National Energy Board

Office national de l'énergie

Reasons for Decision

Vantage Pipeline Canada ULC

OH-3-2011

January 2012

Facilities

Canada

National Energy Board

Reasons for Decision

In the Matter of

Vantage Pipeline Canada ULC

Application dated 7 February 2011 for the Vantage Pipeline Project

OH-3-2011

January 2012

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Cat No. NE22-1/2012-2E
ISBN 978-1-100-19889-7

This report is published separately in both official languages. This publication is available upon request in multiple formats.

Copies are available on request from:
The Publications Office
National Energy Board
444 Seventh Avenue S.W.
Calgary, Alberta, T2P 0X8
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Fax: 403-292-5576
Phone: 403-299-3562
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For pick-up at the NEB office:
Library
Ground Floor

Printed in Canada

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N° de cat. NE22-1/2012-2F
ISBN 978-1-100-98491-9

Ce rapport est publié séparément dans les deux langues officielles. On peut obtenir cette publication sur supports multiples, sur demande.

Demandes d'exemplaires :
Bureau des publications
Office national de l'énergie
444, Septième Avenue S.-O.
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Des exemplaires sont également disponibles à la bibliothèque de l'Office
(rez-de-chaussée)

Imprimé au Canada

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Abbreviations

AB	Alberta
ABCA	Alberta *Business Corporations Act*, R.S.A. 2000, c. B-9, as amended
Act or NEB Act	*National Energy Board Act*
ADOE	Alberta Department of Energy
AEGS	Alberta Ethane Gathering System
AFUDC	Allowance for Funds Used During Construction
Applicant, Vantage Pipeline or the Company	Vantage Pipeline Canada ULC, formerly Vantage Canada Inc.
Application	Application to the Board, pursuant to section 52 of the *National Energy Board Act* for a Certificate of Public Convenience and Necessity for the Vantage Pipeline Project
b/d	barrels per day: 42 U.S. gallons (34.9723 imp gal; 158.9873 L)
Board or NEB	National Energy Board
CAEPLA	Canadian Association of Energy and Pipeline Landowner Associations
CCF	Central Control Facility
CEA Act	*Canadian Environmental Assessment Act*
Certificate	Certificate of Public Convenience and Necessity issued under section 52 of the *National Energy Board Act* authorizing the construction and operation of a pipeline
CSA	Canadian Standards Association
CSA Z245.1	Canadian Standards Association Z245.1, Steel pipe
CSA Z662-11	Canadian Standards Association Z662-11, Oil and Gas Pipeline Systems
Dow	Dow Chemical Canada Inc.
Draft ESR	Draft Environmental Screening Report
EA	Environmental Assessment

EAE	Enhanced Aboriginal Engagement
Enbridge Agreement	The agreement between Enbridge Pipeline Inc., the Manitoba Pipeline Landowners Association and the Saskatchewan Association of Pipeline Landowners which was drafted and agreed to concerning the Enbridge Alberta Clipper Project and the Enbridge Southern Lights Project
Enbridge Bakken	Enbridge Bakken Pipeline Company Inc.
EPM	Emergency Procedures Manual
EPR	Emergency Preparedness and Response
ERP	Emergency Response Plan, also referred to as Emergency Procedures Manual
ESR	Environmental Screening Report
FA(s)	Federal Authority(ies)
Federal Coordination Regulations	*Regulations Respecting the Coordination by Federal Authorities of Environmental Assessment Procedures and Requirements,* made under the *Canadian Environmental Assessment Act*
FHQTC	File Hills Qu'Appelle Tribal Council
HDD	horizontal directional drilling
HVP	high vapour pressure
IEEP	Incremental Ethane Extraction Program
ILI	inline inspection
IMP	integrity management program
km	kilometre(s)
LDS	Leak Detection System
LNG	Liquefied Natural Gas
m^3/d	cubic metre(s) per day
mmcfd	millions of cubic feet per day
MOG	*Memorandum of Guidance on the Regulation of Group 2 Companies*
MPMO	Major Projects Management Office

ND-DMR	North Dakota Department of Mineral Resources
NEB	National Energy Board
NEB Act or the Act	*National Energy Board Act*
NGL	natural gas liquids
NOVA	NOVA Chemicals Corporation
NPS	nominal pipe size (in inches)
OD	outside diameter
OPR-99	*Onshore Pipeline Regulations, 1999*
OPUAR	*Oil Pipeline Uniform Accounting Regulations*
P10	having a 10 per cent probability of occurrence
P50	having a 50 per cent probability of occurrence, or median probability
Pasqua	Pasqua First Nation
PFP	Participant Funding Program
Pipeline	Vantage Pipeline
Project	Vantage Pipeline Project
Purvin & Gertz or PGI	Purvin & Gertz, Inc.
RA(s)	Responsible Authority(ies)
Reasons	Reasons for Decision
Riverstone	Mistral Energy LP (Mistral) and Riverstone/Carlyle Global Energy and Power Fund IV (Cayman) LP
RoW	right of way
SCADA	Supervisory Control and Data Acquisition
SK	Saskatchewan
TELC/CAEPLA	Tioga to Empress Landowner Committee and Canadian Association of Energy and Pipeline Landowner Associations
TLU	Traditional Land Use
TransCanada	TransCanada PipeLines Limited

TSA	Transportation Service Agreement
TWS	Temporary Work Space
U.S.	United States
USGS	2008 U.S. Geological Survey
WCSB	Western Canada Sedimentary Basin

Recital and Appearances

IN THE MATTER OF the *National Energy Board Act* and the Regulations made thereunder: and

IN THE MATTER OF an application dated 7 February 2011 filed with the National Energy Board by Vantage Pipeline Canada ULC under file OF-Fac-Oil-V040-2010-0201 01 for a Certificate of Public Convenience and Necessity under section 52 of the *National Energy Board Act* to construct and operate the Vantage Pipeline Project consisting of approximately 578.3 kilometres of high vapour pressure pipeline and related facilities and an Order under Part IV of the *National Energy Board Act* designating Vantage as a Group 2 company for the purpose of future toll and tariff regulation; and

IN THE MATTER OF National Energy Board Hearing Order OH-3-2011 dated 5 April 2011;

HEARD in Regina, Saskatchewan on 1, 2 and 3 November 2011;

BEFORE:

G.A. Habib	Presiding Member
D.M. Hamilton	Member
R.D. Vergette	Member

Appearances	**Participants**	**Witnesses**
L.B. Ho	Vantage Pipeline Canada ULC	<u>Panel 1</u> D. Schmunk T. Killackey G. Salahor G. Goobie A. Broenink <u>Panel 2</u> D. Schmunk T. Killackey C. Faminow C. Newyar S. Saurette L. Boisjoli
D. Core S. Fradette	Tioga to Empress Landowner Committee and Canadian Association of Energy and Pipeline Landowner Associations	D. Core S. Fradette J. Heatcoat M. Heatcoat D. Martin
T. Timoruski	ATCO Midstream Ltd.	

J.H. Smellie L. Aufricht	NOVA Chemicals Corporation	
Chief A. Little Bear	Big Bear Band	Chief A. Little Bear
G.R. Jeerakathil	File Hills Qu'Appelle Tribal Council Little Pine First Nation Lucky Man Cree Nation Mosquito Grizzly Bear's Head Lean Man First Nation Poundmaker Cree Nation #114 Wood Mountain First Nation	
Chief M.T. Peigan	Pasqua First Nation	
C. Wolf Leg	Siksika Nation	C. Wolf Leg R. Righthand
D. Cox D. Audino	National Energy Board	

Chapter 1

Disposition

The National Energy Board (Board or NEB) finds that the proposed Vantage Pipeline Project (Project) is, and will be, required by the present and future public convenience and necessity, provided that the terms and conditions outlined in Appendix II of these Reasons for Decision (Reasons), including all commitments made by Vantage Pipeline Canada ULC, formerly Vantage Pipeline Canada Inc. (Applicant, Vantage or the Company), in its application and during the hearing process, are met. The Board made its determination under the *Canadian Environmental Assessment Act* (CEA Act) that the Project is not likely to cause significant adverse environmental effects. Subject to the approval of the Governor-in-Council, the Board will issue a Certificate of Public Convenience and Necessity (Certificate) for the Project, incorporating the terms and conditions in Appendix II of these Reasons. This is pursuant to Part III of the *National Energy Board Act* (Act or NEB Act).

The Board also finds it appropriate that Vantage be designated as a Group 2 company pursuant to Part IV of the NEB Act.

The following constitutes our Reasons in respect of the application considered by the Board in the OH-3-2011 proceeding.

G.A. Habib
Presiding Member

D.M. Hamilton
Member

R.D. Vergette
Member

Calgary, Alberta
December 2011

Chapter 2

Introduction

2.1 The Application

On 7 February 2011, Vantage applied to the Board, pursuant to section 52 of the NEB Act, for a Certificate to construct and operate the Project (Application). The Vantage Pipeline (Pipeline) will carry liquid ethane from Hess Corporation's natural gas processing plant near Tioga, North Dakota, United States (U.S.) through Saskatchewan to interconnect with the Alberta Ethane Gathering System (AEGS) near Empress, Alberta (AB). The Project is designed to transport up to 6 360 cubic metres per day (m^3/d) (40 000 barrels per day (b/d)) of liquid ethane, with the ability to expand up to 9 540 m^3/d (60 000 b/d) with the addition of two pump stations.

The Canadian portion of the Project would involve the construction and operation of approximately 578.3 km of new 273 mm (NPS 10) outside diameter (OD) high vapour pressure (HVP) steel pipeline, from the Canada-U.S. border near Beaubier, Saskatchewan to the AEGS near Empress, AB. The Pipeline route would consist of approximately 573.8 km in Saskatchewan and 4.5 km in Alberta. Vantage has routed the Pipeline so that it will be within or alongside and contiguous to existing pipelines and road right of way (RoW) for approximately 503.7 kilometres (km). The estimated capital cost of the Project is $240 million.

As part of its Application, Vantage also requested an order, pursuant to Part IV of the NEB Act, designating Vantage as a Group 2 pipeline company for the purposes of future toll and tariff regulation, as well as such further and other relief as may be requested by Vantage or as the Board may deem appropriate pursuant to section 20 of the NEB Act.

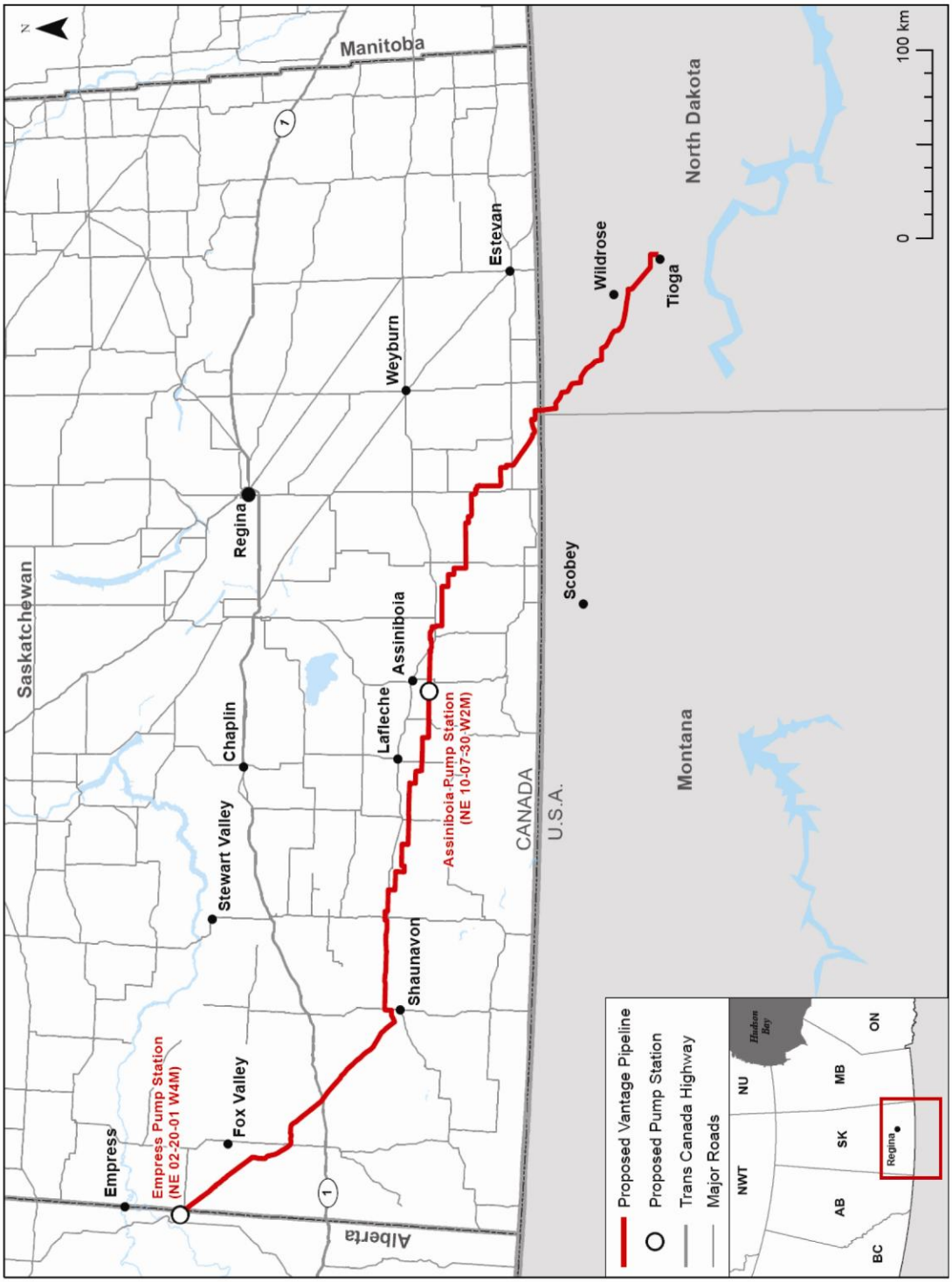
2.2 OH-3-2011 Hearing Process

2.2.1 NEB Hearing Order and Oral Hearing Process

On 5 April 2011, the Board issued Hearing Order OH-3-2011, which established the process for the Board's consideration of the Application. The Hearing Order included the List of Issues, which the Board proposed for consideration during its assessment of the Application. The Board issued a revised List of Issues on 15 June 2011. The revised List of Issues is included in Appendix I of these Reasons.

The oral portion of the hearing started on 1 November 2011 and ended 3 November 2011 in Regina, Saskatchewan (SK). The evidentiary portion of the OH-3-2011 proceeding was closed on 3 November 2011, subject to receipt of an undertaking, which was subsequently filed on 10 November 2011.

Figure 2-1
Vantage Pipeline Project – Proposed General Route Map



2.2.2 Environmental Screening Report (ESR)

Since the Project requires a Certificate under section 52 of the NEB Act, the requirement for an environmental assessment (EA) under the CEA Act was triggered. Given that the Project would require less than 75 km of new RoW, as defined in the CEA Act *Comprehensive Study List Regulations*, the Project was subject to a screening level of EA under the CEA Act.

On 25 November 2011, the Board released for public comment a Draft Environmental Screening Report (Draft ESR). The final ESR incorporates the comments received on the Draft ESR, provides the views of the Board on environmental and socio-economic matters covered under the CEA Act and includes the Board's CEA Act determination. The final ESR is attached as Appendix IV to these Reasons.

In considering the Project, the Board used a life cycle approach. All issues and concerns before the Board were considered in the context of the Project (that is, design, planning, construction, operation, decommissioning and abandonment).

2.2.3 Major Projects Management Office

In 2008, the federal government established the Major Projects Management Office (MPMO) to improve the performance of the Canadian regulatory system for major natural resource projects. An important part of the MPMO's work is to provide overarching project management and accountability for resource projects such as this Project. With respect to Aboriginal Crown consultation for the Project, the MPMO has indicated that the government will rely on the Board's process, to the extent possible, to discharge any Crown duty to consult Aboriginal groups.

2.2.4 Participant Funding

The NEB administers a Participant Funding Program (PFP) which provides financial assistance to support the timely and meaningful engagement of individuals, Aboriginal groups, landowners, incorporated non-industry not-for-profit organizations, or other interest groups who seek to intervene in the NEB's oral hearing process for facilities applications.

On 21 October 2010, the NEB made available $175 000 under its PFP in order to facilitate participation in the regulatory process for the Project. The deadline to submit an application for funding was 17 December 2010. Six applications were received, all from Aboriginal groups, with a total request of over $332 000.

