission had received 252 written comments regarding this matter from the public.

On December 31, 2009, the Commission issued its Amended Order Establishing Briefing Schedule setting the following briefing schedule: (i) initial briefs and proposed findings of fact and conclusions of law from all parties wishing to submit them due by January 20, 2010; and (ii) reply briefs and objections and revisions to proposed findings of fact and conclusions of law due from all parties wishing to submit them on or before February 2, 2010.

On January 13, 2009, Intervenor David Niemi filed a letter with the Commission requesting and recommending a series of conditions to be included in the order approving the permit, if granted. On January 20, 2010, initial briefs were filed by the Applicant and Staff. On January 20, 2010, Applicant also filed and served proposed findings of fact and conclusions of law. On January 21, 2010, DRA filed an initial brief and Motion to Accept Late-Filed Brief. On January 21 and 26, 2010, respectively, Keystone and Staff filed letters of no objection to acceptance of DRA's late-filed initial brief. On February 2, 2010, reply briefs were filed and served by Applicant, DRA and Staff, and Keystone filed Applicant's Response to David Niemi's Letter filed on January 13, 2010.

At an ad hoc meeting on February, 18, 2010, after separately considering each of a set of draft conditions prepared by Commission Counsel from inputs from the individual Commissioners and a number of Commissioner motions to amend the draft conditions, the Commission voted unanimously to approve conditions to which a permit to construct the Project would be subject, if granted, and to grant a permit to Keystone to construct the Project, subject to the approved conditions.

On April 14, 2010, Keystone filed Applicant's Motion for Limited Reconsideration of Certain Permit Conditions ("Motion"). On April 19, 2010, intervenors David Niemi and Seamans filed responses to the Motion. On April 19, 2010, Peter Larson ("Larson") filed two comments responsive to the Motion. On April 27, 2010, Keystone filed Applicant's Reply Brief In Support of Motion for Limited Reconsideration responding to the responses and comments filed by Niemi, Seamans and Larson. On April 28, 2010, Staff filed a response to the Motion. On April 29, 2010, DRA filed the Answer of Dakota Rural Action in Opposition to Applicant's Motion for Limited Reconsideration of Certain Permit Conditions.

At its regularly scheduled meeting on May 4, 2010, the Commission considered the Motion and the responses and comments filed by the parties and Larson. Applicant, Staff, intervenor John

H. Harter, DRA and Larson appeared and participated in the hearing on the Motion. After an extensive discussion among the Commission and participants, the Commission made rulings on the specific requests in the Motion and voted to grant the Motion in part and deny in part and amend certain of the Conditions as set forth in the Commission's Order Granting in Part Motion to Reconsider and Amending Certain Conditions In Final Decision And Order, which was issued by the Commission on June 29, 2010.

Having considered the evidence of record, applicable law and the arguments of the parties, the Commission makes the following Findings of Fact, Conclusions of Law and Decision:

FINDINGS OF FACT

Parties

1. The permit applicant is TransCanada Keystone Pipeline, LP, a limited partnership, organized under the laws of the State of Delaware, and owned by affiliates of TransCanada Corporation ("TransCanada"), a Canadian public company organized under the laws of Canada. Ex TC-1, 1.5, p. 4.

2. On May 19, 2009, the Commission unanimously voted to grant party status to all persons that had requested party status prior to the commencement of the meeting. On June 9, 2009, the Commission unanimously voted to grant party status to all persons that had requested party status after the commencement of the meeting on May 19, 2009, through the intervention deadline of May 31, 2009. Fifteen persons intervened, including: Mary Jasper, Paul F. Seamans, Darrell Iversen, the City of Colome, Glen Iversen, Jacqueline Limpert, John H. Harter, Zona Vig, Tripp County Water User District ("TCWUD"), Dakota Rural Action, David Niemi, Debra Niemi, Ruth M. Iversen, Martin R. Lueck, and Lon Lyman. Minutes of May 19, 2009, and June 9, 2009, Commission Meetings; Applications for Party Status.

3. The Staff also participated in the case as a full party.

Procedural Findings

4. The application was signed on behalf of the Applicant on February 26, 2009, in Calgary, Alberta, Canada, and was filed with the Commission on March 12, 2009. Ex TC -1, 9.0, p. 116.

5. The Commission issued the following notices and orders in the case as described in greater detail in the Procedural History above, which is hereby incorporated by reference in these Findings of Fact and Conclusions of Law:

- Order of Assessment of Filing Fee
- Notice of Application; Order for and Notice of Public Input Hearings; and Notice of Opportunity to Apply for Party Status
- Order Granting Party Status; Order Denying Motion for Extension of Time to File Application for Party Status; Order Extending Intervention Deadline
- Order Granting Motion to Establish Procedural Schedule and Order Granting Party Status
- Order Setting Procedural Schedule
- Order Granting Motion for Extension of Time to Submit Testimony

- Order Granting in Part and Denying in Part Motion to Compel Discovery
- Order Amending Order Granting in Part and Denying in Part Motion to Compel Discovery
- Order Setting Amended Procedural Schedule
- Order for and Notice of Hearing
- Order for and Notice of Public Hearing
- Amended Order for and Notice of Public Hearing
- Order Establishing Briefing Schedule
- Amended Order Establishing Briefing Schedule
- Order Granting in Part Motion to Reconsider and Amending Certain Conditions In Final Decision And Order

6. Pursuant to SDCL 49-41B-15 and 49-41B-16 and its Notice of Application; Order for and Notice of Public Hearings; and Notice of Opportunity to Apply for Party Status, the Commission held public hearings on Keystone's application at the following times and places (see Public Hearing Transcripts):

- Monday, April 27, 2009, 12:00 noon CDT at Winner Community Playhouse, 7th and Leahy Boulevard, Winner, SD
- Monday, April 27, 2009, 7:00 p.m. MDT at Fine Arts School, 330 Scottie Avenue, Philip, SD
- Tuesday, April 28, 2009, 6:00 p.m. MDT at Harding County Recreation Center, 204 Hodge Street, Buffalo, SD.

7. The purpose of the public hearings was to afford an opportunity for interested persons to present their views and comments to the Commission concerning the Application. At the hearings, Keystone presented a brief description of the project after which interested persons presented their views, comments and questions regarding the application. Public Hearing Transcripts.

8. The following testimony was prefiled in advance of the formal evidentiary hearing held November 2, 3 and 4, 2009, in Room 414, State Capitol, Pierre, South Dakota:

- A. Applicant's March 12, 2009, Direct Testimony.
 - Robert Jones
 - John Phillips
 - Richard Gale
 - Jon Schmidt
 - Meera Kothari
 - John Hayes
 - Donald Scott
 - Heidi Tillquist
 - Tom Oster
- B. Supplemental Direct Testimony of August 31, 2009.
 - John Phillips
- C. Intervenors' Direct Testimony of September 11, 2009.
 - David Niemi
 - Debra Niemi

- D. **Staff's September 25, 2009, Direct Testimony.**
- Kim McIntosh
 - Brian Walsh
 - Derric Iles
 - Tom Kirschenmann
 - Paige Hoskinson Olson
 - Michael Kenyon
 - Ross Hargrove
 - Patrick Robblee
 - James Arndt
 - William Walsh
 - Jenny Hudson
 - David Schramm
 - William Mampre
 - Michael K. Madden
 - Tim Binder
- E. **Applicant's Updated Direct and Rebuttal Testimony.**
- Robert Jones Updated Direct (10/23/09)
 - Jon Schmidt Updated Direct and Rebuttal (10/19/09)
 - Meera Kothari Updated Direct and Rebuttal (10/19/09)
 - Donald M. Scott Updated Direct (10/19/09)
 - John W. Hayes Updated Direct (10/19/09)
 - Heidi Tillquist Updated Direct (10/20/09)
 - Steve Hicks Direct and Rebuttal (10/19/09)
- F. **Staff's Supplemental Testimony of October 29, 2009.**
- William Walsh
 - William Mampre
 - Ross Hargrove

9. As provided for in the Commission's October 21, 2009, Amended Order for and Notice of Public Hearing, the Commission held a public input hearing in Room 414 of the State Capitol beginning at 6:00 p.m. on November 3, 2009, at which 23 members of the public presented comments and/or questions. Transcript of November 3, 2009 Public Input Hearing.