Following a review of the requests by the Funding Review Committee, all six applicants were awarded funding:

- Western Region III and Eastern Region II Métis Nation;
- Chief Big Bear First Nation;
- Poundmaker Cree Nation #114, Lucky Man Cree Nation, Mosquito, Grizzly Bear's Head, Lean Man First Nation, and Little Pine First Nation;

- Siksika Nation;
- Pasqua First Nation; and
- File Hills Qu'Appelle Tribal Council.

During the hearing, the Tioga to Empress Landowner Committee and Canadian Association of Energy and Pipeline Landowner Associations (TELC/CAEPLA) raised concerns over the PFP. TELC/CAEPLA stated that it occurred too early in the hearing process. TELC/CAEPLA submitted that unless someone monitored the newspapers, they would not be aware of the program. Therefore, TELC/CAEPLA recommended that the program be remodeled to afford a timely opportunity for affected landowners to apply for participant funding.

More details on the Board's allocation of funds under the PFP for the Project can be found at the following link: http://www.neb-one.gc.ca/clf-nsi/rthnb/pblcprtcptn/prtcpntfndngprgrm/llctnfnd_vntg-eng.html

2.2.5 The Public Interest

In reviewing an application for a Certificate, the Board must consider whether the applied-for facilities are in the overall Canadian public interest. In doing so, the Board must, after carefully weighing all of the evidence in the proceeding, exercise its discretion in balancing the interests of a diverse public.

The Board has described the public interest in the following terms:

> The public interest is inclusive of all Canadians and refers to a balance of economic, environmental, and social interests that change as society's values and preferences evolve over time. The Board estimates the overall public good a project may create against its potential negative aspects, weighs its various impacts, and makes a decision.[1]

In making its determination regarding public convenience and necessity, the Board must rely only on the facts that are established to its satisfaction through the hearing process, and must also proceed in compliance with the principles of natural justice.

1 *Pipeline Regulation in Canada: A Guide for Landowners and the Public* (Revised September 2010), National Energy Board, Page 1.

Chapter 3

Corporate Status of Vantage

Views of Vantage

Vantage applied as a body corporate, incorporated under the Alberta *Business Corporations Act*, R.S.A. 2000, c. B-9, as amended (ABCA). It has since amended its articles to be characterized as an unlimited liability corporation, and submitted that it was required to change its name from Vantage Pipeline Canada Inc. to Vantage Pipeline Canada ULC, under the ABCA. Subsection 1(kk) of the ABCA defines an unlimited liability corporation as, "a corporation whose shareholders have unlimited liability for any liability, act or default of the corporation, as set out in section 15.2" of the ABCA.

Vantage confirmed that the facility to be constructed and operated will be owned and operated by Vantage Pipeline Canada ULC. Vantage Pipeline Canada ULC is a wholly owned subsidiary of Riverstone Vantage Pipeline Canada LP, an Alberta Limited Partnership. Riverstone Vantage Pipeline Canada LP is an indirect, wholly owned subsidiary of Mistral Energy LP and Riverstone/Carlyle Global Energy and Power Fund IV (Cayman) LP (Riverstone), which is one of the funds managed by Riverstone Holdings LLC, a New York-based energy and power focused private equity firm. Vantage submitted that this structure is beneficial from a U.S. tax perspective to Riverstone, Vantage's primary investor. Vantage also submitted that the economics of the project will be materially different to Riverstone if Vantage must continue as a body corporate incorporated under the *Canada Business Corporations Act*.

Vantage's position is that an unlimited liability corporation is a "company" within the meaning of the NEB Act, supported by applying:

- the principles of statutory interpretation; and
- Board precedent.

Views of the Board

The Board acknowledges Vantage's position that an unlimited liability corporation is a "company" within the meaning of the NEB Act and that no party took issue with this. Vantage responded to information requests from TELC/CAEPLA concerning the consequences of its proposed status as an unlimited liability corporation. In response to a request to provide the implications to any landowner indemnification concerning the operations or abandonment of the Pipeline in reference to an unlimited liability company, Vantage explained:

> Vantage Pipeline ULC is the same as a regular corporation except that landowners have the added ability to seek recourse against the shareholders of Vantage Pipeline ULC,

> being Riverstone Vantage Pipeline Canada LP, for "any liability, act or default of the corporation", in accordance with the provisions of the Alberta *Business Corporations Act*.

The Board is satisfied with Vantage's corporate status.

Chapter 4

Need for the Facilities

In making its determination on the economic feasibility of the Pipeline and related facilities, the Board assessed the need for the Pipeline and related facilities and the likelihood of their being used at a reasonable level over their economic life. As part of this determination, the Board considered the supply of ethane that will be available for transportation on the Pipeline, and the availability of adequate markets to receive ethane delivered by the Pipeline.

The Board also considered the transportation contract underpinning the Pipeline, other commercial impacts of the Pipeline and facilities, the Applicant's ability to finance the construction and ongoing operation and maintenance of the Pipeline and facilities, and the Project's effect on any other matters relevant to the public interest. Some of these economic impacts of the proposed project are addressed in Chapter 5, Economic Feasibility and Method of Regulation, and Chapter 11, Environment and Socio-Economic Matters.

4.1 Source of the Supply

4.1.1 North Dakota Ethane Supply

Views of Vantage

In support of its Application, Vantage submitted evidence regarding the North Dakota ethane supply, which relies heavily on a report prepared by Purvin & Gertz, Inc. (Purvin & Gertz or PGI). In its report, PGI indicated that petroleum exploration and production activity in the Williston Basin largely targets crude oil, with the bulk of recent activity focused on the Bakken and Three Forks formations in western North Dakota and eastern Montana. According to PGI, production growth has accelerated as operators have gained experience with the application of horizontal drilling and advanced fracturing technology in this area. PGI noted that a number of producers have announced plans to increase investment and production activity.

PGI submitted that crude oil produced in this region contains an amount of natural gas, known as associated gas, which has high ethane content. According to Vantage, at the present time virtually all of the ethane produced with natural gas is left in the gas stream, so recovery and sale of ethane from the natural gas in North Dakota would provide an additional source of revenue to Williston Basin producers. Vantage also indicated that there is potential for future oil and gas development in this region, and that it is reasonable to expect that additional gas processing capacity will be built in the future, resulting in the production of more natural gas liquids (NGL) including ethane.

Resource Definition

Vantage submitted a 2008 U.S. Geological Survey (USGS) study of the area south of the Canada-U.S. border that estimated North Dakota and Montana have 580 million cubic metres

(3.65 billion barrels) of technically recoverable oil in the Bakken Formation. According to Vantage, it is anticipated that the USGS' estimate of technically recoverable oil in the Bakken Formation will increase.

Oil Supply and Associated Gas Supply Forecasts

In support of the Project, Vantage submitted a report by the North Dakota Pipeline Authority that indicated natural gas production in North Dakota rose to a record high of over 280 mmcfd in February of 2010, and that this associated gas corresponded to oil production of approximately 31 800 m^3/d (200 000 b/d) in the same month. Vantage also provided an oil production outlook from PGI that relied on the P50 forecast developed by the North Dakota Department of Mineral Resources (ND-DMR). This forecast indicates that oil production rises to about 71 500 m^3/d (450 000 b/d) in the near term, with a relatively stable outlook through the later part of the decade, and then subsequently declines at between 2.5 and 3.0 per cent per year through to the end of the forecast period. Similarly, natural gas production should grow to around 500 mmcfd by 2015, remain near that level for several years and decline slowly thereafter.

The ND-DMR forecast document cited by PGI also provides estimates of the impact on drilling rig activity and production levels under several oil price assumptions. A 25 per cent drop in the oil price from $80 to $60 a barrel is estimated to result in a drop in oil production of 4 000 m^3/d (25 000 b/d), or approximately six per cent.

Vantage also provided forecasts indicating greater volumes of future oil supply, including a production forecast for the North Dakota/Eastern Montana Region taken from the Enbridge Bakken Pipeline Company Inc. application (Enbridge Bakken), which showed production rising to approximately 100 000 m^3/d (630 000 b/d) by 2015. As well, Vantage provided a forecast prepared by ND-DMR, in which oil production reaches 111 100 m^3/d (700 000 b/d).

North Dakota Gas Processing Capacity

Vantage submitted that North Dakota's gas processing and NGL production is dominated by three processing plants, including Hess Corporation's Tioga facility. In September of 2010, Hess Corporation was granted permission to expand the Tioga gas plant to a total capacity of 250 mmcfd and such expansion is expected to continue and come on-stream in late 2012 or early 2013. Vantage further submitted that Hess Corporation also announced in November 2010 that it has acquired additional acreage in the Bakken oil play located near Hess' existing properties and these additional properties will provide Hess with adequate reserves to supply the Tioga gas plant for the foreseeable future.

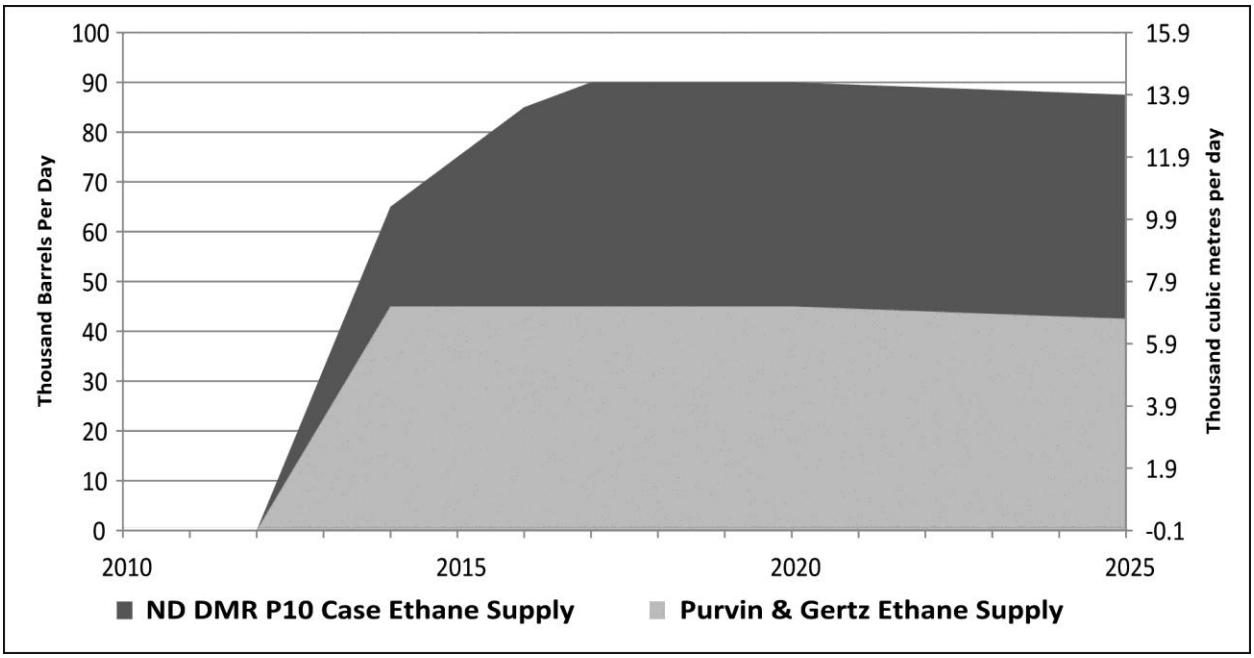
Vantage submitted a report by the North Dakota Pipeline Authority that indicated a gas processing capacity in North Dakota of 475 mmcfd in 2010. Vantage also indicated that additional processing plants have been announced, which would raise total processing capacity to nearly 1 billion cubic feet per day (bcf/d).

Natural Gas Composition and Ethane Supply Forecast

Vantage submitted that current deliveries to the Williston Basin Interstate Pipeline from the Tioga area typically contain approximately 20 per cent ethane. In support of this statement,

Vantage also provided a table that showed that the average ethane content in the Williston Basin Interstate Pipeline over the period May 2010 to May 2011 is 18.9 per cent. Vantage submitted it was reasonable to assume that the composition of the gas will remain similar to what is currently being produced. Based on this assumption, PGI estimates that there will be approximately 6 360 m^3/d to 7 940 m^3/d (40 000 to 50 000 b/d) of potential ethane volumes in proximity to the Pipeline and that these volumes are expected to remain relatively stable through the later part of the decade and will decline around 2020 and beyond. Figure 4-1 shows the PGI ethane supply forecast, as well as a forecast prepared by the ND-DMR. The PGI forecast indicates ethane production will reach 7 140 m^3/d (45 000 b/d), based on oil production of 71 400 m^3/d (450 000 b/d), while the ND-DMR forecast indicates ethane supply reaches 14 300 m^3/d (90 000 b/d) by 2017, based on a scenario where oil production reaches 111 100 m^3/d (700 000 b/d).

Figure 4-1
North Dakota Ethane Supply Forecast



Vantage also provided calculations that indicated ethane production from the Bakken could reach 18 300 m^3/d **(**115 000 b/d), based on gas production reaching 1 bcf/d. In addition, Vantage estimated that approximately 800 m^3/d (5 000 b/d) of ethane from Saskatchewan third party producers could eventually be available to the Pipeline.

An agreement with Hess Corporation gives NOVA Chemicals Corporation (NOVA) the right to acquire up to 100 per cent of ethane production from the Tioga, North Dakota gas plant, which backstops the Project. Vantage confirmed that the start-up date for ethane production from the Hess plant is late 2012 or early 2013, and that production is expected to reach 4 760 m^3/d (30 000 b/d) by 2015.

Views of Other Parties

No intervenors questioned Vantage's evidence regarding supply available to the Pipeline.

4.1.2 Alberta Petrochemical Industry

Vantage submitted a report by PGI, dated 2 February 2011, that provided a description of Alberta's petrochemical industry, including an analysis of Alberta's ethane demand and traditional ethane supply.

Alberta Ethane Demand

Alberta is the leading petrochemical producer in Canada and the Alberta petrochemical sector is one of the largest manufacturing industries in the province. For 2006, the value of the provincial petrochemical output was approximately $15 billion, with exports valued at more than $7 billion. The petrochemical industry is also responsible for more than 7 500 jobs in the province.

The Alberta petrochemical industry is the main consumer of ethane in Western Canada. There are two ethylene production complexes: one located in Fort Saskatchewan and the other in Joffre. These complexes are operated by Dow Chemical Canada Inc. (Dow) and NOVA, respectively. The Joffre complex is one of the largest in the world with an ethane-fed ethylene capacity of 6.2 billion pounds per year, of which NOVA's capacity is 4.8 billion pounds per year, or 77.4 per cent. In its report, PGI estimated that the combined net ethane consumption capacity, or maximum ethane usage, for these ethylene complexes is 39 700 m^3/d (250 000 b/d), taking into account their design capacity and limitations in their downstream facilities.[2]

According to the report by PGI, although the petrochemical industry in Alberta is competitive, it is negatively affected by the ongoing decline in domestic ethane supplies. Since 2005, the ethane supply in Alberta has fallen below the installed petrochemical capacity in the province, and the gap between supply and demand is forecast to widen from approximately 5 600 m^3/d (35 200 b/d) in 2010 to 12 200 m^3/d (76 500 b/d) in 2016 and to 13 500 m^3/d (85 100 b/d) by 2020 (see Table 4-1). The widening gap will result in an increasingly greater amount of unused petrochemical capacity in Alberta and a corresponding loss of value-added upgrading in the province. In addition, PGI indicated that the ethylene crackers in Alberta were designed to use ethane as main feedstock and could only take very limited amounts of propane. Vantage also indicated that the use of propane or other feedstock is less attractive economically than ethane and it creates processing inefficiencies.

Alberta Ethane Supply

The PGI report indicated that the outlook of natural gas production and demand in Western Canada is central to its ethane supply forecast, since practically all ethane produced in Western Canada comes from natural gas processing. According to PGI, the outlook for Western Canadian gas supply post-2010 is a steady decline due to relatively high costs, lower gas prices and increasing competition with U.S. shale gas production in Canadian gas export markets. This downward trend continues until 2016/2017 when increased drilling activity and productivity, combined with growing unconventional gas production[3], eventually overcomes the decline. Gas

2 According to the PGI report, the nameplate capacity for Alberta ethane cracking capacity is approximately 42 900 m^3/d (270 000 b/d). However, the ethane consumption capacity for these facilities is somewhat lower.

3 The unconventional gas production is referred to in the PGI report as gas production coming from the Montney and Horn River shale plays in Northeast BC, as well as from the Duvernay shale in Alberta.

production will level off in the later part of the decade and into the next decade. The PGI report also indicated that natural gas demand in Western Canada, and particularly in Alberta, is growing, primarily driven by oil sands production growth, which would further reduce Western Canada gas exports in the future.

Table 4-1
Ethane Supply & Demand Projections (Thousand b/d)

	2010	2012	2014	2016	2018	2020	2025
Ethane Supply							
Purvin & Gertz	214.8	189.1	173.5	173.6	171.1	164.9	143.0
NEB (Ref Case 2009)	213.6	199.3	204.1	198.6	202.5	185.5	
ADOE (IEEP)[4]	205.0	180.0	170.0	175.0			
Ethane Demand (*)							
Purvin & Gertz	250.0	250.0	250.0	250.0	250.0	250.0	250.0
Ethane Shortfall							
Purvin & Gertz	35.2	60.9	76.5	76.4	78.9	85.1	107.0
NEB (Ref Case 2009)	36.4	50.7	45.9	51.4	47.5	64.5	
ADOE (IEEP)	45.0	70.0	80.0	75.0			

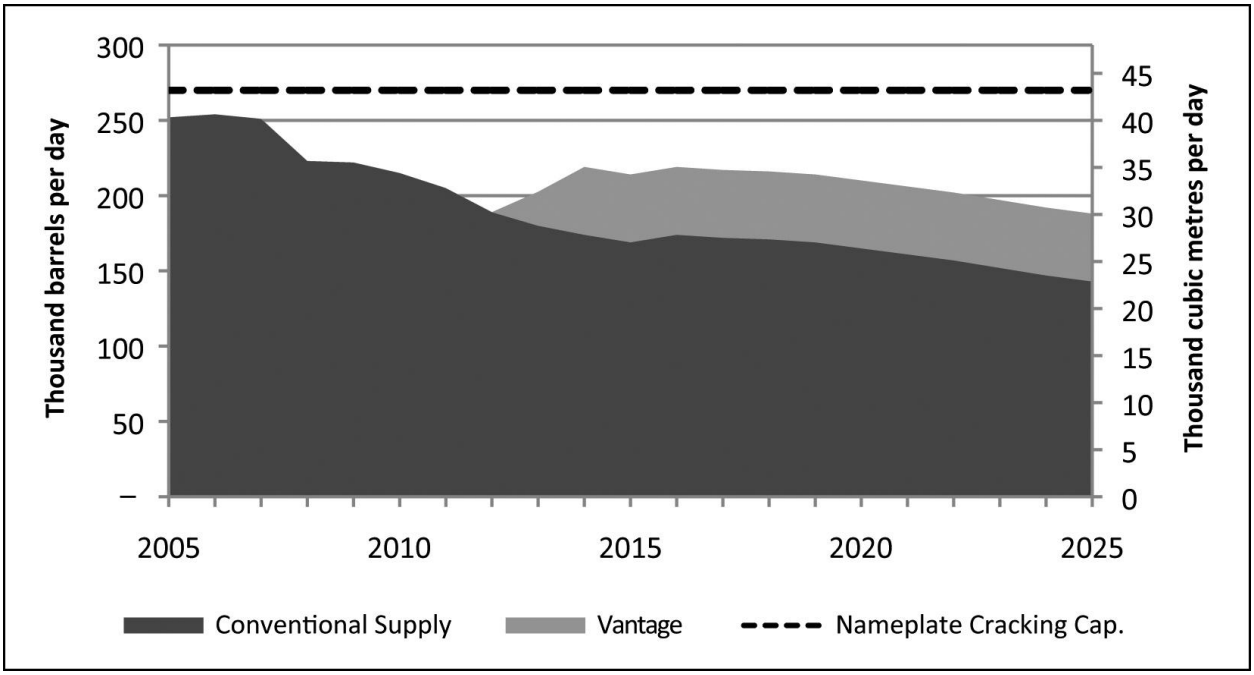
(*) Estimated ethane petrochemical consumption capacity

The PGI outlook for ethane production in Alberta was based on its forecast of gas supply, gas processing and exports. PGI stated that conventional ethane production would decline, in line with the downtrend in Western Canada conventional gas production and exports, until the middle of this decade when incremental unconventional gas supply eventually overcomes the downward trend in conventional gas production and helps to lift ethane production. Later in the decade, it is expected that ethane production would resume its downward trend as gas production becomes flat and the liquids content in the gas declines, as shown in Figure 4-2. According to PGI, the future development of liquefied natural gas (LNG) export capacity in Western Canada would further reduce the gas volumes available for export through Alberta and would have a negative impact on ethane production in the province.

In addition to the PGI report, Vantage submitted ethane supply projections from the ADOE, the National Energy Board, and En*Vantage, Inc., a U.S.-based consultant specialized in NGL and petrochemical industries. The forecasts from these sources are consistent with the PGI projection. Other non-conventional potential ethane sources, such as NGL-rich gas from Alliance Pipeline Ltd., off-gas from oil sands upgraders and incremental ethane extraction from field plants were considered by PGI. However, in PGI's view, the cost of these sources would be significantly higher than conventional ethane production and are generally considered uneconomic.

4 Alberta Department of Energy (ADOE) and Incremental Ethane Extraction Program (IEEP).

Figure 4-2
Alberta Ethane Supply



Views of NOVA

NOVA stated that it is a significant player in the petrochemical industry, with its Joffre manufacturing facility being one of the largest in the world. NOVA submitted that the petrochemical industry in Alberta has a serious problem; it uses considerable amounts of ethane, the vast majority of which is traditionally sourced from Western Canadian natural gas production. Western Canada is facing and will continue to face declining conventional gas production and increased intra-Alberta consumption, which means declining traditional ethane supplies. It is dependent on ethane and the industry does not have a lot of options in terms of alternative feedstocks.

NOVA maintained that Vantage is right in proposing this project on the basis that the ethane shortfall in Alberta is expected to at least continue, if not increase, in the foreseeable future. According to NOVA, even assuming some help from IEEP projects, the expectation is for an ethane supply shortfall in Alberta of between 12 700 to 14 300 m^3/d (80 000 to 90 000 b/d) in 2014 and beyond. NOVA submits that the best evidence for the existence of actual and potential markets to be served by Vantage is the fact that NOVA has agreed to a binding, long-term commitment for capacity on the Pipeline.

NOVA stated that there is an evident need for a large and incremental source of ethane supply for the petrochemical industry in Alberta to alleviate the ethane shortfall situation, and also to

address issues such as debottlenecking[5] existing capacity and making better use of unused capacity.

Views of Other Parties

No Intervenors questioned Vantage's information regarding supply and demand of ethane in Alberta.

Views of the Board

In assessing the need for the Project and its being used at a reasonable level over its economic life, the Board considered, among other things, the existence of sufficient ethane supply from within the North Dakota and eastern Montana supply area to meet the Pipeline throughput requirements, plus the existence of sufficient demand in Alberta to absorb the ethane volumes that would be delivered by the Pipeline.

No concerns were raised in regard to Vantage's assessment of ethane supply and demand within Alberta, or its assessment of ethane supply available in the North Dakota and eastern Montana supply area.

The Board is aware that Alberta's petrochemical industry is a very important contributor to the Alberta and Canadian economy, and recognizes the impact of the current and future ethane shortage in terms of lost value for the province and for Canada. The Board also acknowledges that other potential petrochemical feedstocks, such as propane and butanes, may not be suitable as replacements for ethane for the Alberta petrochemical facilities due to technical and economical reasons. NOVA's argument confirms the Board's view that there is need for new ethane supplies for the purposes of the petrochemical industry. The Board agrees that the Alberta petrochemical industry is experiencing an ethane shortage and the ethane supplies that would be delivered by the Pipeline would reduce the gap between Alberta's domestic demand and supply of ethane.

The Board is satisfied with the evidence provided by Vantage regarding the view that Alberta's domestic ethane supply is declining, coincident with declining gas production in the Western Canada Sedimentary Basin (WCSB). The Board accepts as reasonable the view that the decline of ethane production in Alberta will continue for some time, as increased competition with U.S. shale gas, new U.S. pipelines, and relatively low gas prices in North America could negatively impact the WCSB gas production.

5 Debottlenecking refers to improving facility efficiency and capacity by reducing operational constrictions in processing equipment.

The Board is also satisfied with the evidence provided by Vantage regarding the future ethane supplies that would be potentially available to the Pipeline for shipment to Alberta, sourced in close proximity to the Pipeline starting point in Tioga, North Dakota.

Technological advancements in drilling and exploitation, as well as a better understanding of the resource potential of the Bakken Formation and the Three Forks Formation in North Dakota and eastern Montana, have resulted in high resource assessments and rapidly growing oil supply capability. Coincident with growing oil supply is the growing supply of associated natural gas. The Board is satisfied with the evidence provided by Vantage indicating that the associated gas in this area contains on average about 20 per cent ethane by volume. The Board is also satisfied that there would be sufficient natural gas supply and processing capacity to make ethane available for the Pipeline such that it would be used at a reasonable level over its economic life.

Chapter 5

Economic Feasibility and Method of Regulation

5.1 Transportation, Tolls and Tariffs

5.1.1 Transportation Arrangement

Views of Vantage

Vantage submitted that it had signed a long-term binding transportation agreement with NOVA for 4 770 m^3/d (30 000 b/d) of ethane, which originated at Hess Corporation's natural gas plant located in Tioga, North Dakota for an initial term of ten years, with the option of two five-year extensions. Under the Transportation Services Agreement (TSA), NOVA was provided with priority access for up to 4 770 m^3/d (30 000 b/d) during the term of the ten-year agreement, should the volume of ethane requested to be shipped exceed the Pipeline's capacity. Vantage also stated that a portion of that 4770 m^3/d (30 000 bpd) capacity contracted to NOVA contains a take or pay component.

Vantage submitted that the Pipeline would connect to the AEGS near Empress, AB and that currently, the Empress leg of the AEGS system has approximately 8 585 m^3/d (54 000 b/d) of spare capacity. Vantage submitted that an off-take agreement had been entered into between NOVA and AEGS for the transportation of NOVA's volumes contracted for on the Pipeline from Empress to NOVA's petrochemical complex at Joffre, AB. Vantage estimated that approximately 800 m^3/d (5 000 b/d) of ethane from Saskatchewan third party producers could also be transported by the Pipeline.

Vantage stated that additional shippers would likely request long-term firm transportation service on the Pipeline in the future and that additional transportation service agreements would be entered into when such requests were made. Vantage added that all tolls for transportation on the Pipeline would be negotiated between Vantage and the company requesting the transportation arrangement. That toll would be based on a number of factors, including but not limited to: volume, term and credit rating. Vantage also stated that it would develop a tariff for the uncommitted shippers should it receive a request for the service.

Vantage stated that creditworthiness was one of the primary qualifications of shippers looking to contract for transportation services on the Pipeline and confirmed that NOVA had provided its proof of creditworthiness by meeting the Investment Grade Rating criteria contained in the TSA.

Regarding the transportation toll payable by NOVA, Vantage submitted that it had negotiated the principles for the basic toll as follows:

- Fixed Portion: $U.S. 0.0768 per U.S. gallon.
- Operating Portion: $U.S. 0.0100 per U.S. gallon.

The TSA provides for an adjustment to the Operating Portion each year as per the percentage change in the annual Consumer Price Index for Canada for the previous January to December period, as published by Statistics Canada. The TSA also provides for possible adjustments to the Fixed Portion based on the final capital cost of the Project and annual average volume throughput.

Views of NOVA

NOVA submitted that the toll arrangements negotiated with Vantage for its priority capacity were competitive and market-responsive and will ensure the economic feasibility of the proposed facilities. NOVA added that the current TSA did not afford NOVA the right or preference to any expansion capacity on a priority basis. In the expansion scenario, any potential shipper would be free to negotiate for some priority access to the increment of expansion capacity. No party raised concerns regarding throughputs or access conditions to the Pipeline.

Views of the Board

No party to the proceeding expressed concerns with respect to Vantage's tolling methodology under the TSA. The Board recognizes that the proposed facilities are for the transportation of a specialty product for a specific use. The Board acknowledges that a reasonable market-based tolling arrangement has been negotiated between two commercial parties.

5.2 Ability to Finance

Views of Vantage

Vantage estimated the capital cost of the Pipeline, including wages and an Allowance for Funds Used During Construction (AFUDC), to be $240 million.

Vantage submitted that the financing to construct the Pipeline would be provided by Mistral Energy LP (Mistral) and Riverstone/Carlyle Global Energy and Power Fund IV (Cayman) LP (Riverstone), one of the funds managed by Riverstone Holdings LLC, an energy and power-focused private equity firm founded in 2000, that has over $17 billion under management across six investment funds. Riverstone would provide Vantage with the equity necessary to construct and operate the Project. Vantage stated that Riverstone would fund the requirements through a combination of internally-generated cash flow and funds obtained from the Canadian and U.S. capital markets. Vantage submitted that Riverstone's Investment Committee had already approved and authorized the required capital expenditure to construct the Project.

However, based on preliminary discussions with several financial institutions, Riverstone is of the belief that the Project would attract debt financing, in which case the full capital requirement would not be obtained from Riverstone.

Vantage stated that while Riverstone would be working on obtaining debt financing for the Project under the lending guidelines, in the event that the debt markets were inaccessible, the Project could be funded with 100 per cent equity. Vantage stated that the capital structure of the Project has not been determined yet, adding however, that landowners would not be affected by

any combination of debt or equity in the final capital structure of the project. Vantage stated that because the Pipeline will not be regulated on a cost of service basis, the expected return on equity of the Pipeline would depend on the performance of the business.

Vantage estimated that approximately 90 per cent of that capital cost would be recovered during the first ten years of the TSA. Vantage stated that it based this estimate on certain volume assumptions as well as the assumption that the operating toll would cover the operating expenses of the Pipeline. At the end of the initial ten year agreement, if NOVA does not extend its transportation commitment, Vantage submitted that a small portion of the capital costs may not be recovered.

Views of Parties

TELC/CAEPLA had concerns as to whether Riverstone would be able to afford the Project and show a return on the investment, and also whether using debt financing for the Project would put the landowners at risk. Certain Aboriginal groups had concerns regarding the capital structure of the Project, in terms of the percentage of debt and equity.

Views of the Board

The Board is satisfied that adequate provisions exist for the recovery of capital, operating expenses and financing costs for the applied-for facilities.

5.3 Common Carrier Obligation

Subsection 71(1) of the NEB Act requires that a company operating an oil pipeline offer service to any person wishing to ship oil on its pipeline. Where capacity on an oil pipeline is contracted, the Board examines the open season process and the capacity to be made available for spot shipments in considering whether the company is acting in a manner consistent with its common carrier obligations.

Views of Vantage

Vantage submitted that it would retain at least 10 per cent of the Pipeline's capacity for uncommitted shippers. This uncommitted capacity would be marketed and made available to qualified shippers through its ongoing business development efforts.

Views of NOVA

NOVA noted that the priority capacity arrangement accorded to NOVA under the TSA requires that some consideration be given to the obligations to which Vantage would be subject to under subsection 71(1) of the NEB Act. NOVA recognized that where priority capacity, or priority access is proposed, it is important that some capacity remain available for spot shipments or monthly nominations.

NOVA noted that while the NEB legislation does not use the term "common carrier", it has established that the obligation to comply with the common carrier obligation is subject to the

Board's discretion and a test of reasonableness, with a view to tailoring any particular pipeline's common carrier duty or obligation to the circumstances of its case.

NOVA stated that unlike other commodities subject to subsection 71(1) of the NEB Act, ethane is a specialty product for industrial petrochemical use, and that it is produced and consumed by a limited number of large and sophisticated companies. NOVA noted Vantage's extensive public consultation program that provided interested third parties the ability to determine whether the Vantage Project represented a viable commercial opportunity.

Given that Vantage indicated that it would reserve at least 10 per cent of its capacity for uncommitted shippers, NOVA asserted that Vantage would meet its obligation under subsection 71(1) of the NEB Act.

Views of the Board

> In previous decisions, the Board has found that an oil pipeline acts in a manner consistent with its common carrier obligations when an open season is properly conducted and where the facilities are either readily expandable or capacity is left available for monthly nominations.
>
> Noting that Vantage has undertaken to reserve 10 per cent of its capacity for uncommitted shippers, the Board is satisfied that Vantage will be able to meet its common carrier obligation. The Board reminds Vantage to prepare and file with the Board a tariff for uncommitted shippers, in the event that uncommitted shippers contract with Vantage for service on the Pipeline.