Applicable Statutes and Regulations

10. The following South Dakota statutes are applicable: SDCL 49-41B-1 through 49-41B-2.1, 49-41B-4, 49-41B-11 through 49-41B-19, 49-41B-21, 49-41B-22, 49-41B-24, 49-41B-26 through 49-41B-38 and applicable provisions of SDCL Chs. 1-26 and 15-6.

11. The following South Dakota administrative rules are applicable: ARSD Chapter 20:10:01, ARSD 20:10:22:01 through ARSD 20:10:22:25 and ARSD 20:10:22:36 through ARSD 20:10:22:40.

12. Pursuant to SDCL 49-41B-22, the Applicant for a facility construction permit has the burden of proof to establish that:

- (1) The proposed facility will comply with all applicable laws and rules;

- (2) The facility will not pose a threat of serious injury to the environment nor to the social and economic condition of inhabitants or expected inhabitants in the siting area;
- (3) The facility will not substantially impair the health, safety or welfare of the inhabitants; and
- (4) The facility will not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.

The Project

13. The Project will be owned, managed and operated by the Applicant, TransCanada Keystone Pipeline, LP. Ex TC-1, 1.5 and 1.7, p. 4.

14. The purpose of the Project is to transport incremental crude oil production from the Western Canadian Sedimentary Basin ("WCSB") to meet growing demand by refineries and markets in the United States ("U.S."). This supply will serve to replace U.S. reliance on less stable and less reliable sources of offshore crude oil. Ex TC-1, 1.1, p. 1; Ex TC-1, 3.0 p. 23; Ex TC-1, 3.4 p. 24.

15. The Project will consist of three segments: the Steele City Segment, the Gulf Coast Segment, and the Houston Lateral. From north to south, the Steele City Segment extends from Hardisty, Alberta, Canada, southeast to Steele City, Nebraska. The Gulf Coast Segment extends from Cushing, Oklahoma south to Nederland, in Jefferson County, Texas. The Houston Lateral extends from the Gulf Coast Segment in Liberty County, Texas southwest to Moore Junction, Harris County, Texas. It will interconnect with the northern and southern termini of the previously approved 298-mile-long, 36-inch-diameter Keystone Cushing Extension segment of the Keystone Pipeline Project. Ex TC-1, 1.2, p. 1. Initially, the pipeline would have a nominal capacity to transport 700,000 barrels per day ("bpd"). Keystone could add additional pumping capacity to expand the nominal capacity to 900,000 bpd. Ex TC-1, 2.1.2, p. 8.

16. The Project is an approximately 1,707 mile pipeline with about 1,380, miles in the United States. The South Dakota portion of the pipeline will be approximately 314 miles in length and will extend from the Montana border in Harding County to the Nebraska border in Tripp County. The Project is proposed to cross the South Dakota counties of Harding, Butte, Perkins, Meade, Pennington, Haakon, Jones, Lyman and Tripp. Ex TC-1, 1.2 and 2.1.1, pp. 1 and 8. Detailed route maps are presented in Ex TC-1, Exhibits A and C, as updated in Ex TC-14.

17. Construction of the Project is proposed to commence in May of 2011 and be completed in 2012. Construction in South Dakota will be conducted in five spreads, generally proceeding in a north to south direction. The Applicant expects to place the Project in service in 2012. This in-service date is consistent with the requirements of the Applicant's shippers who have made the contractual commitments that underpin the viability and need for the project. Ex TC-1, 1.4, pp. 1 and 4; TR 26.

18. The pipeline in South Dakota will extend from milepost 282.5 to milepost 597, approximately 314 miles. The pipeline will have a 36-inch nominal diameter and be constructed using API 5L X70 or X80 high-strength steel. An external fusion bonded epoxy ("FBE") coating will be applied to the pipeline and all buried facilities to protect against corrosion. Cathodic protection will be provided by impressed current. The pipeline will have batching capabilities and will be able to transport products ranging from light crude oil to heavy crude oil. Ex TC-1, 2.2, 2.2.1, 6.5.2, pp. 8-9, 97-98; Ex TC-8, ¶ 26.

19. The pipeline will operate at a maximum operating pressure of 1,440 psig. For location specific low elevation segments close to the discharge of pump stations, the maximum operating pressure will be 1,600 psig. Pipe associated with these segments of 1,600 psig MOP are excluded from the Special Permit application and will have a design factor of 0.72 and pipe wall thickness of 0.572 inch (X-70) or 0.500 inch (X-80). All other segments in South Dakota will have a MOP of 1,440 psig. Ex TC-1, 2.2.1, p. 9.

20. The Project will have seven pump stations in South Dakota, located in Harding (2), Meade, Haakon, Jones and Tripp (2) Counties. TC-1, 2.2.2, p. 10. The pump stations will be electrically driven. Power lines required for providing power to pump stations will be permitted and constructed by local power providers, not by Keystone. Initially, three pumps will be installed at each station to meet the nominal design flow rate of 700,000 bpd. If future demand warrants, pumps may be added to the proposed pump stations for a total of up to five pumps per station, increasing nominal throughput to 900,000 bpd. No additional pump stations will be required to be constructed for this additional throughput. No tank facilities will be constructed in South Dakota. Ex TC-1, 2.1.2, p.8. Sixteen mainline valves will be located in South Dakota. Seven of these valves will be remotely controlled, in order to have the capability to isolate sections of line rapidly in the event of an emergency to minimize impacts or for operational or maintenance reasons. Ex TC-1, 2.2.3, pp. 10-11.

21. The pipeline will be constructed within a 110-foot wide corridor, consisting of a temporary 60-foot wide construction right-of-way and a 50-foot permanent right-of-way. Additional workspace will be required for stream, road, and railroad crossings, as well as hilly terrain and other features. The Applicant committed to reducing the construction right-of-way to 85 feet in certain wetlands to minimize impacts. Ex TC-1, 2.2.4, pp. 11-12; Ex TC-7, ¶ 20. FERC guidelines provide that the wetland construction right-of-way should be limited to 75 feet except where conditions do not permit, and Staff witness Hargrove's Construction, Mitigation and Reclamation Plan Review states that industry practice is to reduce the typical construction right-of-way width to 75 feet in non-cultivated wetlands, although exceptions are sometimes made for larger-diameter pipelines or where warranted due to site-specific conditions. Ex S-5, p. 2 and Attachment 2, 6.2; TR 335, 353. The Commission finds that the construction right-of-way should be limited to 75 feet, except where site-specific conditions require use of Keystone's proposed 85-foot right-of-way or where special circumstances are present, and the Commission accordingly adopts Condition 22(a), subject to the special circumstance provisions of Condition 30.

22. The Project will be designed, constructed, tested, and operated in accordance with all applicable requirements, including the U.S. Department of Transportation, Pipeline Hazardous Materials and Safety Administration (PHMSA) regulations set forth at 49 CFR Part 195, as modified by the Special Permit requested for the Project from PHMSA (see Finding 71). These federal regulations are intended to ensure adequate protection for the public and the environment and to prevent crude oil pipeline accidents and failures. Ex TC-1, 2.2, p. 8.

23. The current estimated cost of the Keystone Project in South Dakota is \$921.4 million. Ex TC-1, 1.3, p. 1.

Demand for the Facility

24. The transport of additional crude oil production from the WCSB is necessary to meet growing demand by refineries and markets in the U.S. The need for the project is dictated by a number of factors, including increasing WCSB crude oil supply combined with insufficient export pipeline capacity; increasing crude oil demand in the U.S. and decreasing domestic crude supply;

the opportunity to reduce U.S. dependence on foreign off-shore oil through increased access to stable, secure Canadian crude oil supplies; and binding shipper commitments to utilize the Keystone Pipeline Project. Ex TC-1, 3.0, p. 23.