5.4 Method of Regulation

Views of Vantage

Vantage requested that it be regulated as a Group 2 company for the purposes of toll and tariff regulation. Vantage cited the Board in its Reasons for Decision OH-1-2007, as outlining the factors found to be relevant when making a determination as to the method of regulation.

In its OH-1-2007 Reasons for Decision, the Board stated that such factors include:

> the size of the facilities; whether the pipeline transports commodities for third parties; and, whether the pipeline is regulated under a traditional cost of service methodology.

Vantage submitted that its request for Group 2 designation was made having regard to the following factors:

- the relatively small size of the proposed Pipeline and facilities;
- its moderate length; and
- the single Pipeline operation mode.

Vantage also stated that the Pipeline's characteristics are similar (or identical) to existing pipelines included in the NEB Group 2 classification. These characteristics are:

- Vantage is not comparable to the complex, multi-line Group 1 pipeline companies;
- there will initially be only one firm service shipper on the Pipeline. Vantage and the shipper have negotiated the principles that will determine the toll payable by the shipper for firm service on the Pipeline; and
- the product to be shipped on the Pipeline, ethane, is a specialty product for industrial petrochemical use, and is thus typically produced and consumed by a small constituency of large and sophisticated companies.

Vantage submitted that, in these circumstances, it would be appropriate that the Pipeline be regulated on a complaint basis, as provided by Group 2 status.

Views of Parties

No party expressed any opposition to Vantage's request to be designated as a Group 2 company for financial regulation purposes.

Views of the Board

The *Memorandum of Guidance on the Regulation of Group 2 Companies,* issued on 6 December 1995 (MOG), divides pipeline companies into two groups: Group 1 and Group 2. Group 1 companies are generally subject to a greater degree of financial regulation and monitoring than Group 2 companies.

Pursuant to Schedule B of the MOG, Group 2 companies are subject to a lesser degree of financial regulation than Group 1 companies. The financial regulation of Group 2 companies is carried out on a complaint basis with a consequential reduction in financial reporting requirements. In the past, when determining whether a company should be designated as Group 1 or Group 2, the Board has considered the size of the facilities, whether the pipeline transports commodities for third parties and whether the pipeline is regulated under traditional cost of service methodology.

Given that Vantage will have just one committed shipper initially and that both parties have based the toll payable through a negotiated agreement rather than on a traditional cost of service basis, the Board finds it appropriate that Vantage be designated as a Group 2 company. Vantage is, therefore, required to comply with the requirements of subsection 5(2) of the *Oil Pipeline Uniform Accounting Regulations* (OPUAR).

Vantage is required to include in its tariff the following wording:

The tolls of Vantage are regulated by the National Energy Board on a complaint basis. Vantage is required to make copies of tariffs and supporting financial information readily available to interested persons. Persons who cannot resolve traffic, toll and tariff issues with Vantage may file a complaint with the Board. In the absence of a complaint, the Board does not generally undertake a detailed examination of Vantage's tolls.

Given its designation as a Group 2 company, the Board reminds Vantage to comply with all abandonment-related filing requirements for Group 2 companies, pursuant to RH-2-2008. The Board requires that Group 2 companies that charge tolls develop and file a proposal for collection of funds no later than 30 November 2012. Group 2 companies are also required to file with the Board a proposed process and mechanism to set aside funds for abandonment no later than 31 May 2013.

Chapter 6

Facilities

The Board uses a risk-based life cycle approach to ensure that NEB-regulated facilities and activities are safe and secure from their initial construction through to their abandonment. In consideration of the safety and security of proposed facilities, the Board assesses, at a conceptual level, whether the facilities are appropriately designed for the properties of the product being transported, the range of operating conditions, and the human and natural environment where the facilities would be located. Specific considerations include the company's approach to engineering design, integrity management, security, emergency preparedness, and health and safety.

When a company designs, constructs, operates or abandons a pipeline, it must do so in accordance with the NEB's *Onshore Pipeline Regulations, 1999* (OPR-99), the commitments made during the hearing, and the conditions attached to any approval. The OPR-99 references various engineering codes and standards including *Canadian Standards Association Z662-11 Oil and Gas Pipeline Systems* (CSA Z662-11). The company is responsible for ensuring that it follows the design, specifications, programs, manuals, procedures, measures and plans developed and implemented by the company in accordance with the OPR-99.

The adequacy, implementation and effectiveness of a company's commitments are typically verified by the Board through audits, inspections and meetings. In addition, the Board may also perform ongoing monitoring of a company's compliance and incidents. This compliance approach is an integral part of the Board's continuous oversight of a company's pipeline and facilities. Accordingly, the Board would employ its normal compliance verification approach as a means of verifying that the company is meeting the commitments outlined in the OH-3-2011 proceeding.

6.1 Description of Facilities

The Project includes approximately 578.3 km of new pipeline and associated facilities for the transportation of liquid ethane at a maximum operating pressure of 9930 kPa. The Pipeline would be designed in a manner that ensures the product remains in a single phase or dense phase state at all times.

The buried pipe material would be Canadian Standards Association Z245.1, Steel pipe (CSA Z245.1) Grade 359, Category II pipe, with an outside diameter of 273 mm (NPS 10), minimum wall thickness of 4.8 mm and polyethylene coating. The Project also includes:

- two pump stations (located near Assiniboia, SK and Empress, AB)
- 28 mainline block valve sites
- in-line inspection facilities (launching and receiving)
- custody transfer metering facilities

- cathodic protection system
- associated miscellaneous works.

6.2 Design, Construction, and Operation

Codes and Standards

Vantage submitted that the Project is to be designed, installed, tested and operated in accordance with the requirements of CSA Z662-11, the OPR-99 and other applicable codes and standards and will comply with other federal, provincial, and municipal codes and regulations, as applicable.

Risk Assessment

Vantage indicated that a preliminary risk assessment has been completed and that it would be finalized during the detailed design phase. The assessment was based on the worst case scenario of a full pipeline rupture, that being a mechanical hit due to excavation. Based on the assessment, the Pipeline route was selected so that it would maintain a minimum of 900 metres in distance from any populated areas. If the number of people were to increase in the vicinity of 900 metres of the Pipeline, Vantage committed to following the CSA Z662-11 standard requirements.

Depth of Cover

Vantage submitted that it would bury the Pipeline a minimum depth of 1.2 metres (4.0 feet) along the entire length of the Pipeline, unless otherwise required by the CSA Z662-11 standard or crossing approvals. In response to TELC/CAEPLA's concerns regarding depth of cover, Vantage submitted that the CSA Z662-11 standard requires a minimum of 0.9 metres (3 feet) depth of cover for High Vapour Pressure (HVP) product in a Class 1 location. However, Vantage submitted that it would bury the Pipeline deeper than required so that any agricultural equipment crossing the Pipeline would not damage it. According to Vantage's engineering assessment, the Pipeline buried at a depth of cover of 1.2 metres can be crossed by heavy agricultural equipment (that is, B-train semi trailer combination) and imposed stresses on the Pipeline will remain below the CSA Z662-11 standard allowable.

Horizontal Directional Drilling (HDD)

Vantage submitted that the Pipeline route would intersect a total of 159 watercourse crossings: 17 with defined bed and banks, 71 identified as undefined drainages and 71 with no visible channels. Some of the watercrossings will require special design consideration. Each of the surveyed watercourse crossing locations has been assessed and could be crossed using a conventional or isolated open-cut, bore or punch drill, or Horizontal Directional Drilling (HDD). Vantage submitted a preliminary geotechnical evaluation for five HDD creek crossings and one HDD river crossing. This evaluation concluded that the six proposed HDD crossings should be feasible, however, further field assessment work would be undertaken prior to design and construction. HDD would also be considered by Vantage as one option for wetland crossings to reduce environmental impacts. At other sensitive locations, Vantage proposed dryland HDD as a potential mitigation measure to avoid damaging the habitat of Ord's kangaroo rat and arthropod

species at risk listed under the federal *Species at Risk Act*. Any wetland or potential dryland HDD locations would be confirmed with the Board prior to construction.

Materials

Vantage submitted that the minimum operating temperature of the Pipeline, at the minimum burial depth of 1.2 metres, would be -5°C. Based on the operating conditions, Vantage selected the buried line pipe to be CSA Z245.1 Category II, -5°C (notch toughness properties tested at -5°C). In order to confirm the selected line pipe notch toughness properties, Vantage committed to conducting a ground temperature study and if it found that the ground temperature was below -5°C, Vantage would select the pipe material design temperature to meet the minimum ground temperature. Regarding the pump stations, Vantage submitted that all process piping would be Electric Resistance Welded (ERW) pipe, CSA Z245.1, Category II, -45°C, (notch toughness properties specified at -45°C). The aboveground piping would be painted and installed on pipe racks.

Welding and Non-destructive Examination (NDE)

Vantage committed that the welding specifications for the Project will be developed in accordance with all applicable standards and codes. Manual welding will be used for the Project and the welds are to be subjected to 100 per cent visual examination, and in addition, 100 per cent radiographic or ultrasonic NDE. Vantage stated that an independent contractor would be responsible for the NDE of pipeline and pump station welds and that the weld integrity would be confirmed by performing pressure testing of the pipeline and pump stations piping.

Overpressure Protection and Leak Detection System (LDS)

Vantage submitted that the Pipeline would be monitored and controlled 24 hours a day, 365 days per year, from a Central Control Facility (CCF) using a state-of-the-art Supervisory Control and Data Acquisition (SCADA) system. The pump station overpressure system would have two forms of redundancy: pressure monitors and switches, and mechanical automatic pressure safety valves. The flare system would be designed in accordance with the CSA Z662-11 standard with the purpose of depressurizing the Pipeline in the case of an emergency.

Vantage indicated that a LDS would be developed and installed for the Project. The LDS would cover the entire Pipeline system, including road and railway crossings, and would be designed in a manner capable of alerting the CCF operators of potential issues through the SCADA system. Material balance methods, as per CSA Z662-11, Annex E, *Recommended practice for liquid hydrocarbon pipeline system leak detection*, would be used as a basis for developing the LDS. To address any limitations of the material balance method on sensitivity and accuracy, the overall LDS would include a combination of other leak detection methods, such as visual and aerial surveys, as well as gas detection and fugitive emission programs. Vantage committed to summarizing the details of the LDS in a manual to be filed with the Board. Vantage also indicated that it would consult with NOVA on the material balance system in detecting liquid ethane leaks, since NOVA has been operating and employing that system on the AEGS in Alberta since 1978.

Integrity Management Program (IMP)

Vantage submitted it would develop the IMP to meet the requirements of the OPR-99 and CSA Z662-11. A Pipeline integrity in-line inspection (ILI) would be completed after one year in operation and would include both deformation and metal loss internal inspections to confirm the Pipeline integrity. The ILI would also be used to establish a baseline for future internal inspections. Vantage submitted that launching and receiving facilities would be designed as per the requirements of CSA Z662-11 and installed at adequate locations to accommodate the in-line inspection tools.

Views of the Board

The Board notes that the Project would be designed, constructed and operated in accordance with the most recent regulations, codes and industry standards and other specifications for liquid ethane pipelines. The Board would require Vantage to design, locate, construct, install and operate the Project in accordance with the specifications, standards and other information referred to in its Application or as otherwise agreed to during questioning or in its related submissions (Condition 2, Appendix II). In addition, the Board would require Vantage to update its Commitments Tracking Table (Condition 26, Appendix II) to reflect commitments made throughout this proceeding.

The Project would be designed to transport liquid ethane, which is a HVP product highly volatile and flammable when released to the atmosphere. The liquid ethane could change to a gaseous state when released from the Pipeline. OPR-99, Section 10 requires companies to assess the risk to operate such a pipeline that is situated in a Class 1 location and within 500 m of the RoW of a railway or paved road. The Board finds Vantage's preliminary risk assessment pertaining to mechanical damage hazard causing full pipeline rupture to be adequate with respect to this hazard. However, the Board is of the view that a risk analysis pertaining to all other hazards (for example, manufacturing, incorrect operations, overpressure, pressure cycling) and associated consequences is required. The Board would require Vantage to finalize and file with the Board the risk assessment for the Project at least 60 days prior to the commencement of construction. Populated areas shall be given special consideration in the assessment of the hazards and implementation of the preventative and mitigative measures (Condition 5, Appendix II).

With regard to depth of cover, the Board notes Vantage's proposal to bury the Pipeline to a minimum depth of 1.2 metres exceeds the requirements of CSA Z662-11 and will accommodate ordinary agricultural practices.

The Board is satisfied with the approach to HDD adopted by Vantage. The Board notes that HDD can be a very effective technique for the installation of pipelines in sensitive areas. The success of HDD installations for

pipeline construction depends on accurate HDD feasibility assessments, proper design and planning, and actual conditions encountered during the execution of the HDD. The Board would require Vantage to file design drawings and drilling execution plans for its HDD activities (Conditions 13 and 14, respectively of Appendix II). These plans would be specific to each watercourse crossing and to each potential HDD dryland crossing, whereas plans for wetland HDD crossings may be generic. The Board would also require Vantage to notify the Board in the event that Vantage has to follow an approved contingency plan for a particular crossing (Condition 15, Appendix II).

The Board is of the view that the selected materials for the Project meet the requirements set out in CSA Z662-11. A ground temperature study will provide confirmation whether the selected below ground pipe notch toughness properties are suitable and a Quality Assurance Plan will ensure a quality control process and integrity inspection program for all procured materials. The Board would require Vantage to file the Quality Assurance Plan and a ground temperature study 30 days prior to the purchase of any materials to be used in the construction of the Project (Conditions 11 and 12, respectively of Appendix II).

The Board is satisfied with Vantage's proposed welding, non-destructive examination and pressure testing programs for the Project which will meet the requirements stated in CSA Z662-11 and OPR-99. To facilitate the Board's inspection of Vantage's construction activities, the Board would require Vantage to file the welding, non-destructive examination, painting and pressure testing procedures for the Project (Conditions 28, 29 and 30, respectively of Appendix II).

Regarding overpressure protection and the LDS programs for the Project, the Board is satisfied that the proposed programs will meet the requirements specified in CSA Z662-11. The Board is of the view that the LDS, coupled with the SCADA system, should be acceptable for the safe operation of the Pipeline system. Vantage would develop specifications for pump station monitoring and control, a LDS manual incorporating CSA Z662 and industry requirements, as well as training programs for the personnel involved in the operation and maintenance of the Project. The Board would require Vantage to file such specifications 60 days prior to the commencement of construction of the Project and the LDS manual and training program 60 days prior to filing any Leave to Open application pursuant to section 47 of the NEB Act (Conditions 10, 16, 34 and 35, respectively of Appendix II).

The Board requires companies to develop and implement an IMP to proactively identify and mitigate any potential hazards to the Project. The IMP is a continuous improvement process to be used throughout the life cycle of the Project. The in-line inspection of the Pipeline in the early

stage of the operation provides important data on the integrity status of the Pipeline, which would be used as a baseline comparison of future in-line inspections of the Pipeline. The Board would require Vantage to file the in-line inspection details prior to the commencement of any pressurized operation of the launching and receiving facilities, as well as an IMP for the Project prior to filing any Leave to Open application pursuant to section 47 of the NEB Act. The Board would also require Vantage to perform the in-line inspection to confirm the integrity of the Pipeline, one year after the commencement of operation of the Project (Conditions 31, 36 and 43, respectively of Appendix II).

Chapter 7

Safety, Security and Emergency Preparedness and Response Programs

7.1 Safety, Security and Emergency Preparedness and Response Programs

On 24 April 2002, the NEB issued a letter to all oil and gas companies under the jurisdiction of the Board entitled "Security and Emergency Preparedness and Response Programs". The letter set out the NEB's expectations for appropriate and effective Emergency Preparedness and Response (EPR) programs. The NEB expects companies to develop and implement EPR programs for all aspects of their operations. Vantage stated that it will follow the Board's expectations in the development of its EPR Program and Security Program.

Vantage noted that it will address responsibilities for health, safety and environmental performance by using a Health, Safety and Environmental Management System.

Vantage stated that in the event of an emergency such as a line break, pipeline block valves would be capable of detecting loss of pressure as the valves would be equipped with actuators for low pressure detection, causing them to close upon sensing low pressure or any rapid rate of decrease in pressure, thus isolating the pipeline segment. Vantage noted that ability to close upon sensing a loss of pressure would be designed into each block valve location and would not be dependent on the SCADA system.

Vantage committed to having an Emergency Response Plan (ERP) for the Project that would meet regulatory requirements and be developed in time to train emergency response personnel prior to the Pipeline start up. Vantage further noted that it would coordinate with emergency response agencies along the Pipeline route to ensure that appropriate communication, understanding and cooperation were in place for the Project and that the ERP was consistent with the plans maintained by the affected agencies. Vantage also stated that after start-up, emergency response training would be provided and emergency response exercises would be conducted annually, with a full scale exercise involving all agencies identified in the Company Liaison Section of the ERP being conducted at least every three years.

Vantage submitted that it would adopt recommendations regarding the ERP made by Environment Canada in its 19 August 2011 Letter of Comment.

Views of Parties

Environment Canada made several recommendations regarding emergency prevention, preparedness and response planning. Environment Canada's recommendations included that project related spill contingency and emergency response plans be provided to the appropriate regulatory agencies for review and that emergency response plans be developed in accordance

with applicable standards. Further, the recommendations included proposed minimum requirements of environmental emergency response plans.

No party raised concerns about Vantage's safety or security programs for the Project.

Views of the Board

In the Board's view, public safety is paramount in the design, construction and operation of the proposed Pipeline. While the Board finds that a pipeline such as the one proposed by Vantage can be built and operated safely, the Board acknowledges that risk cannot be completely eliminated.

The Board is of the opinion that both the potential for, and consequences of, an incident such as an accidental gas leak can and must be minimized. The Board must be satisfied that adequate precautions and appropriate measures are in place in the event of an incident. An appropriate Emergency Procedures Manual (EPM) confirms adequate emergency procedures are in place for public safety and protection of the environment in the event of an incident. The Board would direct Vantage to submit an EPM at least 60 days prior to filing an application for Leave to Open (Condition 38, Appendix II). In addition, the Board would require Vantage to file evidence of consultation conducted with agencies, municipalities and landowners that may be involved in an emergency response related to the Pipeline for the development of the final EPM (Condition 39, Appendix II).

The Board would also require Vantage to conduct, within one year after commencement of operations, a full scale emergency response exercise to test the relevant components of its EPM and emergency management program (Condition 44, Appendix II). Further, the Board would require that Vantage file documentation demonstrating full implementation of the company's Emergency Preparedness and Response Program and Training Program at least 60 days prior to filing an application for Leave to Open (Condition 37, Appendix II). This documentation shall include an assessment and risk ranking of, and appropriate control measures for, all potential hazards associated with the Project.

The Board has reviewed the recommendations made by Environment Canada, which Vantage has committed to adopt. The Board is of the view that these recommendations align with NEB requirements and expectations.

It is the Board's expectation that both construction and operational practices must address safety considerations. To facilitate the ongoing review by the NEB of Vantage's safety plans and performance, the Board would require Vantage to submit a safety program and construction safety manual for the Project (Conditions 22 and 40, respectively of Appendix

II). The Board would also require Vantage to submit a Construction Inspection Program and an Audit Program, both of which have safety elements (Conditions 27 and 42, respectively of Appendix II). Further, the Board would require Vantage to submit a construction schedule and construction progress reports that include information on any environmental, safety and security issues and non-compliances, as well as the measures undertaken for the resolution of each issue and non-compliance (Conditions 9 and 32, respectively of Appendix II). The Board's oversight of construction of the Project would include verification of Vantage's compliance with its safety program and construction safety manual, as facilitated by the filing of Vantage's construction schedule and progress reports.

Regarding pipeline security, the Board's expectations are that a security program is systematic, comprehensive and proactive in managing security risks and that it is appropriately integrated into a company's overall management system to provide for safe and secure practice in the design, construction, operation and maintenance of a pipeline system. The Board also expects that the program be developed in accordance with the OPR-99 and the Proposed Regulatory Change 2010-01, which outlines the Board's expectations for a Pipeline Security Management Program. The Board would require a security program in accordance with Proposed Regulatory Change 2010-01 (Condition 17, Appendix II).

The Board reminds Vantage that an application pursuant to section 47 of the NEB Act for Leave to Open would be required prior to the operation of the Pipeline and related facilities.

Chapter 8

Public Consultation

The Board requires companies to undertake an appropriate level of public consultation, commensurate with the setting, nature and magnitude of a project. The Board considers public involvement to be a fundamental component during each phase in the lifecycle of a project (that is, project design, construction, operation and maintenance, and abandonment) in order to address potential impacts of that project. This chapter addresses Vantage's public consultation program. Vantage's Aboriginal engagement and consultation are discussed in Chapter 9, Aboriginal Matters.

8.1 Vantage's Public Consultation Program

8.1.1 Consultation with Landowners, Residents, and Other Potentially Affected People

Views of Vantage

Vantage submitted that it used an informative and consultative approach to ensure public awareness of the Project and that its objective was to identify those stakeholders most likely affected by the Project, or those with a potential interest in the Project. Vantage stated that it had informed and consulted those identified stakeholders since the planning stage of the Project, and would continue to engage with them on an ongoing basis.

Vantage's consultation program consisted of four phases:

1. Stakeholder Identification and Early Notification: focused on initial public disclosure of the Project and the initiation and solicitation of stakeholder dialogue, including initial notification of the Project, follow-up with stakeholders as required, and early considerations in the development of the Pipeline route.

2. Stakeholder Outreach: focused on the implementation of comprehensive and direct stakeholder engagement, including community meetings, open houses and ongoing information distribution and dialogue to provide more detailed Project information and to invite continued dialogue.

3. Ongoing Stakeholder Outreach: focused on ongoing stakeholder consultation and communication to continue to solicit feedback, expand stakeholder dialogue, address and resolve issues and advise stakeholders about the manner in which they could participate in the Board's regulatory process and comment to the Board about the Project. This phase commenced with the filing of Vantage's Application with the NEB and would continue throughout the regulatory review process until the completion of construction.

4. Operations Consultation: focused on ensuring ongoing stakeholder communication and issue resolution, as required during operation. When operations commence, consultation activities would be transferred to Vantage's operation team.

Vantage indicated that through its consultation program, it made the public, industry and area stakeholders aware of the Project and the impact it could have on their communities. It also provided opportunities to engage stakeholders to address their concerns and answer their questions. Vantage stated it had employed a number of methods to engage stakeholders, including:

- distribution of Project materials via mail;
- development of a Project inquiry telephone line;
- one-on-one meetings;
- presentations; and
- community consultation events, including open houses.

Among those stakeholders and potentially affected groups identified for consultation were landowners and residents, federal, provincial and municipal government agencies, non-governmental organizations, including environmental non-governmental organizations and recreational clubs, Aboriginal groups, and industry.

Vantage also stated that it had sent a notification letter to all industry stakeholders that own adjacent existing pipelines along the proposed project RoWs and that there had been initial consultation meetings with 90 per cent of the owners of these pipelines, including Foothills Pipe Lines Ltd., TransCanada PipeLines Ltd. (TransCanada), Keystone XL, TransGas Limited, and Enbridge Pipelines Inc.

Public consultation activities began in August 2010 with the distribution of a project information package. A total of 625 packages were mailed to adjacent landowners within 900 metres on either side of the proposed RoW. Landowners and residents within a 2 km radius of any proposed pump station location were also notified. Six open house events were held between 27 September 2010 and 2 October 2010 in the communities of Richmound, Shaunavon, Ponteix, Assiniboia, Bengough, and Lake Alma. Vantage continued its consultation activities during the regulatory application process, and committed to being available to meet with stakeholders throughout the course of the Project.

Vantage noted there were a number of concerns raised by stakeholders through its engagement activities. These included concerns about safety, impacts to business and farming operations, cumulative effects, liability, economic opportunities, land reclamation and abandonment. Vantage confirmed that it would continue to consult and discuss mitigation measures with potentially affected individuals.

With regard to landowners' pipeline abandonment concerns, Vantage acknowledged that it would meet NEB requirements for pipeline abandonment as outlined in the Board's Reasons for Decision regarding Land Matters Consultation Initiative (LMCI) Stream 3 (RH-2-2008).

Specifically, with respect to the financial matters related to pipeline abandonment, Vantage confirmed that landowners would not be liable for the costs of pipeline abandonment.

Vantage pointed out that a proposal for collection of abandonment funds through tolls was not included in the TSA. Vantage clarified that abandonment costs would be classified as an operating cost, so the annual contribution that would result from its abandonment collection plan would be an annual operating cost. Vantage added that this fund would be reviewed every five years and if it determined more money needed to be put aside because of future developments in the area, the fund would then be re-estimated and more money would be provided. Vantage stated that, as per the LMCI Stream 3 decision, it would set aside money in an independent fund, managed by a third party. This independent fund would potentially cover any unforeseen contingencies after the Pipeline has been abandoned.

Regarding consultation with TELC/CAEPLA, Vantage submitted that it had met and would continue to meet with TELC/CAEPLA representatives to discuss concerns and issues related to the Project. Vantage indicated that in the last proposed agreement between TELC/CAEPLA and Vantage, many areas of concern such as abandonment, wet soil, stripping, weed management, open trench management, coverage, stone picking and land access, were addressed. Vantage stated the only outstanding issue was compensation. Vantage committed to adopting many of the principles incorporated into the draft TELC/CAEPLA agreement and apply them to other landowners along the Pipeline route.

In response to TELC/CAEPLA's concerns regarding the inappropriate conduct of its land agents, Vantage indicated that as soon as it was informed of these concerns, it promptly addressed them. Vantage further recognized that its land agents are the "eyes and ears in the field" and they are representing the company.

Views of TELC/CAEPLA

TELC/CAEPLA expressed concerns regarding the adequacy of Vantage's landowner consultation process, submitting that landowners had been provided misinformation with respect to the Project and "suffered repercussions" as a result of attempted communications and negotiations with land agents. Ms. Heatcoat, on behalf of TELC/CAEPLA, indicated that Vantage's land agents advised that if landowners did not sign easement agreements on time, or if they caused any problems, the land would be expropriated. She viewed the land agents approach as being "heavy handed" and having a "school yard bully mentality".

TELC/CAEPLA expressed concerns that the Pipeline would not be buried deep enough to accommodate modern agricultural cultivation practices and farm machinery. Mr. Martin, a landowner on the proposed Project route, expressed concern that Vantage would not bury the pipe deep enough so he could continue his farming practices without being held responsible if the pipe were damaged. TELC/CAEPLA proposed the Pipeline be installed at a depth of cover of no less than five feet in order to reduce the potential from third party impact and damages occurring as a result of inadequate cover. Related to the issue of depth of cover, TELC/CAEPLA also expressed concern that if the Pipeline were not buried at an adequate depth, the safety of landowners crossing the Pipeline during farming operations would be at risk.

TELC/CAEPLA indicated that Vantage had not adequately demonstrated that the proposed Project would be properly abandoned in the future. It argued that rather than removing the entire pipe at the time of abandonment, Vantage had proposed to abandon the Pipeline in place, with the exception of a one kilometre strip allocated for prospective future development. TELC/CAEPLA expressed concern that the financial responsibility and liability associated with environmental impacts from the pipe being left in the ground, and future abandonment activities would fall on members of TELC/CAEPLA or other similarly affected landowners.

TELC/CAEPLA stated it was continuing to seek resolution of the on-going annual risks, liabilities, obligations and costs imposed upon the landowners when the Pipeline is constructed on their property and to make certain Vantage provide assurances with respect to adequate liability insurance coverage during construction and operation of the Pipeline.

TELC/CAEPLA submitted that it has focused its efforts on resolving the outstanding landowner issues for the Project with mitigation measures similar to those provided in the Enbridge Pipeline Inc., the Manitoba Pipeline Landowners Association and the Saskatchewan Association of Pipeline Landowners agreement, which was drafted and agreed to concerning the Enbridge Alberta Clipper Project and the Enbridge Southern Lights Project (Enbridge Agreement). TELC/CAEPLA indicated although issues around construction monitors and joint committees remain outstanding, Vantage's proposed agreement was similar in nature to the Enbridge Agreement and addressed many areas of concern, except for compensation and annual fees.

TELC/CAEPLA requested that the Board stay its decision on the Project until all issues and concerns of landowners in regard to the Project have been remedied by satisfactory agreements. TELC/CAEPLA indicated that if the Board approved the Application before the issues were fully addressed, there would no longer be a level playing field for consultations and its right to fair and balanced negotiations for private easement agreements would be prejudiced.

8.1.2 Consultation with Government Stakeholders

Views of Vantage

Vantage provided evidence that consultation with various regulatory agencies, including those involved in environmental management, began in the second quarter of 2010. Vantage stated that it had initial meetings with municipal representatives. A large number of non-government organizations were notified of the Project and those that expressed interest provided input on various topics, including baseline research, field methods and reporting requirements. Consultation with federal, provincial and municipal stakeholders continued throughout the application process.

No other parties expressed views on this topic.

Views of the Board

The Board acknowledges Vantage's efforts to identify and consult with potentially affected and interested stakeholders and its commitment to continuing public consultation throughout the life of the Project.

Although consultation with Government stakeholders was initiated early in the process, the Board expects Vantage to continue its efforts to engage in and maintain effective and timely consultation activities with Government stakeholders, as appropriate, throughout the life of the Project.

The Board recognizes the concerns raised by TELC/CAEPLA regarding land agent conduct and Vantage's timely response in dealing with these concerns. The Board encourages Vantage to continue to provide appropriate oversight and training to its land agents in order to work towards continual improvement in the performance of its land agents. The Board views land agents as the front-line company representatives. It is the Company's responsibility to ensure that land agents deal with landowners in a professional and respectful manner.

As set out in Chapter 6 of these Reasons where depth of cover was discussed, the Board has found that installation of the Pipeline at a depth of 1.2 metres of cover exceeds the requirements of CSA Z662-11 and will accommodate ordinary agricultural practices. The Board is of the view that, in addition to the Board's requirements and Vantage's ongoing commitment to consultation, the concerns raised by landowners about their safety when operating equipment and vehicles over the Pipeline would be sufficiently addressed.

With respect to consultation with potentially affected landowners and residents, the Board notes that many of the concerns expressed by TELC/CAEPLA focused on safety and emergency measures. The Board recognizes the complexity of information that stakeholders must evaluate when considering the potential effects of a project, including information related to the design of projects and the proposed measures to protect the safety of nearby residents and the public.

As already determined in Chapter 7, the Board would direct Vantage to file its EPM for approval prior to filing an application for Leave to Open. The Board expects, in accordance with Condition 39, Appendix II, that Vantage would demonstrate that its EPM is based on effective consultation that takes into account the views and concerns of stakeholders, including landowners, municipalities and other relevant agencies.

With respect to issues associated with pipeline abandonment, the Board acknowledges that abandonment is a valid concern of landowners. Companies are required to obtain leave of the Board to abandon a pipeline. An application for abandonment is made at the time of abandonment and it must include an abandonment plan, which requires approval of the Board. Abandonment plans must include evidence that all landowners and other persons potentially affected by the abandonment are

sufficiently notified, their concerns addressed, and that an environmental assessment has been completed. In addition, the NEB would provide potentially affected parties an opportunity to make their concerns known to the Board in order to ensure their comments are taken into account when assessing the abandonment application. Further, if the Board were to approve the plan, it would issue an Order with conditions attached. The Board would monitor the conditions for compliance. A Pipeline is not declared abandoned until the Board is convinced the abandonment will not result in any negative impacts and the RoW is returned to a state compatible with the surrounding lands.

At present, there is no legislative or other requirement that companies assume abandonment-related costs at the certification stage of a project. However, pursuant to the Board direction in RH-2-2008, companies would be required to file preliminary physical plans and cost estimates related to abandonment and a proposal for collection of funds (for companies that charge tolls). The Board will address the mechanism and appropriateness of funds set aside for abandonment at a future proceeding. Therefore, at this time, the Board is not making a decision on abandonment, whether for physical or financial consideration, as it is not in the context of this hearing.

The Board notes the concerns expressed by TELC/CAEPLA regarding a number of issues including consultation, depth of cover, safety, abandonment, and liability. With respect to the request by TELC/CAEPLA for the Board to stay its decision until landowners and Vantage have signed mutually acceptable agreements, the Board notes that Vantage and TELC/CAEPLA have initiated consultations and that both parties have committed to continuing these discussions. The Board further notes that even though a final agreement was not reached, Vantage committed to upholding all terms previously agreed upon between it and TELC/CAEPLA. The last significant unresolved concern, as stated by both parties, was compensation, which is outside of the Board's jurisdiction. In addition, the Board notes Vantage's commitment to addressing concerns that are raised through all its ongoing consultation activities and its interest in developing agreements and work plans with landowners in the area of the Project. The Board strongly supports the development of such arrangements and encourages project proponents to build relationships with landowners with interests in the area of their projects. Given the commitments both parties have made to ongoing dialogue, the Board is of the view that it need not impose further requirements.