25. According to the U.S. Energy Information Administration ("EIA"), U.S. demand for petroleum products has increased by over 11 percent or 2,000,000 bpd over the past 10 years and is expected to increase further. The EIA estimates that total U.S. petroleum consumption will increase by approximately 10 million bpd over the next 10 years, representing average demand growth of about 100,000 bpd per year (EIA Annual Energy Outlook 2008). Ex TC-1, 3.2, pp. 23-24.

26. At the same time, domestic U.S. crude oil supplies continue to decline. For example, over the past 10 years, domestic crude production in the United States has declined at an average rate of about 135,000 bpd per year, or 2% per year. Ex TC-1, 3.3, p. 24. Crude and refined petroleum product imports into the U.S. have increased by over 3.3 million bpd over the past 10 years. In 2007, the U.S. imported over 13.4 million bpd of crude oil and petroleum products or over 60 percent of total U.S. petroleum product consumption. Canada is currently the largest supplier of imported crude oil and refined products to the U.S., supplying over 2.4 million bpd in 2007, representing over 11 percent of total U.S. petroleum product consumption (EIA 2007). Ex TC-1, 3.4, p. 24.

27. The Project will provide an opportunity for U.S. refiners in Petroleum Administration for Defense District III, the Gulf Coast region, to further diversify supply away from traditional offshore foreign crude supply and to obtain direct access to secure and growing Canadian crude supplies. Access to additional Canadian crude supply will also provide an opportunity for the U.S. to offset annual declines in domestic crude production and, specifically, to decrease its dependence on other foreign crude oil suppliers, such as Mexico and Venezuela, the top two heavy crude oil exporters into the U.S. Gulf Coast. Ex TC-1, 3.4, p. 24.

28. Reliable and safe transportation of crude oil will help ensure that U.S. energy needs are not subject to unstable political events. Established crude oil reserves in the WCSB are estimated at 179 billion barrels (CAPP 2008). Over 97 percent of WCSB crude oil supply is sourced from Canada's vast oil sands reserves located in northern Alberta. The Alberta Energy and Utilities Board estimates there are 175 billion barrels of established reserves recoverable from Canada's oil sands. Alberta has the second largest crude oil reserves in the world, second only to Saudi Arabia. Ex TC-1, 3.1, p. 23.

29. Shippers have already committed to long-term binding contracts, enabling Keystone to proceed with regulatory applications and construction of the pipeline once all regulatory, environmental, and other approvals are received. These long-term binding shipper commitments demonstrate a material endorsement of support for the Project, its economics, proposed route, and target market, as well as the need for additional pipeline capacity and access to Canadian crude supplies. Ex TC-1, 3.5, p. 24.

Environmental

30. In order to construct the Project, Keystone is required to obtain a Presidential Permit from the U.S. Department of State ("DOS") authorizing the construction of facilities across the international border. Ex TC-1, 1.8, pp. 4-5; 5.1, p. 30.

31. Because Keystone is required to obtain a Presidential Permit from the DOS, the National Environmental Policy Act requires the DOS to prepare an Environmental Impact Statement

("EIS"). Ex TC-1, 1.8, pp. 4-5; Ex TC-4; Ex S-3. In support of its Presidential Permit application, Keystone has submitted studies and other environmental information to the DOS. Ex TC-1, 1.8, pp. 4-5; 5.1, p. 30.

32. Table 6 to the Application summarizes the environmental impacts that Keystone's analysis indicates could be expected to remain after its Construction Mitigation and Reclamation Plan is implemented. Ex TC-1, pp. 31-37.

33. The pipeline will cross the Unglaciaded Missouri Plateau. This physiographic province is characterized by a dissected plateau where river channels have incised into the landscape. Elevations range from just over 3,000 feet above mean sea level in the northwestern part of the state to around 1,800 feet above mean sea level in the White River valley. The major river valleys traversed include the Little Missouri River, Cheyenne River, and White River. Ex TC-1, 5.3.1, p. 30; Ex TC-4, ¶15. Exhibit A to the Application includes soil type maps and aerial photograph maps of the Keystone pipeline route in South Dakota that indicate topography, land uses, project mileposts and Section, Township, Range location descriptors. Ex TC-1, Exhibit A. Updated versions of these maps were received in evidence as Exhibit TC-14.

34. The surficial geologic deposits along the proposed route are primarily composed of Quaternary alluvium, colluvium, alluvial terraces, and eolian deposits (sand dunes). The alluvium primarily occurs in modern stream channels and floodplains, but also is present in older river terraces. The bedrock geology consists of Upper Cretaceous and Tertiary rocks. The Upper Cretaceous units include the Pierre Shale, Fox Hills Formation, and the Hell Creek Formation. The Ogallala Group, present in the far southern portion of the Project in South Dakota, was deposited as a result of uplift and erosion of the Rocky Mountains. Material that was eroded from the mountains was transported to the east by streams and wind. Ex TC-1, 5.3.2, p. 37.

35. Sand, gravel, crushed stone, oil, natural gas, coal and metallic ore resources are mineral resources existing along the proposed route. The route passes through the Buffalo Field in Harding County. Construction will have very minor and short-term impact on current mineral extraction activities due to the temporary and localized nature of pipeline construction activities. Several oil and gas wells were identified within or close to the Project construction ROW. Prior to construction, Keystone will identify the exact locations of active, shut-in, and abandoned wells and any associated underground pipelines in the construction ROW and take appropriate precautions to protect the integrity of such facilities. Ex TC-1, 5.3.3, pp. 38-39.

36. Soil maps for the route are provided in Exhibit A to Ex TC-1. In the northwestern portions of South Dakota, the soils are shallow to very deep, generally well drained, and loamy or clayey. Soils such as the Assiniboine series formed in fluvial deposits that occur on fans, terraces, and till plains. Soils such as the Cabbart, Delridge, and Blackhall series formed in residuum on hills and plains. Fertile soils and smooth topography dominate Meade County. The soils generally are shallow to very deep, somewhat excessively drained to moderately well drained, and loamy or clayey. Cretaceous Pierre Shale underlies almost all of Haakon, Jones, and portions of Tripp counties. This shale weathers to smectitic clays. These clays shrink as they dry and swell as they get wet, causing significant problems for road and structural foundations. From central Tripp County to the Nebraska state line, soils typically are derived from shale and clays on the flatter to moderately sloping, eroded tablelands. In southern Tripp County, the route also crosses deep, sandy deposits on which the Doger, Dunday, and Valentine soils formed. These are dry, rapidly permeable soils. Topsoil layers are thin and droughty, and wind erosion and blowouts are a common hazard. Ex TC-1, 5.3.4, p. 40.

37. Grading and excavating for the proposed pipeline and ancillary facilities will disturb a variety of agricultural, rangeland, wetland and forestland soils. Prime farmland soils may be altered temporarily following construction due to short-term impact such as soil compaction from equipment traffic, excavation and handling. However, potential impacts to soils will be minimized or mitigated by the soil protection measures identified in the Construction Mitigation and Reclamation Plan (CMR Plan) to the extent such measures are fully implemented. The measures include procedures for segregating and replacing top soil, trench backfilling, relieving areas compacted by heavy equipment, removing surface rock fragments and implementing water and wind erosion control practices. Ex TC-1, 5.3.4, p. 41; TC-1 Ex. B.

38. To accommodate potential discoveries of contaminated soils, Keystone made a commitment in the Application to develop, in consultation with relevant agencies, procedures for the handling and disposal of unanticipated contaminated soil discovered during construction. These procedures will be added to the CMR Plan. If hydrocarbon contaminated soils are encountered during trench excavation, the appropriate federal and state agencies will be contacted immediately. A remediation plan of action will be developed in consultation with that agency. Depending on the level of contamination found, affected soil may be replaced in the trench or removed to an approved landfill for disposal. Ex TC-1, 5.3.4, p. 42.

39. The USGS ground motion hazard mapping indicates that potential ground motion hazard in the Project area is low. South Dakota historically has had little earthquake activity. No ground subsidence or karst hazards are present in the vicinity of the route. Ex TC-1, 5.3.6, p. 43.

40. Cretaceous and Tertiary rocks in the Missouri River Plateau have high clay content and upon weathering can be susceptible to instability in the form of slumps and earth flows. Landslide potential is enhanced on steeper slopes. Formations that are especially susceptible are the Cretaceous Hell Creek and Pierre Shale as well as shales in the Tertiary Fort Union Formation mainly on river banks and steep slopes. These units can contain appreciable amounts of bentonite, a rock made up of montmorillonite clay that has deleterious properties when exposed to moisture. The bentonite layers in the Pierre Shale may present hazards associated with swelling clays. These formations are considered to have "high swelling potential." Bentonite has the property whereby when wet, it expands significantly in volume. When bentonite layers are exposed to successive cycles of wetting and drying, they swell and shrink, and the soil fluctuates in volume and strength. Ex TC-1, 5.3.4, pp. 43.

41. Fifteen perennial streams and rivers, 129 intermittent streams, 206 ephemeral streams and seven man-made ponds will be crossed during construction of the Project in South Dakota. Keystone will utilize horizontal directional drilling ("HDD") to cross the Little Missouri, Cheyenne and White River crossings. Keystone intends to use open-cut trenching at the other perennial streams and intermittent water bodies. The open cut wet method can cause the following impacts: loss of in-stream habitat through direct disturbance, loss of bank cover, disruption of fish movement, direct disturbance to spawning, water quality effects and sedimentation effects. Alternative techniques include open cut dry flume, open cut dam-and-pump and horizontal directional drilling. Exhibit C to the Application contains a listing of all water body crossings and preliminary site-specific crossing plans for the HDD sites. Ex TC-14. Permitting of water body crossings, which is currently underway, will ultimately determine the construction method to be utilized. Keystone committed to mitigate water crossing impacts through implementation of procedures outlined in the CMR Plan. Ex TC-1, 5.4.1, pp. 45-46.

42. The pipeline will be buried at an adequate depth under channels, adjacent flood plains and flood protection levees to avoid pipe exposure caused by channel degradation and lateral scour. Determination of the pipeline burial depth will be based on site-specific channel and hydrologic investigations where deemed necessary. Ex TC-1, 5.4.1, p. 46.

43. Although improvements in pipeline safety have been made, the risk of a leak cannot be eliminated. Keystone's environmental consulting firm for the Project, AECOM, estimated the chances of and the environmental consequences of a leak or spill through a risk assessment. Ex TC-1, 6.5.2, pp. 96-102; Table 6; TC-12, 10, 24.

44. Keystone's expert estimated the chance of a leak from the Project to be not more than one spill in 7,400 years for any given mile of pipe. TR 128-132, 136-137; Ex TC-12, ¶10; TC-1, 5.5.1, p. 54; 6.1.2.1, p. 87. The frequency calculation found the chance to be no more than one release in 24 years in South Dakota. TR 137.

45. Keystone's spill frequency and volume estimates are conservative by design, overestimating the risk since the intent is to use the assessment for planning purposes. The risk assessment overestimates the probable size of a spill to ensure conservatism in emergency response and other planning objectives. If a spill were to occur on the Keystone pipeline, PHMSA data indicate that the spill is likely to be three barrels or less. Ex TC-12, ¶10; TR 128-132, 137; TC-1, 6.1.2.1, p. 87.

46. Except for a few miles in the far southern reach of the Project in southern Tripp County which will be located over the permeable Sand Hills and shallow High Plains Aquifer, the Project route in South Dakota does not cross geologic units that are traditionally considered as aquifers. TR 440. Where aquifers are present, at most locations they are more than 50 feet deep, which significantly reduces the chance of contamination reaching the aquifer. Additionally, the majority of the pipeline is underlain by low permeability confining materials (e.g., clays, shales) that inhibit the infiltration of released crude oil into aquifers. TR 158; Ex TC-12, ¶13, EX TC-1, 5.4.2, pp. 47-48. Keystone consulted with the DENR during the routing process to identify and subsequently avoid sensitive aquifers and recharge areas, e.g., Source Water Protection Areas (SWPAs) in order to minimize risk to important public groundwater resources, and no groundwater SWPAs are crossed by the Project in South Dakota. EX TC-1, 5.4.2, pp. 47-48. Except for the Sand Hills area, no evidence was offered of the existence of a shallow aquifer (i.e. less than 50 feet in depth) crossed by the Project.

47. Because of their high solubility and their very low Maximum Contaminant Levels ("MCLs"), the constituents of primary concern in petroleum, including crude oil, are benzene, toluene, ethyl benzene and xylene. These constituents are commonly referred to as BTEX. TR 142, 146. The crude oil to be shipped through the Project will be similar in composition to other crude oils produced throughout the world and currently shipped in the United States. TR 155-56. The BTEX concentration in the crude oil to be shipped through the Project is close to 1 % to 1.5%. TR 151.

48. The Project will pass through areas in Tripp County where shallow and surficial aquifers exist. Since the pipeline will be buried at a shallow depth, it is unlikely that the construction or operation of the pipeline will alter the yield from any aquifers that are used for drinking water purposes. Keystone will investigate shallow groundwater when it is encountered during construction to determine if there are any nearby livestock or domestic wells that might be affected by construction activities. Appropriate measures will be implemented to prevent groundwater contamination and steps will be taken to manage the flow of any ground water encountered. Ex TC-

1, 5.4.2, pp. 47-48. The Tripp County Water User District is up-gradient of the pipeline and therefore would not be affected by a spill. TR 441, 449-50.

49. The risk of a spill affecting public or private water wells is low because the components of crude oil are unlikely to travel more than 300 feet from the spill site. TR 142-43. There are no private or public wells within 200 or 400 feet, respectively, of the right of way. TC-16, Data Response 3-46.

50. The total length of Project pipe with the potential to affect a High Consequence Area ("HCA") is 34.3 miles. A spill that could affect an HCA would occur no more than once in 250 years. TC-12, ¶ 24.

51. In the event that soils and groundwater are contaminated by a petroleum release, Keystone will work with state agency personnel to determine what type of remediation process would be appropriate. TR 148. Effective emergency response can reduce the likelihood and severity of contamination. TC-12, ¶¶ 10, 14, 24. Soils and groundwater contaminated by a petroleum release can be remediated. TR 499-500. The experience of DENR is that pipeline facilities have responded immediately to the incident in every case. TR 502.

52. The Commission finds that the risk of a significant release occurring is low and finds that the risk that a release would irretrievably impair a water supply is very low and that it is probable that Keystone, in conjunction with state and federal response agencies, will be able to and will be required to mitigate and successfully remediate the effects of a release.

53. The Commission nevertheless finds that the Sand Hills area and High Plains Aquifer in southeastern Tripp County is an area of vulnerability that warrants additional vigilance and attention in Keystone's integrity management and emergency response planning and implementation process. The evidence demonstrates that the shallow Sand Hills groundwater or High Plains Aquifer is used by landowners in the Project area, that many wells are developed into the aquifer, including TCWUD's, that the very high permeability of both the sandy surficial soils and deeper soils render the formation particularly vulnerable to contamination and that rapid discovery and response can significantly lessen the impact of a release on this vulnerable groundwater resource. The Commission further finds that if additional surficial aquifers are discovered in the course of pipeline construction, such aquifers should have similar treatment. The Commission accordingly finds that Condition 35 shall be adopted.