The Board acknowledges Vantage's commitment to consulting with and addressing issues raised by affected landowners, both before and after Pipeline construction. The Board would require Vantage to create and maintain records to track Project-related landowner complaints or concerns and how they have been addressed (Condition 4, Appendix II).

Although outside of the scope of this proceeding, the Board acknowledges concerns regarding the Participant Funding Program, which is intended to provide financial assistance for public participation in the NEB's oral hearing process for facility applications. More specifically, the Board notes TELC/CAEPLA's position that the program may be of limited value to individuals or groups who are unaware of their need to be involved in the Certificate hearing process when the public notice announcing funding is posted in the newspapers including a deadline for submitting funding application forms.

While the Board notes the inability of TELC/CAEPLA and Vantage to reach an agreement prior to the hearing, the Board finds that the design and implementation of Vantage's public consultation program is appropriate given the setting, nature and magnitude of the Project.

Chapter 9

Aboriginal Matters

Whenever a project has the potential to impact the rights or interests of Aboriginal groups, the Board obtains as much evidence as possible so that it may assess the potential impacts and factor that consideration into its final decision. The Board relies on its Enhanced Aboriginal Engagement (EAE) initiative and its hearing process so that its records are as complete as possible.

Before filing a project application, proponents are required by the Board's Filing Manual to identify, engage and consult with potentially affected Aboriginal groups. Proponents are further required to report on these activities, and to provide a description of any unresolved concerns as part of the project application. Aboriginal groups are encouraged to engage with proponents so that their concerns may be identified early with, perhaps, a greater opportunity for concerns to be potentially resolved before the application is filed.

The Board's EAE initiative aims to provide proactive contact with Aboriginal groups that may be affected by a proposed project, and to help Aboriginal groups understand the Board's regulatory process and how to participate in that process. The Board reviews the completeness of the list of potentially affected Aboriginal groups identified in the proponent's Project Description filed with the MPMO. The Board may suggest to the proponent any necessary revisions. The Board then sends letters to each potentially impacted Aboriginal group on the revised list, informing them of the project as well as the Board's regulatory role in respect of the project, and offers to provide further information on the hearing process. Following issuance of these letters, Board staff follow up, respond to questions or conduct information meetings, where requested.

The Board encourages Aboriginal groups with an interest in the project to participate in the hearing process in order to make the Board aware of their views and concerns. There are various ways for Aboriginal groups to make their views known directly to the Board. This can include a letter of comment, oral statements, written evidence, oral testimony by elders and members of Aboriginal groups, cross-examination of the project proponent and other parties, and final argument.

9.1 Participation of Aboriginal Groups in the Regulatory Process

For the Project, the NEB carried out its EAE work between the receipt of the Project Description on 23 September 2010 and the receipt of the Project Application on 7 February 2011. The following nine Aboriginal groups requested and were provided information meetings on the Board's hearing process: Carry the Kettle First Nation, Pasqua First Nation, Poundmaker First Nation, Red Pheasant First Nation, Treaty Four Chiefs' Gathering, File Hills Qu'Appelle Tribal Council, Métis Nation of Alberta – Region 3, and Métis Nations of Saskatchewan, Eastern Region 3 and Western Region 3.

Nine Aboriginal groups participated as intervenors in the OH-3-2011 proceeding, including eight First Nations and one Aboriginal organization. The Aboriginal participants and the extent of their participation are found in Table 9-1.

Table 9-1
Aboriginal Intervenors in the Vantage Pipeline Hearing

Intervenor	Filed Evidence	Presented Witnesses	Final Argument
First Nations:			
Big Bear Band		●	
Little Pine First Nation	●		
Lucky Man Cree Nation	●		
Mosquito, Grizzly Bear's Head, Lean Man First Nations	●		
Pasqua First Nation			●
Poundmaker Cree Nation #114	●		
Siksika Nation	●	●	
Wood Mountain First Nation	●		
Organization:			
File Hills Qu'Appelle Tribal Council*	●		●

*Member Nations include Carry the Kettle First Nation, Little Black Bear First Nation, Muscowpetung First Nation, Nekaneet First Nation, Okanese First Nation, Pasqua First Nation, Peepeekisis First Nation, Piapot First Nation, Standing Buffalo First Nation, Star Blanket Cree Nation, and Wood Mountain First Nation

Procedural Motions

Little Pine First Nation (Little Pine), Lucky Man Cree Nation (Lucky Man), Mosquito, Grizzly Bear's Head, Lean Man First Nations (Mosquito), Nekaneet First Nation (Nekaneet), Poundmaker Cree Nation #114 (Poundmaker) and Wood Mountain First Nation (Wood Mountain) filed letters with the Board stating that through engagement activities between Vantage and the respective First Nations, all issues of concern arising from the Project had been resolved. The Aboriginal groups requested that select evidence filed by members of the First Nations be withdrawn from the record of proceeding and noted support for the Project. Siksika Nation (Siksika) also requested the Board withdraw certain evidence. The Board granted the request of each of these First Nations and has withdrawn the specified exhibits from the record.

9.2 Aboriginal Engagement by Vantage

Vantage stated that it commenced work on its Aboriginal Engagement for the Project in the spring of 2010 by identifying the Aboriginal groups most likely to be impacted by the Project. Vantage indicated the primary goals of its Aboriginal Engagement process were to:

- identify and consider, in planning the Project and in developing mitigation measures, the potential effects of the Project, if any, on the current use of the lands by Aboriginal groups for traditional activities within the proposed Project areas;
- obtain local and traditional knowledge of Aboriginal groups relevant to the Project;
- identify and consider, in planning the Project and in developing mitigation measures, sites of cultural and historical importance to Aboriginal groups that may be affected by the Project; and
- develop and enhance long-term relationships with Aboriginal groups.

Vantage began its Aboriginal Engagement process by researching the proximity of the Project area to: reserves or other lands designated as future reserves under the *Indian Act*; Métis settlements and communities; and, areas of traditional land use (TLU). Vantage noted that its pipeline route crosses the regions covered by Treaty 4, but that it does not cross any reserves or lands designated for reserve status. Vantage then developed a contact list of those potentially impacted Aboriginal groups based on an initial 50 km engagement zone centered on the Project RoW. Reserves within this 50 km engagement zone include Nekaneet Cree Nation, Wood Mountain First Nation and Piapot First Nation.

To validate and update its contact list, Vantage began to contact the Aboriginal groups, key organizations, and government officials. Based on this research, Vantage developed and consulted with an expanded list of Aboriginal groups, which either expressed an interest in the Project, or requested further information regarding the Project. The list also included Aboriginal groups identified on the MPMO's list of communities to be considered under Vantage's Aboriginal engagement program. The final contact list included 41 Aboriginal communities or organizations, all of whom were advised of the Project via an information package for review and feedback.

Vantage's Aboriginal engagement program involved a number of initial activities including:

- mail-outs of letters and Project information materials, including regulatory information;
- community visits and information drop-offs;
- project presentations through person-to-person meetings with Aboriginal groups; and
- open houses.

Vantage stated that it conducted an extensive Aboriginal engagement program, which was intended to determine whether the Project would have an impact on Aboriginal TLU. Vantage also stated that it intended to formalize the relationship between Vantage and Aboriginal groups by way of Community Capacity Agreements. In the course of the proceedings, Vantage indicated that it resolved all concerns with Little Pine, Lucky Man, Mosquito, Nekaneet, Poundmaker and Wood Mountain, which resulted in Vantage obtaining support for the Project from those First Nations.

In the event that impacts on traditional uses are subsequently identified, Vantage stated it would work with Aboriginal groups to determine an appropriate mitigation strategy. Vantage also

committed to responding to the concerns raised by Aboriginal groups and to ongoing consultation during the regulatory process and through the life of the Project.

Views of Parties

File Hills Qu'Appelle Tribal Council

The FHQTC raised a number of concerns regarding Vantage's consultation activities and stated that Vantage's Application had not adequately considered impacts to FHQTC members' rights and interests. More specifically, it stated that the Application was deficient in that it did not give any specific consideration to Aboriginal and Treaty rights including *Natural Resources Transfer Agreement, 1930* rights currently exercised by FHQTC members in the Project area. It further stated that although the Application reviewed the species of wildlife that exist within the Project area, it did not address the impact that construction and operation of the Project would have on the FHQTC members' rights.

FHQTC raised concerns regarding the timing of Vantage's initial notification of the Project to potentially affected Aboriginal groups. FHQTC suggested the length of time for engagement may have determined which of the FHQTC member Nations currently support the Project. FHQTC suggested that its member Nations who were included in Vantage's initial contact list of potentially impacted Aboriginal groups were the groups who have filed letters of support for the Project. The members of FHQTC who have yet to support the Project were contacted at a later date, after Vantage had expanded its list of Aboriginal groups, based on the MPMO's list of communities to be considered under Vantage's Aboriginal engagement program.

Siksika Nation

Siksika stated that it participated in extensive discussions with Vantage and was "confident that the honour of the Crown has been upheld in this case and the project will proceed in a way that respects Siksika's Aboriginal Treaty Right." Siksika further stated that it believed that Siksika had been treated fairly throughout the consultation process.

9.3 Impacts of the Project on Aboriginal People

Views of Vantage

Vantage submitted its Aboriginal Engagement work would continue throughout the regulatory process and through the life cycle of the Project with any Aboriginal group who expressed concern regarding potential impacts to traditional land use.

With assistance from Vantage, the Stoney Nakoda Sioux Nation initiated a desktop assessment to determine traditional land use and to identify impacts. Vantage agreed to additional meetings with Siksika hunters and members of the Siksika Traditional Society to review project maps and to identity plant, animal and culturally significant sites. Vantage also committed to reviewing Siksika's existing traditional use information gathered in relation to other projects. If necessary, site visits would occur in the spring of 2012.

Vantage committed that if Aboriginal groups identify concerns, mitigation strategies would be implemented as required and acceptable solutions to problems would be developed. Aboriginal groups would have the opportunity to review and comment on the proposed mitigation measures. Vantage also committed to the use of monitors from interested Aboriginal groups to observe construction activities.

Vantage noted that the Project would have minimal impact on Aboriginal people along the proposed Project RoW and be of limited duration. Specifically, it stated the majority of Vantage's proposed RoW consists of privately owned or Crown-occupied lands used for agricultural purposes, where permission needs to be obtained from the landowner or leaseholder in order for traditional use to occur.

Views of Parties

Big Bear Band

Big Bear Band expressed concerns about the environmental protection of traditional lands. It noted that members practice traditional land use activities in many of the areas near the Pipeline route. Chief Little Bear recalled that he would hunt coyotes just about almost where the Pipeline goes, and that members of the Big Bear Band still fish in the Swift Current watershed region, including Duncairn Dam, Swift Current River and Lake Pelletier. Members also continue to gather plants for traditional and medicinal use. Chief Little Bear further stated that the Empress and Maple Creek area sand hills hold spiritual significance.

Chief Little Bear submitted, in response to how Vantage could address his concerns, that he believed Vantage had "done a good job with having archaeologists and biologists, and they seem to be really concerned with the sacred sites...".

File Hills Qu'Appelle Tribal Council

The FHQTC expressed concerns about the Project traversing Crown lands within its traditional territory, and about potential impacts to traditional uses and interests. FHQTC stated that the Project would cross traditional territory where TLU activities are currently practiced by FHQTC members to hunt, trap and gather food for themselves, their families and community members. FHQTC indicated that the Great Sand Hills area is important to the traditional and current use of cultural, spiritual and ceremonial practices.

The FHQTC indicated the need for some form of a TLU study to be conducted by Vantage, in participation with potentially affected groups, so that the full extent of TLU impacts could be appropriately identified and mitigated. It also questioned Vantage's belief that Aboriginal groups must provide a clear demonstration of impacts before considering whether to conduct a TLU study. The FHQTC explained that it, along with its members, did not have the capacity or resources to provide further information, which Vantage deemed necessary before a TLU study would be conducted. At the oral hearing, the FHQTC submitted that if the Board did approve the Application, Vantage should be required to provide reasonable capacity support for traditional use investigations identified by interested First Nations to enable them to provide traditional use information to Vantage.

The FHQTC raised concerns about the potential impacts of the Project on its treaty and Aboriginal rights and its ability to select lands under the *Saskatchewan Treaty Land Entitlement Act*. The FHQTC stated that member Nations are signatories to the *Saskatchewan Treaty Land Entitlement Framework Agreement*, and are actively seeking to realize their treaty land entitlement in the Project area.

The FHQTC also expressed concerns with the Project's abandonment process. In particular, it expressed a need for more information on how consultation activities would be factored into the abandonment process and to what extent Aboriginal groups would be provided adequate capacity to meaningfully participate in the process and associated studies to ensure their rights and interests were protected. It suggested establishing a dedicated pipeline abandonment Aboriginal consultation and participation capacity fund for the Project. FHQTC noted that Vantage has made no provision for collecting abandonment funds through tolls and suggested that abandonment costs should be included in tolls and recovered over a defined period of time, shorter than the expected life of the Project, in order to ensure that sufficient funds exist to properly abandon the Project.

Little Pine First Nation, Lucky Man Cree Nation, Mosquito, Grizzly Bear's Head, Lean Man First Nations, Poundmaker Cree Nation #114 and Wood Mountain First Nation

Little Pine, Lucky Man, Mosquito, Poundmaker and Wood Mountain indicated that all issues of concern regarding potential impacts to traditional land use activities in the Project area had been resolved and subsequently filed letters of support for the Project.

Pasqua First Nation

Pasqua stated that its members continue to exercise Aboriginal, inherent and Treaty rights in the Project area. While Vantage had sent information to Pasqua, due to limited resources, Pasqua had experienced difficulty reviewing all the information and communicating with Vantage. As a result, Pasqua indicated it may not have been fully consulted. Pasqua submitted that if the Board were to approve the Application, Vantage should be required to consult further with Pasqua and all First Nations of Treaty 4 to "sort out any of the differences and come to a mutually understandable agreement."

Pasqua also expressed concerns regarding the Project abandonment process. In particular, it was concerned about the potential impact and liability, which landowners and Aboriginal groups could face if environmental clean-up was required after abandonment had occurred.

Siksika Nation

Siksika expressed concerns about the potential impacts of the Project on its rights and traditional uses in the proposed Project area, with particular concern about potential impacts in the Great Sand Hills area. Siksika noted it continues today to exercise collective rights to harvest plants and wildlife on unoccupied Crown lands, other lands within Siksika's traditional territory, and certain portions of the Project area. In written affidavits, Siksika members detailed hunting, fishing, and gathering of plants for traditional and medicinal use in the Great Sand Hills, Cypress Hills and Empress regions. The Great Sand Hills and Cypress Hills were noted as having particular cultural significance as members still conduct many traditional ceremonies in these

areas. Siksika burial grounds, known as “Death Camps”, are located in the Great Sand Hills region and may be present along portions of Vantage’s proposed route.

Councilor Clarence Wolf Leg stated that “at all times, Siksika’s traditional way must be balanced with the need for new development infrastructure.” Siksika expressed support for the way Vantage is “honouring the things that we’re very concerned about; not just the things, our historical sites and the plants and the gathering aspect of our ways.”

Views of the Board

The Board requires applicants to initiate early discussions and consultation with Aboriginal groups potentially affected by a proposed project. This allows for early exchange of information and for matters of concern to be considered at the onset of the Project and through the design phase. The extent of the consultation that needs to be carried out is determined, to a large extent, by the nature, scope and setting of a project.

The Board is satisfied that all Aboriginal groups potentially affected by the Project were provided with sufficient information about the Project and had an opportunity to make their views known to Vantage and the Board. The Board expects Vantage to continue to consult with interested Aboriginal groups throughout the life of the Project.