54. Of the approximately 314-mile route in South Dakota, all but 21.5 miles is privately owned. 21.5 miles is state-owned and managed. The list is found in Table 14. No tribal or federal lands are crossed by the proposed route. Ex TC-1, 5.7.1, p. 75.

55. Table 15 of the Application identifies the land uses affected by the pipeline corridor. Among other things, it shows that the project will not cross or be co-located with any major industrial sites, the pipeline will not cross active farmsteads, but may cross near them and the pipeline will not cross suburban and urban residential areas. The project will not cross municipal water supplies or water sources for organized rural water districts. Ex TC-1, 5.7.1, pp. 76-78.

56. The pipeline will be compatible with the predominant land use, which is rural agriculture, because the pipeline will be buried to a depth of four feet in fields and will interfere only minimally with normal agricultural operations. In most locations, the pipeline will be placed below agricultural drain tiles, and drain tiles that are damaged will be repaired. The only above-ground

facilities will be pump stations and block valves located at intervals along the pipeline. Ex TC-1, 5.7.3, pp.78-79.

57. The Project's high strength X70 steel will have a puncture resistance of 51 tons of digging force. Ex TC-8, ¶ 28. Keystone will have a public awareness program in place and an informational number to call where landowners and others can obtain information concerning activities of concern. TC-1, 6.3.4, pp. 93-94. The Commission finds that the risk of damage by ordinary farming operations is very low and that problems can be avoided through exercise of ordinary common sense.

58. If previously undocumented sites are discovered within the construction corridor during construction activities, all work that might adversely affect the discovery will cease until Keystone, in consultation with the appropriate agencies such as the SHPO, can evaluate the site's eligibility and the probable effects. If a previously unidentified site is recommended as eligible to the National Registry of Historic Places, impacts will be mitigated pursuant to the Unanticipated Discovery Plan submitted to the SHPO. Treatment of any discovered human remains, funerary objects, or items of cultural patrimony found on federal land will be handled in accordance with the Native American Grave Protection and Repatriation Act. Construction will not resume in the area of the discovery until the authorized agency has issued a notice to proceed. If human remains and associated funerary objects are discovered on state or private land during construction activities, construction will cease within the vicinity of the discovery and the county coroner or sheriff will be notified of the find. Treatment of any discovered human remains and associated funerary objects found on state or private land will be handled in accordance with the provisions of applicable state laws. TR 40; Ex TC-1, 6.4, pp. 96; Ex TC-16, 3-54. In accordance with these commitments, the Commission finds that Condition 43 should be adopted.

59. Certain formations to be crossed by the Project, such as the Fox Hills, Ludlow and particularly the Hell Creek Formation are known to contain paleontological resources of high scientific and monetary value. TR 438-439, 442-444. In northwest South Dakota, the Hell Creek Formation has yielded valuable dinosaur bones including from a triceratops, the South Dakota State fossil. Ex TC-1, 5.3.2, p. 38. Protection of paleontological resources was among the most frequently expressed concerns at the public input hearings held by the Commission. There is no way for anyone to know with any degree of certainty whether fossils of significance will be encountered during construction activities. TR 439. Because of the potential significance to landowners of the encounter by construction activities with paleontological resources and the inability to thoroughly lessen the probability of such encounter through pre-construction survey and avoidance, the Commission adopts Condition 44 to require certain special procedures in high probability areas, including the Hell Creek formation, such as the presence of a monitor with training in identification of a paleontological strike of significance.

Design and Construction

60. Keystone has applied for a special permit ("Special Permit") from PHMSA authorizing Keystone to design, construct, and operate the Project at up to 80% of the steel pipe specified minimum yield strength at most locations. TC-1, 2.2, p. 8; TR 62. In Condition 2, the Commission requires Keystone to comply with all of the conditions of the Special Permit, if issued.

61. TransCanada operates approximately 11,000 miles of pipelines in Canada with a 0.8 design factor and requested the Special Permit to ensure consistency across its system and to reduce costs. PHMSA has previously granted similar waivers adopting this modified design factor for natural gas pipelines and for the Keystone Pipeline. Ex TC-8, ¶¶ 13, 17.

62. The Special Permit is expected to exclude pipeline segments operating in (i) PHMSA-defined HCAs described as high population areas and commercially navigable waterways in 49 CFR Section 195.450; (ii) pipeline segments operating at highway, railroad, and road crossings; (iii) piping located within pump stations, mainline valve assemblies, pigging facilities, and measurement facilities; and (iv) areas where the MOP is greater than 1,440 psig. Ex TC-8, ¶ 16.

63. Application of the 0.8 design factor and API 5L PSL2 X70 high-strength steel pipe results in use of pipe with a 0.463 inch wall thickness, as compared with the 0.512 inch wall thickness under the otherwise applicable 0.72 design factor, a reduction in thickness of .050 inches. TR 61. PHMSA previously found that the issuance of a waiver is not inconsistent with pipeline safety and that the waiver will provide a level of safety equal to or greater than that which would be provided if the pipeline were operated under the otherwise applicable regulations. Ex TC-8, ¶ 15.

64. In preparation for the Project, Keystone conducted a pipeline threat analysis, using the pipeline industry published list of threats under ASME B31.8S and PHMSA to determine threats to the pipeline. Identified threats were manufacturing defects, construction damage, corrosion, mechanical damage and hydraulic event. Safeguards were then developed to address these threats. Ex TC-8, ¶ 22.

65. Steel suppliers, mills and coating plants were pre-qualified using a formal qualification process consistent with ISO standards. The pipe is engineered with stringent chemistry to ensure weldability during construction. Each batch of pipe is mechanically tested to prove strength, fracture control and fracture propagation properties. The pipe is hydrostatically tested. The pipe seams are visually and manually inspected and also inspected using ultrasonic instruments. Each piece of pipe and joint is traceable to the steel supplier and pipe mill shift during production. The coating is inspected at the plant with stringent tolerances on roundness and nominal wall thickness. A formal quality surveillance program is in place at the steel mill and at the coating plant. Ex TC-8, ¶ 24; TR 59-60.

66. All pipe welds will be examined around 100 percent of their circumferences using ultrasonic or radiographic inspection. The coating is inspected and repaired if required prior to lowering into the trench. After construction the pipeline is hydrostatically tested in the field to 125 percent of its maximum operating pressure, followed by caliper tool testing to check for dents and ovality. Ex TC-8, ¶ 25.

67. A fusion-bonded epoxy ("FBE") coating will be applied to the external surface of the pipe to prevent corrosion. Ex TC- 8, ¶ 26.

68. TransCanada has thousands of miles of this particular grade of pipeline steel installed and in operation. TransCanada pioneered the use of FBE, which has been in use on its system for over 29 years. There have been no leaks on this type of pipe installed by TransCanada with the FBE coating and cathodic protection system during that time. When TransCanada has excavated pipe to validate FBE coating performance, there has been no evidence of external corrosion. Ex TC-8, ¶ 27.

69. A cathodic protection system will be installed comprised of engineered metal anodes, which are connected to the pipeline. A low voltage direct current is applied to the pipeline, resulting in corrosion of the anodes rather than the pipeline. Ex TC-8, ¶ 27. FBE coating and cathodic protection mitigate external corrosion. Ex TC-8, ¶ 26.

70. A tariff specification of 0.5 percent solids and water by volume will be utilized to minimize the potential for internal corrosion. This specification is half the industry standard of one percent. In Condition 32, the Commission requires Keystone to implement and enforce its crude oil specifications in order to minimize the potential for internal corrosion. Further, the pipeline is designed to operate in turbulent flow to minimize water drop out, another potential cause of internal corrosion. During operations, the pipeline will be cleaned using in-line inspection tools, which measure internal and external corrosion. Keystone will repair areas of pipeline corrosion as required by federal regulation. Ex TC-8, ¶ 26. Staff expert Schramm concluded that the cathodic protection and corrosion control measures that Keystone committed to utilize would meet or exceed applicable federal standards. TR 407-427; Ex S-12.