With respect to the request by the FHQTC regarding TLU capacity agreements and the request by Pasqua to require Vantage to continue further consultation with all First Nations of Treaty 4, the Board notes that Vantage and both the FHQTC and Pasqua have initiated consultations and that Vantage has committed to ongoing consultation with any interested Aboriginal groups, including Pasqua and FHQTC. In addition, the Board notes Vantage’s commitment to addressing concerns that are raised through its ongoing consultation activities and Vantage’s interest in developing agreements and work plans with Aboriginal groups in the area of the Project. Given the commitments all parties have made to ongoing dialogue, the Board does not see a need to impose conditions to address additional consultation or TLU capacity concerns.

The Board notes FHQTC’s and Pasqua’s concerns regarding abandonment. With respect to the Board’s current and on-going process for addressing abandonment issues, please refer to Chapter 8, Public Consultation, for further details.

The Board notes Vantage’s commitments to continue consulting with interested Aboriginal groups, and to develop and review all mitigation pertaining to TLU with affected Aboriginal groups. The Board further notes Vantage’s commitment to completing various TLU investigations that would identify any additional issues or concerns. The Board would require Vantage to file with the Board a final report outlining TLU

investigations for the Project (Condition 20, Appendix II). In this regard, the Board would expect Vantage to provide, in particular, a summary of any effects of the Project on the current use of lands and resources for traditional purposes identified in the investigations, including a description of how these concerns or issues have been or will be addressed by Vantage.

The Board notes that almost all the lands required for the Project are previously disturbed, primarily privately owned and used mainly for ranching and agricultural purposes. The Board also notes the comprehensive program of measures for reducing or eliminating potential Project impacts on resources that may be used for traditional purposes by Aboriginal groups committed to in Vantage's EA. The Board is, therefore, of the view that any impacts to the use of lands and resources for traditional purposes would be effectively addressed by Vantage.

Chapter 10

Land Matters

The Board requires applicants to provide a description and rationale for the proposed general route of the pipeline, the location of associated facilities and the permanent and temporary lands required for the project. The Board also requires a description of the land rights to be acquired, as well as the land acquisition process and the status of land acquisition activities. This information permits the Board to assess the appropriateness of the proposed general route of the project, the proposed land requirements and the applicant's land acquisition program.

10.1 Route Selection

Views of Vantage

The Project would include the Pipeline and various associated facilities, as described in Chapter 6 of these Reasons.

Vantage identified three routing options for the Pipeline. The evaluation criteria used to select the notification corridor included:

- accommodating landowner and government requests, where feasible;
- minimizing the Pipeline length in order to limit the total area of disturbance;
- following existing linear disturbances (pipelines, maintained roads, etc.);
- avoiding or minimizing the cross of steep/moderate slopes;
- avoiding or minimizing the crossing of sensitive wildlife habitat;
- avoiding or minimizing the crossing of areas of high archaeological/palaeontological sensitivity;
- avoiding or minimizing the quantity of watercourse crossings; and
- where watercourses cannot be avoided, crossing at or near right angles where straight and stable reaches occur and where a successful directionally drilled or bored crossing is likely.

The selection of the notification corridor was based on the primary control points of the Hess Tioga North Dakota Plant, as the source point, and the AEGS, as the delivery point. Secondary control points included the Canada-U.S. border crossing, the Town of Cadillac, SK and the Agri-Environment Service Branch Big Stick Community Pasture.

Alternatives to the general Pipeline route were ultimately found not to be suitable. Vantage rejected Alternate Route 1, because it would involve traversing extensive areas of native prairie in southern Saskatchewan and Vantage would have to seek additional regulatory approvals from the State of Montana. Vantage rejected Alternate Route 2, because it would run directly through

the Great Sand Hills Representative Area Ecological Reserve, which Vantage determined would have greater impacts on the environment and Aboriginal traditional land use.

In Saskatchewan, the Pipeline commences near the junction of the Saskatchewan, North Dakota and Montana borders within the SE 01-01-16 W2M in the municipality of Lake Alma. It continues northwest to the Saskatchewan-Alberta border in SE 06-20-29 W3M and terminates at the AEGS near Empress, AB in SE 11-20-01 W4M. Vantage submitted that the total length of the general Pipeline route is approximately 578 km, consisting of 4.5 km of private (freehold) lands in Alberta and the remaining 573.8 km being 93 per cent freehold and 7 per cent Crown lands in Saskatchewan.

Approximately 503.7 km of the proposed general route is contiguous with existing pipeline, railway and all season public road RoW, and Vantage stated that 74.773 km of non-contiguous RoW would be required for the Project. Vantage provided letters, signed by officials of rural municipalities, confirming that the Pipeline would follow or cross roadways maintained by the rural municipalities so as to be accessible to the public on a year-round basis. Approximately 90 per cent of the adjacent existing pipeline RoWs are owned by Foothills Pipe Lines Ltd., TransCanada, Keystone XL, TransGas Limited, and Enbridge Pipelines Inc.

Vantage stated it would continue to assess the need for route modifications to address issues that are site specific or in response to landowner concerns.

Views of TELC/CAEPLA

TELC/CAEPLA identified concerns regarding Vantage's proposed general route for the Project. These concerns were focused on the proposed route being "counter to good pipeline engineering, construction and safety practices while at the same time creating the longest route possible." TELC/CAEPLA argued that agricultural operations would be affected as a result of the proposed route following road allowances instead of remaining contiguous to pipeline RoWs, as proposed in Alternate Route 2. TELC/CAEPLA argued that the area along roadways is generally where the highest frequency of farming traffic occurs and more farming developments, such as fences, buildings and bins, are built and maintained.

In its final argument, TELC/CAEPLA moved that the Board request that a full, comprehensive study be conducted under the CEA Act. TELC/CAEPLA indicated that some of the roads adjacent to the proposed general route were not all season public highways[6], and therefore, the Pipeline would traverse more than 75 km of new RoW. TELC/CAEPLA indicated that it had travelled the proposed Pipeline route, purchased and reviewed Rural Municipality maps, and spoke with long-term residents to establish if the roadways were maintained year-round. Based on the information it collected, TELC/CAEPLA was of the view that 141.5 km of the proposed Pipeline route was non-contiguous.

6 Under the *CEA Act*, and the *Comprehensive Study List Regulations*, the proposed construction of an oil and gas pipeline more than 75 km on a new RoW requires a Comprehensive Study. The *Comprehensive Study List Regulations* define new RoW as "not alongside and contiguous to" an existing RoW, and further define an existing RoW as "land subject to a right of way and developed for an electrical transmission line, an oil and gas pipeline, a railway or an all season public highway".

10.2 Land Requirements

Views of Vantage

Permanent Right of Way and Temporary Work Space (TWS)

Vantage submitted that in order to construct, maintain and operate the Pipeline, new permanent RoW and TWS would be required. New permanent RoW, varying in widths from 8 to 30 metres, would be acquired with an additional amount of TWS, measuring 5 to 12 metres in width. The total combined width of the RoW and TWS is 20 metres for approximately 543 km.

Changes in width of the RoW would occur where the RoW would be adjoining, sharing or overlapping existing pipeline or roadway RoW. Where available and practical, temporary working rights would be obtained from existing contiguous RoWs to reduce the amount of new disturbance. In areas with native prairie, Vantage stated it would reduce the construction RoW width. Additional TWS would be required at crossings of roads, railroads, pipelines, utilities and water course, pipeline deflection areas or bend and other locations where site requirements need to be addressed. These TWS would vary in shape and size.

Vantage submitted that the RoW would be reclaimed after construction with a new permanent RoW maintained for pipeline operations. The NEB also designates an area which extends about 30 metres beyond both sides of the RoW as a safety zone[7], where certain activities are restricted without first obtaining clearance from either the company or the NEB. Following post-construction reclamation activity, the Pipeline would operate until such time as an application for decommissioning or abandonment was made. Vantage submitted that it would comply with the Board's *Guidance for Safe Crossings of NEB Regulated Pipelines Using Agricultural Vehicles and Mobile Equipment*, dated December 2010 and related *Exemption Order Respecting Crossings by Agricultural Vehicles or Mobile Equipment*.[8]

Pump Stations

Vantage proposed to install a pump station in both Alberta and Saskatchewan. Both pump stations would be located on private leased lands. The total land area required for each pump station is approximately 0.73 hectares.

Valve Sites

The Project would require 28 mainline valve sites to be installed at approximately 25 km intervals along the route. Twenty-four of these valve sites would be contained within the boundaries of the permanent RoW. The other four valve sites are proposed to be located within

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7 For more information about the 30 metre safety zone, please refer to section 112 of the NEB Act or to the NEB publication "Pipeline Regulation in Canada: A Guide for Landowners and Public", which can be obtained online at http://www.neb-one.gc.ca/clf-nsi/rthnb/pblcprtcptn/pplnrgltncnd/pplnrgltncnd_ndx-eng.html or from the NEB Library (ask for it by title or ISBN 978-1-100-16721-3).

8 The "Guidance for Safe Crossings of NEB Regulated Pipelines Using Agricultural Vehicles and Mobile Equipment" and related "Exemption Order Respecting Crossings by Agricultural Vehicles or Mobile Equipment" can be obtained online at https://www.neb-one.gc.ca/ll-eng/livelink.exe?func=ll&objId=659454&objAction=browse or from the NEB Library (ask for it by title or ISBN 978-1-100-17643-7).

the boundaries of the pump stations. The total land area required for each valve site is approximately 0.04 hectares.

In selecting the valve site locations, Vantage considered the following criteria:

- proximity to existing roads;
- power supply; and
- avoidance of native prairie, where feasible.

Cathodic Protection Facilities

Vantage stated that it would be installing and maintaining a cathodic protection system along the entire length of the Project. The land areas required for the cathodic protection system would be confined to the area of the Pipeline RoW and surface lease locations. The specific location of these facilities would be determined during the detailed design phase.

10.3 Land Acquisition Process

Views of Vantage

Vantage identified all landowners directly affected by the general Pipeline route and created a 1.8 km notification corridor (900 metres on either side of the Pipeline centreline). Lands within a 2 km radius of any proposed pump station locations were also identified. Landowners were contacted by Vantage's land agents to advise them of the Project, to obtain permission to complete field surveys and studies, and to answer any questions.

Vantage submitted that it would comply with the land acquisition provisions and regulations of sections 86 and 87 of the NEB Act. Along with the section 87 notice, landowners received detailed Project information. Vantage submitted sample documents of section 87 notices to landowners, and section 86 agreements for the various types of land rights required. Table 10-1 below provides details on lands information.

Table 10-1
Summary of Land Information

Segment	Alberta	Saskatchewan	TOTAL
Length of Pipeline (km)	4.5	573.8	578.3
Number of Easements	6	852	858

Vantage indicated that on private lands, the Pipeline and ancillary facilities would generally require the negotiation and acquisition of easements for the pipeline RoW. Vantage noted that supplemental lease agreements would be required for pump station sites, valve sites, and

permanent access roads. Temporary rights would be needed for TWS, temporary access roads, staging areas and storage areas during construction.

Vantage indicated that land acquisition activities commenced November 2010 and would continue into the first half of 2012. As of November 2011, Vantage had executed approximately 81 per cent of the total easement agreements required.

Vantage committed that all easement documents, including compensation easements signed by all landowners, were not confidential. In a letter to all landowners, Vantage promised a transparent negotiation process. It further committed that all landowners who enter into easement or temporary workspaces agreements with Vantage would be offered the same compensation structure and similar terms for all similarly situated landowners, irrespective of when agreements were entered into.

Views of the Board

It is the Board's view that a total RoW varying in width from 8 to 30 metres, with an additional amount of TWS measuring 5 to 12 metres in width, is necessary to allow for the construction and operation of the Project in a safe and efficient manner, as well as allowing for maximum use of the existing RoW for construction and operation purposes. The Board, therefore, finds that Vantage's anticipated requirements for permanent and temporary land rights are acceptable. The land rights documentation and acquisition process proposed by Vantage are also acceptable to the Board.

The Board acknowledges Vantage's efforts to create a transparent land acquisition process. The Board notes that implementing non-confidential easement and temporary workspaces agreements may ease the frustration experienced by landowners. The Board commends Vantage on these initiatives and supports this approach to improve long-term relationships with landowners.

In response to the motion by TELC/CAEPLA requesting the Board direct a comprehensive study under the CEA Act, the Board is of the view that the information provided in support of the motion by TELC/CAEPLA is limited and does not sufficiently demonstrate justification for a comprehensive study. The Board notes that Vantage has consulted with the appropriate rural municipalities and has provided assurances that the roadways are maintained and accessible to the public on a year-round basis. Consequently, in the Board's view, the Project would be restricted to less than 75 km non-contiguous RoW, which does not require a comprehensive study.

Designing the majority of the Pipeline route to be contiguous with existing pipeline, railway and all season public road RoW is favourable to minimize the environmental and socio-economic impacts of the Project. With respect to the proposed route deviations from existing contiguous RoW, the Board notes that the rationale for those deviations was to avoid potential environmental and socio-economic impacts, and therefore, finds the criteria and the proposed deviations to be appropriate. The Board is of the view that the proposed general route is acceptable.

Chapter 11

Environment and Socio-Economic Matters

The Board considers environmental and socio-economic matters under both the CEA Act and the NEB Act. The Board requires applicants to identify the effects a project may have on bio-physical and socio-economic elements, the mitigation to reduce those effects, and the significance of any residual effects once the mitigation has been applied.

This chapter summarizes the EA process used by the NEB in evaluating the Project. It also addresses the socio-economic issues that are not assessed under the CEA Act.

11.1 Environmental Screening Process

The Project requires a certificate under section 52 of the NEB Act, which triggers the requirement for an EA under the CEA Act. Since the Project requires less than 75 km of new RoW, as defined in the CEA Act *Comprehensive Study List Regulations*, the Project is subject to a screening level of environmental assessment under the CEA Act.

Pursuant to the CEA Act *Regulations Respecting the Coordination by Federal Authorities of Environmental Assessment Procedures and Requirements* (Federal Coordination Regulations), the NEB coordinated the involvement of the Responsible Authorities (RA) and Federal Authorities (FA) in the CEA Act EA conducted within the NEB hearing process. The Canadian Transportation Agency is an RA with a regulatory trigger under the *Canada Transportation Act*.

The Board issued a Draft ESR on 25 November 2011 for a one week public comment period. The Board received comments from Fisheries and Oceans Canada and Transport Canada on 2 December 2011, and from Environment Canada and Vantage on 5 December 2011. The final ESR reflects comments received during the public comment period and the Board's assessment of the bio-physical and socio-economic effects of the Project and mitigation measures. It also includes an evaluation of the likelihood of significance for any adverse effects. The ESR includes recommendations for conditions to be included in any Board approval.

11.2 Socio-Economic Matters considered under the NEB Act

The Board expects companies to identify and consider the impacts a project may have on socio-economic conditions including the mitigation of negative impacts and the enhancement of project benefits.

Potential socio-economic effects covered by the CEA Act are included in the ESR. The CEA Act contemplates indirect socio-economic effects caused by a change to the environment, as a result of the Project. Direct socio-economic effects caused by the existence of the Project itself are assessed under the NEB Act and are discussed below. Other economic effects are addressed in Economic Feasibility and Method of Regulation, Chapter 5.

Employment and Economy

Views of Vantage

Vantage submitted that the Project is expected to result in net positive impacts on employment and the economy. Construction of the Project is expected to result in expenditures on goods and services of approximately $240 million, and is estimated to generate increased tax revenues in Canada of approximately $950 000 per year, which would be paid to municipal, provincial and federal governments. Vantage suggested that construction would result in 35 102 person-days of employment for an estimated $21 million in wages and benefits.

Vantage noted that residents in the Project area had expressed a desire to benefit from the Project through business contracts and job opportunities, and therefore, Vantage would make construction contracting opportunities available to qualified competitive local and Aboriginal businesses wherever possible. Vantage stated that construction of the Project was also expected to result in indirect business and employment opportunities.

As part of its Aboriginal engagement process, Vantage submitted that it would identify and explore opportunities for participation by Aboriginal groups in the Project by way of education, employment and contract opportunities. In response to concerns raised by the File Hills Qu'Appelle Tribal Council (FHQTC) and Pasqua First Nations (Pasqua), Vantage maintained that it would work closely with Aboriginal groups to understand their capacity and ability to provide services, equipment and personnel to participate in the Project. Vantage further committed to including a provision in the main construction contracts, which was meant to ensure contractors engage Aboriginal groups and attempt to generate as many employment opportunities as possible during the construction phase.