71. To minimize the risk of mechanical damage to the pipeline, it will be buried with a minimum of four feet of cover, one foot deeper than the industry standard, reducing the likelihood of mechanical damage. The steel specified for the pipeline is high-strength steel with engineered puncture resistance of approximately 51 tons of force. Ex TC-8, ¶ 28.

72. Hydraulic damage is caused by over-pressurization of the pipeline. The risk of hydraulic damage will be minimized through the SCADA system's continuous, real-time pressure monitoring systems and through operator training. Ex TC-8, ¶ 29.

73. The Applicant has prepared a detailed CMR Plan that describes procedures for crossing cultivated lands, grasslands, including native grasslands, wetlands, streams and the procedures for restoring or reclaiming and monitoring those features crossed by the Project. The CMR Plan is a summary of the commitments that Keystone has made for environmental mitigation, restoration and post-construction monitoring and compliance related to the construction phase of the Project. Among these, Keystone will utilize construction techniques that will retain the original characteristics of the lands crossed as detailed in the CMR Plan. Keystone's thorough implementation of these procedures will minimize the impacts associated with the Project. A copy of the CMR Plan was filed as Exhibit B to Keystone's permit application and introduced into evidence as TC-1, Exhibit B.

74. The CMR Plan establishes procedures to address a multitude of construction-related issues, including but not limited to the following:

- Training
- Advance Notice of Access
- Depth of Cover
- Noise Control
- Weed Control
- Dust Control
- Fire Prevention and Control
- Spill Prevention and Containment
- Irrigation Systems
- Clearing
- Grading
- Topsoil Removal and Storage
- Temporary Erosion and Sediment Control
- Clean-Up
- Reclamation and Revegetation
- Compaction Relief

- Rock Removal
- Soil Additives
- Seeding
- Construction in Residential and Commercial/Industrial Areas
- Drain Tile Damage Mitigation and Repair

Ex TC-1, Exhibit B.

75. The fire prevention and containment measures outlined in the CMR Plan will provide significant protection against uncontrolled fire in the arid region to be crossed by the Project. The Commission finds, however, that these provisions are largely centered on active construction areas and that certain additional fire prevention and containment precautions are appropriate as well for vehicles performing functions not in proximity to locations where fire suppression equipment will be based, such as route survey vehicles and vehicles involved in surveillance and inspection activities whether before, during and after construction. The Commission accordingly adopts Conditions 16(p) and the last sentence of Condition 30 to address these situations.

76. Keystone's CMR Plan includes many mitigation steps designed to return the land to its original production. These include topsoil removal and replacement, compaction of the trench line, decompaction of the working area, and tilling the topsoil after replacement. Ex TC-1, Exhibit B; Ex TC-6, ¶ 27; Ex TC-1, 6.1.2.2, pp. 87-88.

77. In areas where geologic conditions such as ground swelling, or slope instability, could pose a potential threat, Keystone will conduct appropriate pre-construction site assessments and subsequently will design facilities to account for various ground motion hazards as required by federal regulations. The main hazard of concern during construction of the pipeline will be from unintentional undercutting of slopes or construction on steep slopes resulting in instability that could lead to landslides. Other hazards may result from construction on Cretaceous shales that contain bentonite beds. The high swelling hazard may cause slope instability during periods of precipitation. Ex TC-1, 5.3.6, p. 44.

78. When selecting the proposed pipeline route, Keystone has attempted to minimize the amount of steep slopes crossed by the pipeline. Special pipeline construction practices described in the CMR Plan will minimize slope stability concerns during construction. Landslide hazards can be mitigated by:

- Returning disturbed areas to pre-existing conditions or, where necessary, reducing steep grades during construction;
- Preserving or improving surface drainage;
- Preserving or improving subsurface drainage during construction;
- Removing overburden where necessary to reduce weight of overlying soil mass; and
- Adding fill at toe of slope to resist movement.

Ex TC-1, 5.3.6, pp. 43-44.

79. Slope instability poses a threat of ground movement responsible for approximately 1 percent of liquid pipeline incidents (PHMSA 2008). Keystone will monitor slope stability during routine surveillance. Areas where slope stability poses a potential threat to the pipeline will be incorporated into Keystone's Integrity Management Plan. If ground movement is suspected of having caused abnormal movement of the pipeline, federal regulations (49 CFR Part 195) require

Keystone to conduct an internal inspection. Consequently, damage to the pipeline would be detected quickly and spills would be averted or minimized. Ex TC-1, 5.3.6, p. 44

80. Keystone is in the process of preparing, in consultation with the area National Resource Conservation Service, construction/reclamation unit ("Con/Rec Unit") mapping to address differing construction and reclamation techniques for different soils conditions, slopes, vegetation, and land use along the pipeline route. This analysis and mapping results in the identification of segments called Con/Rec Units. Ex. TC-5; TC-16, DR 3-25.

81. The Applicant will use special construction methods and measures to minimize and mitigate impacts where warranted by site specific conditions. These special techniques will be used when constructing across paved roads, primary gravel roads, highways, railroads, water bodies, wetlands, sand hills areas, and steep terrain. These special techniques are described in the Application. Ex TC-1, 2.2.6, p. 17; TC-6, ¶ 11.

82. Of the perennial streams that are crossed by the proposed route, the Cheyenne River is the largest water body and is classified as a warm water permanent fishery. Of the other streams that have been classified, habitat is considered more limited as indicated by a warm water semi-permanent or warm water marginal classification. Ex TC-1, 5.6.2, pp. 71-72, Table 13.

83. Keystone will utilize HDD for the Little Missouri, Cheyenne and White River crossings, which will aid in minimizing impacts to important game and commercial fish species and special status species. Open-cut trenching, which can affect fisheries, will be used at other perennial streams. Keystone will use best practices to reduce or eliminate the impact of crossings at the perennial streams other than the Cheyenne and White Rivers. Ex TC-1, 5.4.1, p. 46; 5.6.2, p. 72; TC-16, DR 3-39.

84. Water used for hydrostatic testing during construction and subsequently released will not result in contamination of aquatic ecosystems since the pipe is cleaned prior to testing and the discharge water is monitored and tested. Ex TC-1, 5.4.3.1, pp. 48-50. In Conditions 1 and 2, the Commission has required that Keystone comply with DENR's regulations governing temporary use and discharge of water and obtain and comply with the DENR General Permits for these activities.

85. During construction, Keystone will have a number of inspectors on a construction spread, including environmental inspectors, who will monitor erosion control, small spills, full tanks, and any environmental issues that arise. TR. 37-38. In Condition 14, the Commission requires that Keystone incorporate such inspectors into the CMR Plan.

86. The Pipeline corridor will pass through areas where shallow and surficial aquifers exist. Appropriate measures will be implemented to prevent groundwater contamination and steps will be taken to manage the flow of any ground water encountered. Ex TC-1, 5.4.2, p. 47-48.

87. In addition to those recommendations of Staff and its expert witnesses referenced specifically in these Findings, Staff expert witnesses made a number of recommendations which the Commission has determined will provide additional protections for affected landowners, the environment and the public, and has included Conditions in this Order requiring certain of these measures. These recommendations encompassed matters such as sediment control at water body crossings, soil profile analysis, topsoil, subsoil and rock segregation and replacement, special procedures in areas of bentenitic, sodic, or saline soils, noise, etc. Staff's final recommendations are set forth in its Brief. See also Staff Exhibits and testimony in Transcript Vols. II and III.

88. Keystone will be required to acquire permits authorizing the crossing of county roads and township roads. These permits will typically require Keystone to restore roads to their pre-construction condition. If its construction equipment causes damage to county or township roads, Keystone will be responsible for the repair of those roads to pre-construction condition. Pursuant to SDCL 49-41B-38, Keystone will be required to post a bond to ensure that any damage beyond normal wear to public roads, highways, bridges or other related facilities will be adequately compensated. Staff witness Binder recommended that the bond amount under SDCL 49-41B-38 for damage to highways, roads, bridges and other related facilities be set at \$15,600,000 for 2011 and \$15,600,000 for 2012. TR 224. Keystone did not object to this requirement.

89. The Commission finds that the procedures in the CMR Plan and the other construction plans and procedures that Keystone has committed to implement, together with the Conditions regarding construction practices adopted by the Commission herein, will minimize impacts from construction of the Project to the environment and social and economic condition of inhabitants and expected inhabitants in the Project area.

Operation and Maintenance

90. The Keystone pipeline will be designed constructed, tested and operated in accordance with all applicable requirements, including the PHMSA regulations set forth at 49 CFR Parts 194 and 195, as modified by the Special Permit. These federal regulations are intended to ensure adequate protection for the public and the environment and to prevent crude oil pipeline accidents and failures. Ex TC-8, ¶ 2.

91. The safety features of Keystone's operations are governed by 49 CFR Part 195 and include aerial inspection 26 times per year, with any interval not to exceed three weeks, right-of-way maintenance for accessibility, and continual monitoring of the pipeline to identify potential integrity concerns. A Supervisory Control and Data Acquisition ("SCADA") system will be used to monitor the pipeline at all times. Ex TC-8, ¶ 9.

92. The Project will have a SCADA system to remotely monitor and control the pipeline. The SCADA system will include: (i) a redundant, fully functional back-up Operational Control Center available for service at all times; (ii) automatic features within the system to ensure operation within prescribed limits; and (iii) additional automatic features at the pump stations to provide pipeline pressure protection in the event that communications with the SCADA host are interrupted. Ex TC-10, ¶ 8.

93. The pipeline will have a control center manned 24 hours per day. A backup control center will also be constructed and maintained. A backup communications system is included within the system design and installation. Keystone's SCADA system should have a very high degree of reliability. TR 82-83.

94. Keystone will use a series of complimentary and overlapping SCADA-based leak detection systems and methods at the Operational Control Center, including: (i) remote monitoring; (ii) software-based volume balance systems that monitor injection and delivery volumes; (iii) Computational Pipeline Monitoring or model-based leak detection systems that break the pipeline into smaller segments and monitor each segment on a mass balance basis; and (iv) computer-based, non-real-time, accumulated gain/(loss) volume trending to assist in identifying low rate or seepage releases below the 1.5 percent by volume detection threshold. The SCADA and other monitoring and control systems to be implemented by Keystone for the Project are state of the art

and consistent with the best commercially available technology. Ex TC-10, ¶ 8. Staff witness, William Mampre, testified that Keystone's SCADA system was one he probably would have selected himself. TR 431.

95. Additionally, Keystone will implement and utilize direct observation methodologies, which include aerial patrols, ground patrols and public and landowner awareness programs designed to encourage and facilitate the reporting of suspected leaks and events that may suggest a threat to the integrity of the pipeline. Ex TC10, ¶ 8. Remote sensing technologies that could be employed in pipeline surveillance such as aerial surveillance are in their infancy and practical systems are not currently available. Keystone would consider using such technology if it becomes commercially available. TR 89-90.

96. Keystone will implement abnormal operating procedures when necessary and as required by 49 CFR 195.402(d). Abnormal operating procedures will be part of the written manual for normal operations, maintenance activities, and handling abnormal operating and emergencies. Ex TC-1, 2.3.2, p. 20.

97. As required by US DOT regulations, Keystone will prepare an emergency response plan ("ERP") for the system. Ex TC-11, ¶ 13. The ERP will be submitted to PHMSA for review prior to commencement of pipeline operations. Ex TC-11, ¶ 13. The Commission finds that the ERP and manual of written procedures for conducting normal operations and maintenance activities and handling abnormal operations and emergencies as required under 49 CFR195.402 should also be submitted to the Commission at the time it is submitted to PHMSA to apprise the Commission of its details. Keystone has agreed to do this. The Commission has so specified in Condition 36.

98. Keystone will utilize the ERP approved by PHMSA for the Keystone Pipeline as the basis for its ERP for the Project. Under the ERP, Keystone will strategically locate emergency response equipment along the pipeline route. The equipment will include trailers, oil spill containment and recovery equipment, boats, and a communication office. Keystone will also have a number of local contractors available to provide emergency response assistance. Ex TC-11, ¶ 15. Keystone's goal is to respond to any spill within six hours. TR 102-103. Additional details concerning the ERP and the ERP process are set forth in the Application at Section 6.5.2 and in the pre-filed and hearing testimony of John Hayes. Ex TC-11; EX TC-1, 6.5.2, pp. 96-101. Keystone has consulted with DENR in developing its ERP. TR 111-12.

99. If the Keystone pipeline should experience a release, Keystone would implement its ERP. TC-11, ¶ 10; S-18, p. 4. DENR would be involved in the assessment and abatement of the release, and require the leak to be cleaned up and remediated. S-18, p. 5. DENR has been successful in enforcing remediation laws to ensure the effects of any pipeline releases are mitigated. TR 488-89, 497, 502-03.

100. Local emergency responders may be required to initially secure the scene and ensure the safety of the public, and Keystone will provide training in that regard. Ex TC-11, ¶ 17; TR 105-107.

101. If ground movement is suspected of having caused abnormal movement of the pipeline, federal regulations (49 CFR Part 195) require Keystone to conduct an internal inspection. Consequently, damage to the pipeline would be detected quickly and spills would be averted or minimized. Ex TC-1, 5.3.6, p. 44.

102. In addition to the ERP, hazardous materials pipeline segments through High Consequence Areas (“HCAs”) are subject to the Integrity Management Rule. 49 CFR 195.452. Pipeline operators are required to develop a written Integrity Management Plan (“IMP”) that must include methods to measure the program’s effectiveness in assessing and evaluating integrity and protecting HCAs. Keystone will develop and implement an IMP for the entire pipeline including the HCAs. The overall objective of the IMP is to establish and maintain acceptable levels of integrity and having regard to the environment, public and employee safety, regulatory requirements, delivery reliability, and life cycle cost. The IMP uses advanced in-line inspection and mitigation technologies applied with a comprehensive risk-based methodology. 49 CFR Part 195 also requires pipeline operators to develop and implement public awareness programs consistent with the API’s Recommended Practice 1162, Public Awareness Programs for Pipeline Operators. Staff witness Jenny Hudson testified that Keystone’s planning and preparation of the IMP were fully compliant with the PHMSA regulations and had no recommendations for conditions. Ex S-9, p.5.

103. The Commission finds that the threat of serious injury to the environment or inhabitants of the State of South Dakota from a crude oil release is substantially mitigated by the integrity management, leak detection and emergency response processes and procedures that Keystone is continuing to plan and will implement.

Rural Water Crossings

104. The route crosses through two rural water system districts, the West River/Lyman-Jones Rural Water District and the Tripp County Water User District. Keystone met with these rural water districts to discuss the Project and will continue to coordinate with these districts. During construction and maintenance, Keystone will coordinate with the One Call system to avoid impacts to underground utilities, including water lines. Ex TC-4.

Alternative Routes

105. The proposed Project route was developed through an, iterative process. TC-1, 4.1, p. 25. During the course of the route evaluation process, Keystone held public meetings, open houses, and one-on-one meetings with stakeholders to discuss and review the proposed routing through South Dakota. TC-1, 4.1.5, p. 27. The route was refined in Mellette County to avoid environmentally sensitive areas and reduce wetland crossings, and near Colome to avoid groundwater protection areas. Ex TC-3; TC-1, 4.2.1-4.2.2, p. 28.

106. SDCL 49-41B-36 explicitly states that Chapter 49-41B “shall not be construed as a delegation to the Public Utilities Commission of the authority to route a facility.” The Commission accordingly finds and concludes that it lacks authority to compel the Applicant to select an alternative route or to base its decision on whether to grant or deny a permit for a proposed facility on whether the selected route is the route the Commission itself might select.

Socio-Economic Factors

107. Socio-economic evidence offered by both Keystone and Staff demonstrates that the welfare of the citizens of South Dakota will not be impaired by the Project. Staff expert Dr. Michael Madden conducted a socio-economic analysis of the Keystone Pipeline, and concluded that the positive economic benefits of the project were unambiguous, while most if not all of the social impacts were positive or neutral. S-2, Madden Assessment at 21. The Project, subject to compliance with the Special Permit and the Conditions herein, would not, from a socioeconomic standpoint: (i) pose a threat of serious injury to the socioeconomic conditions in the project area; (ii)

substantially impair the health, safety, or welfare of the inhabitants in the project area; or (iii) unduly interfere with the orderly development of the region.

108. The Project will pay property taxes to local governments on an annual basis estimated to be in the millions of dollars. Ex TC-2, ¶ 24, TC-13, S-13; TR 584. An increase in assessed, taxable valuation for school districts is a positive development. TR 175.

109. The Project will bring jobs, both temporary and permanent, to the state of South Dakota and specifically to the areas of construction and operation. Ex TC-1 at 6.1.1, pp. 85-86.

110. The Project will have minimal effect in the areas of agriculture, commercial and industrial sectors, land values, housing, sewer and water, solid waste management, transportation, cultural and historical resources, health services, schools, recreation, public safety, noise, and visual impacts. Ex TC-1. It follows that the project will not substantially impair the health, safety, or welfare of the inhabitants.

General

111. Applicant has provided all information required by ARSD Chapter 20:10:22 and SDCL Chapter 49-41B. S-1.

112. The Commission finds that the Conditions attached hereto as Exhibit A and incorporated herein by reference are supported by the record, are reasonable and will help ensure that the Project will meet the standards established for approval of a construction permit for the Project set forth in SDCL 49-41B-22 and should be adopted.

113. The Commission finds that subject to the conditions of the Special Permit and the Conditions set forth as Exhibit A hereto, the Project will (i) comply with all applicable laws and rules; (ii) not pose an unacceptable threat of serious injury to the environment nor to the social and economic condition of inhabitants or expected inhabitants in the siting area; (iii) not substantially impair the health, safety or welfare of the inhabitants; and (iv) not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.

114. The Commission finds that a permit to construct the Project should be granted subject to the Conditions set forth in Exhibit A.

115. To the extent that any Conclusion of Law set forth below is more appropriately a finding of fact, that Conclusion of Law is incorporated by reference as a Finding of Fact.

Based on the foregoing Findings of Fact, the Commission hereby makes the following:

CONCLUSIONS OF LAW

1. The Commission has jurisdiction over the subject matter and parties to this proceeding pursuant to SDCL Chapter 49-41B and ARSD Chapter 20:10:22. Subject to the findings made on the four elements of proof under SDCL 49-41B-22, the Commission has authority to grant,

deny or grant upon reasonable terms, conditions or modifications, a permit for the construction, operation and maintenance of the TransCanada Keystone Pipeline.

2. The TransCanada Keystone Pipeline Project is a transmission facility as defined in SDCL 49-41B-2.1(3).

3. Applicant's permit application, as amended and supplemented through the proceedings in this matter, complies with the applicable requirements of SDCL Chapter 49-41B and ARSD Chapter 20:10:22.

4. The Project, if constructed and operated in accordance with the terms and conditions of this decision, will comply with all applicable laws and rules, including all requirements of SDCL Chapter 49-41B and ARSD 20:10:22.

5. The Project, if constructed and operated in accordance with the terms and conditions of this decision, will not pose an unacceptable threat of serious injury to the environment nor to the social and economic conditions of inhabitants or expected inhabitants in the siting area.

6. The Project, if constructed and operated in accordance with the terms and conditions of this decision, will not substantially impair the health, safety or welfare of the inhabitants in the siting area.

7. The Project, if constructed and operated in accordance with the terms and conditions of this decision, will not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.

8. The standard of proof is by the preponderance of evidence. The Applicant has met its burden of proof pursuant to SDCL 49-41B-22 and is entitled to a permit as provided in SDCL 49-41B-25.

9. The Commission has authority to revoke or suspend any permit granted under the South Dakota Energy Facility Permit Act for failure to comply with the terms and conditions of the permit pursuant to SDCL 49-41B-33 and must approve any transfer of the permit granted by this Order pursuant to SDCL 49-41B-29.

10. To the extent that any of the Findings of Fact in this decision are determined to be conclusions of law or mixed findings of fact and conclusions of law, the same are incorporated herein by this reference as a Conclusion of Law as if set forth in full herein.

11. Because a federal EIS will be required and completed for the Project and because the federal EIS complies with the requirements of SDCL Chapter 34A-9, the Commission appropriately exercised its discretion under SDCL 49-41B-21 in determining not to prepare or require the preparation of a second EIS.

12. PHMSA is delegated exclusive authority over the establishment and enforcement of safety-orientated design and operational standards for hazardous materials pipelines. 49 U.S.C. 60101, et seq.

13. SDCL 49-41B-36 explicitly states that SDCL Chapter 49-41B "shall not be construed as a delegation to the Public Utilities Commission of the authority to route a facility." The

Commission accordingly concludes that it lacks authority (i) to compel the Applicant to select an alternative route or (ii) to base its decision on whether to grant or deny a permit for a proposed facility on whether the selected route is the route the Commission might itself select.

14. The Commission concludes that it needs no other information to assess the impact of the proposed facility or to determine if Applicant or any Intervenor has met its burden of proof.

15. The Commission concludes that the Application and all required filings have been filed with the Commission in conformity with South Dakota law and that all procedural requirements under South Dakota law, including public hearing requirements, have been met or exceeded.

16. The Commission concludes that it possesses the authority under SDCL 49-41B-25 to impose conditions on the construction, operation and maintenance of the Project, that the Conditions set forth in Exhibit A are supported by the record, are reasonable and will help ensure that the Project will meet the standards established for approval of a construction permit for the Project set forth in SDCL 49-41B-22 and that the Conditions are hereby adopted.

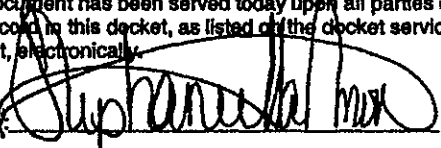
It is therefore

ORDERED, that a permit to construct the Keystone Pipeline Project is granted to TransCanada Keystone Pipeline, LP, subject to the Conditions set forth in Exhibit A.

NOTICE OF ENTRY AND OF RIGHT TO APPEAL

PLEASE TAKE NOTICE that this Amended Final Decision and Order was duly issued and entered on the ____ day of June, 2010. Pursuant to SDCL 1-26-32, this Final Decision and Order will take effect 10 days after the date of receipt or failure to accept delivery of the decision by the parties. Pursuant to ARSD 20:10:01:30.01, an application for a rehearing or reconsideration may be made by filing a written petition with the Commission within 30 days from the date of issuance of this Final Decision and Order; Notice of Entry. Pursuant to SDCL 1-26-31, the parties have the right to appeal this Final Decision and Order to the appropriate Circuit Court by serving notice of appeal of this decision to the circuit court within thirty (30) days after the date of service of this Notice of Decision.

Dated at Pierre, South Dakota, this 29th of June, 2010.

CERTIFICATE OF SERVICE
The undersigned hereby certifies that this document has been served today upon all parties of record in this docket, as listed on the docket service list, electronically.
By: 
Date: 06/29/10
(OFFICIAL SEAL)

BY ORDER OF THE COMMISSION:


DUSTIN M. JOHNSON, Chairman


STEVE KOLBECK, Commissioner


GARY HANSON, Commissioner