Views of File Hills Qu'Appelle Tribal Council and Pasqua First Nation

Both FHQTC and Pasqua indicated that they had concerns regarding employment, training and business opportunities related to the Project. FHQTC submitted that Vantage had made good faith commitments with respect to Aboriginal involvement in the Project, but that its preference was that the Board hold Vantage accountable by specifically referring to Vantage's "commitments" in the Certificate conditions. FHQTC also submitted that Vantage should be required to report the percentage of Aboriginal employment and the amounts obtained by Aboriginal businesses in contracting opportunities, within a certain period after construction of the Project. Pasqua requested that Vantage be required to employ a defined number of First Nation people or a percentage of personnel from Aboriginal groups.

Infrastructure and Services

Views of Vantage

Vantage submitted that the total construction workforce for the Project was expected to be approximately 600 persons, distributed over three construction spreads along the Pipeline route. The peak requirements for personnel and services will occur in a 6 month period from spring through fall 2012. Local accommodations, including existing hotels, motels, and recreation

vehicle parks, would be used to house construction workers, with approximately 1 200 hotel rooms and 356 serviced campsites available within the regional study area.

Vantage submitted that traffic on highways as well as local and municipal roads used to access the Project was likely to increase during construction. In order to minimize the potential effects of the Project on local transportation infrastructure, Vantage has developed a Traffic Management Plan, which would provide guidelines for the management and control of pipeline construction traffic, and address traffic management and safety for pre-construction, construction and post-construction phases of the Project. Vantage committed to consulting with affected municipalities in the Project area to determine whether further mitigation was required.

Vantage indicated that TransCanada had expressed concern that the Project and the Keystone XL Pipeline (Certificate OC-56) would be under construction at the same time and this would result in additional stresses on the local communities and infrastructure resources, including accommodation, traffic, and challenges in moving material and equipment within the Project area. Vantage noted it would continue to consult with TransCanada to address these concerns or issues.

In the event that the Project and the Keystone XL Pipeline were scheduled for construction between Empress, AB and Shaunavon, SK at the same time, Vantage indicated it planned to explore alternate workforce accommodation options, including seeking commercial accommodations outside of the immediate Project area. If necessary, Vantage will identify potential sites where small temporary campsites could be located. To mitigate traffic-related impacts, Vantage committed to traffic control measures such as establishing designated marshalling points and bussing project personnel to the worksite and altering hours of work.

Views of the Board

With respect to the potential socio-economic effects of the Project considered under the NEB Act, the Board promotes the identification and consideration, by regulated companies, of the effects of projects on individuals, groups and communities. This consideration includes a project's positive and negative socio-economic impacts and any proposed enhancement and mitigation measures.

The Board acknowledges Vantage's evidence regarding the positive economic effects of the Project. The Board is encouraged by Vantage's intention and commitments to providing, where possible, opportunities for local employment and economic participation in the Project, including opportunities for the FHQTC, Pasqua, other potentially affected and interested Aboriginal groups, and local businesses and contractors. With respect to FHQTC's submission that a specific reference be made to Vantage's commitments in the Certificate conditions, the Board considers the requirement that a Commitments Tracking Table be filed satisfactorily holds Vantage accountable in regard to its commitments (Condition 26, Appendix II).

With respect to employment and economy, the Board finds that the impacts of the Project have been adequately identified and considered. The Board supports Vantage's commitment to working closely with pipeline contractors to ensure Aboriginal groups have the opportunity for employment and the provision of services during the construction phase of the Project, and reminds Vantage of the importance of establishing and maintaining these commitments.

The Board notes Vantage's submission of plans to address the Project's socio-economic impacts. In particular, the Board notes Vantage's submission of a Traffic Management Plan to address Project impacts on local communities, infrastructure and services.

The Board recognizes that potential additional impacts on local residents and community infrastructure may occur if the Project and the Keystone XL Pipeline are scheduled for construction between Empress, AB and Shaunavon, SK at the same time. The Board would require that Vantage create a Workforce Accommodation Plan, Community Impact Monitoring Plan and an update to the Traffic Management Plan. These would help to ensure Vantage adequately monitors or predicts potential impacts on local residents and community infrastructure, including increased noise, workforce numbers, and impacts on accommodations, traffic and emergency services and implements appropriate mitigation measures (Condition 21, Appendix II).

In light of the measures, protocols and conditions outlined in the above-noted plans, the Board finds that the Project's impacts on infrastructure and services would be adequately mitigated.

Given the above, and the measures and commitments Vantage has provided with respect to strategies for employment and procurement for the Project, the Board finds that the proposed Project would provide benefits to local, regional and provincial economies. Any adverse socio-economic impacts would be temporary in nature, limited to the relatively short duration of Pipeline construction and would be adequately addressed.

Chapter 12

Conclusion on Public Interest and Public Convenience and Necessity

In reaching its determination under section 52, Part III of the NEB Act on Vantage's Application for a Certificate to construct and operate the Vantage Pipeline, the Board has carefully weighed the evidence and submissions made by all participants to the OH-3-2011 proceeding. The Board's views and conclusions on individual matters which fall within the scope of section 52 are contained in the preceding chapters.

The Board is satisfied, based on all of the evidence presented, that the Vantage Pipeline and associated facilities are, and will be, required by the present and future public convenience and necessity and therefore finds that approval of the Project is in the public interest.

Appendix I

List of Issues

The Board has identified but does not limit itself to the following issues for discussion in the proceeding:

1. The need for the proposed facilities.

2. The economic feasibility of the proposed facilities.

3. The potential commercial impacts of the proposed project.

4. The potential environmental and socio-economic effects of the proposed facilities, including those to be considered under the *Canadian Environmental Assessment Act* (the draft Scope of which is set out in Appendix V of the Hearing Order)

5. The potential impacts of the proposed project on Aboriginal interests, including Aboriginal and treaty rights.

6. Consultation with the public and Aboriginal groups on the project.

7. The potential impacts of the proposed project on landowners and land users.

8. The appropriateness of the general route for the pipeline and land requirements.

9. The method of toll and tariff regulation.

10. The suitability of the design and operation of the proposed facilities.

11. The suitability of the safety, security, and emergency response management plans.

12. The terms and conditions to be included in any approval the Board may issue.

Appendix II

Certificate Conditions

In these conditions:

"the Project" refers to the Vantage Pipeline Project.

"commencement of construction" includes: clearing of vegetation, ground-breaking and other forms of right of way (RoW) preparation for the Project that may have an effect on the environment, but does not include activities associated with normal surveying operations.

"application for Leave to Open" means: an application made under section 47 of the *National Energy Board Act*

"commencement of operation" means: the date the Project is placed in service.

"for approval" means: where any condition requires a filing with the Board "for approval" that action shall not be commenced until the approval is issued.

General

1. Compliance

   Vantage shall comply with all of the conditions contained in this Certificate unless the Board otherwise directs.

2. Project Design, Location, Construction, Installation and Operation

   Vantage shall cause the approved Project to be designed, located, constructed, installed and operated in accordance with the specifications, standards and other information referred to in its application or as otherwise agreed to during questioning or in its related submissions.

3. Environment

   Vantage shall implement or cause to be implemented all of the policies, practices, programs, mitigation measures, recommendations and procedures for the protection of the environment included in or referred to in its application or as otherwise agreed to during questioning or in its related submissions.

4. Landowner Complaint Tracking

   From commencement of construction through to abandonment, Vantage shall, for audit purposes, create and maintain records that chronologically track landowner complaints related to the Project. The landowner complaint records shall include:

a) the date the complaint was received;

b) how the complaint was received (for example, telephone, mail, email);

c) subsequent date and summary of all telephone calls, visits, correspondence, site monitoring/inspections, follow up reports and other related documentation;

d) contact information for all persons involved in the complaint;

e) a detailed description of the complaint;

f) the date and a description of resolution of the complaint; and

g) if the complaint was not resolved, the further action(s) to be taken to resolve it (if any).

Prior to Construction Activities (including clearing or ground-breaking activities)

5. Pipeline Risk Assessment

Vantage shall:

a) file with the Board, at least 60 days prior to the commencement of construction, a finalized pipeline risk assessment for the Project. The finalized risk assessment shall include, but not be limited to, an assessment of all hazards and associated consequences. Populated areas shall be given special consideration in the assessment of the hazards and implementation of the preventative and mitigative measures;

b) engage an independent third party expert to verify Vantage's finalized risk assessment for the Project. The verification shall ensure, but not be limited to, the adequacy of the risk assessment as well as the effectiveness of Vantage's proposed preventative and mitigative measures to address the identified risks;

c) file for approval with the Board, at least 60 days prior to the commencement of construction, the proposed independent third party expert's name including his or her qualifications, experience and evidence demonstrating the expert's independence from Vantage; and

d) file with the Board, at least 30 days prior to the commencement of construction, a report prepared by the third party expert that verifies the finalized risk assessment for the Project.

6. Environmental Protection Plan

Vantage shall file with the Board for approval, at least 90 days prior to the commencement of construction, an updated project-specific Environmental Protection Plan (EPP).

The EPP shall be a comprehensive compilation of all environmental and socio-economic protection procedures, mitigation measures and monitoring commitments, as set out in Vantage's application for the Project, subsequent filings, or as otherwise agreed to during questioning or in its related submissions, or through consultations with other government authorities. The EPP shall describe the criteria for implementing all procedures and

measures, and shall use clear and unambiguous language that confirms Vantage's intention to implement all of its commitments.

The EPP shall include, but not be limited to, the following elements:

a) environmental protection procedures and plans applicable to all Project phases and activities, including:

   i) site-specific plans,

   ii) criteria for implementing the procedures,

   iii) mitigation measures, and

   iv) monitoring plans;

b) policies and procedures for environmental training;

c) the reporting structure for environmental management during construction, including the qualifications, roles, responsibilities and decision-making authority for each job title identified in the EPP;

d) management of air and noise emissions;

e) an updated Weed Management Plan;

f) a contingency plan for trenchless watercourse crossings, including the criteria that will be applied to determine when this crossing method will be used on a case by case basis;

g) updated Environmental Alignment Sheets and Watercourse Data Sheets;

h) a reclamation plan for those areas not covered by the Native Prairie Protection Plan and Monitoring Program, which includes a description of the condition to which the applicant intends to reclaim and maintain the RoW once the construction has been completed, including a description of measurable goals for reclamation; and

i) evidence of consultation with appropriate regulatory authorities regarding the EPP.

7. Native Prairie Protection Plan and Monitoring Program

Vantage shall file with the Board for approval, at least 60 days prior to the commencement of construction, a Native Prairie Protection Plan and Monitoring Program for the protection and reclamation of native prairie. The Plan and Program shall include, but not be limited to, the following components:

a) the locations where native prairie protection and monitoring will be applied, on a map or Environmental Alignment Sheets;

b) goals and measurable objectives for mitigation and reclamation;

c) mitigation measures, including a discussion of the anticipated effectiveness of the proposed measures and locations or conditions that may have specific challenges;

d) criteria to determine if mitigation and reclamation goals have been met;

e) protocol or methodology for monitoring the success of mitigation measures and progress of reclamation;

f) frequency, timing and locations of monitoring and the rationale for each;

g) evidence of consultation with appropriate federal and provincial authorities on the Plan; and

h) a schedule for filing monitoring reports for native prairie protection and reclamation with the Board, which shall include the first (1st), third (3rd), fifth (5th) and tenth (10th) years following the commencement of operation.

8. Wildlife Protection Plan

Vantage shall file with the Board for approval, at least 60 days prior to the commencement of construction, a Project-specific Wildlife Protection Plan. The Plan shall include, but not be limited to, the following components:

a) pre-construction survey plans and methods;

b) communication plans for employee awareness and training related to wildlife protection;

c) general mitigation measures and species-specific measures for species at risk and their habitats, including:

   i) measures to avoid traffic mortality to wildlife,

   ii) goals and measurable objectives for mitigation, and

   iii) the criteria to determine if mitigation goals have been met;

d) site-specific mitigation measures for species at risk and rationale for those measures;

e) the protocol or methodology for monitoring;

f) frequency, timing and locations of monitoring and the rationale for each;

g) protocols for how mitigation measures will be adapted based on monitoring results; and

h) evidence confirming consultation with Environment Canada, Canadian Wildlife Service and the appropriate provincial authorities regarding the Plan.

9. Construction Schedule

Vantage shall file with the Board, at least 30 days prior to the commencement of construction, a construction schedule identifying key construction activities for the Project and shall notify the Board of any modifications to the schedule(s) as such modifications occur.

10. Supervisory Control and Data Acquisition (SCADA) System

Vantage shall file with the Board, at least 60 days prior to the commencement of construction, a summary of the engineering Supervisory Control and Data Acquisition (SCADA) system specification. The specification shall include, but not be limited to, details of the:

a) reliability of the SCADA system;

b) safety and security of the SCADA system;

c) parameters that will be monitored by instrumentation;

d) controlling mechanisms of pump station(s) and valve station(s);

e) locations for the remote terminals (RTU) and communications;

f) polling sequence and time;

g) alarm annunciation and acknowledgement; and

h) details on the interface between the SCADA system and the LDS.

11. Quality Assurance Plan

Vantage shall file with the Board, at least 30 days prior to the purchase of any materials to be used in the construction of the Project, a Quality Assurance Plan (QAP) for the Project. The QAP shall include, but not be limited to:

a) the list of applicable standards and codes; and

b) the quality control process and integrity inspection program for all procured materials.

12. Ground Temperature Study

Vantage shall file with the Board, at least 30 days prior to purchasing any materials to be used in the construction of the Project:

a) a ground temperature study confirming ground temperatures along the pipeline route at a depth of 1.2 metres over a period of 30 years. The study shall include, but not be limited to:

   i) types of soil,

   ii) the Freezing Index Degree Days, and

   iii) average frost depths; and

b) a revised pipe material design temperature for the Project if the study in (a) shows the ground temperature is below -5˚C.

13. Horizontal Directional Drill (HDD) Crossings – Design Drawings

Vantage shall file with the Board, at least 60 days prior to the commencement of any horizontal directional drill (HDD) activities, the HDD design drawings in both plan and profile views specific to each proposed HDD watercourse and dryland crossing and generic for all proposed HDD wetland crossings. The drawings shall include, but not be limited to, details of:

a) the stratigraphy;

b) the proposed drill path and entry and exit locations; and

c) the approximate depths of the "No Drill Zone" relative to the bottom of each crossing.

14. Horizontal Directional Drill (HDD) Crossings – Drilling Execution Plans

Vantage shall file with the Board, at least 60 days prior to the commencement of any horizontal directional drill (HDD) activities, a drilling execution plan specific to each watercourse and dryland crossing and a generic plan for all proposed HDD wetland crossings. The drilling execution plans will be prepared in accordance with CSA Z662-11 Clause 6.2.11.1.

15. Change from Horizontal Directional Drill (HDD) Crossing Method to another Crossing Method

In the event that Vantage changes from using the HDD crossing method at a particular crossing, whether to comply with CSA Z662-11 or otherwise, Vantage shall file with the Board at least 3 days prior to construction of the crossing, notice in writing of its intention to follow the approved contingency plan referred to in the Environmental Protection Plan for that crossing and include the results of Vantage's consultation with Fisheries and Oceans Canada regarding the requirement for an authorization under subsection 35(2) of the *Fisheries Act*.

16. Pump Station Monitoring and Control System

Vantage shall file with the Board, at least 60 days prior to the commencement of construction of any pump station(s), a summary of the engineering specifications for the pump station(s) monitoring and control system. The specification shall include, but not be limited to, a description of the:

a) station monitoring and control system such as Programmable Logic Controller;

b) emergency shutdown and its alternative power source;

c) station equipment including auxiliary system;

d) instrumentation;

e) communications with the host SCADA;

f) pump unit start and shutdown operations;

g) pump unit valve opening and closing operations; and

h) safety shutdown systems such as gas and fire detection.

17. Security Program

Vantage shall confirm with the Board in writing, at least 45 days prior to the commencement of construction, that a Security Program for the Project pursuant to NEB Proposed Regulatory Change 2010-01 has been developed.

18. Rare Plants

Vantage shall file with the Board, at least 45 days prior to the commencement of construction, a Rare Plant Mitigation Plan. The Plan shall itemize the mitigation option selected for each rare plant site identified in the Environmental Alignment Sheets. In addition, for those sites where avoidance is not the selected mitigation option, the Plan shall explain:

a) the rationale for why avoidance is not selected as the mitigation option;

b) how the success of the selected mitigation option will be achieved, based on site-specific conditions and species-specific requirements; and

c) the results of consultation with appropriate regulatory authorities.

19. Wetland Compensation and Monitoring

Vantage shall file with the Board, at least 45 days prior to the commencement of construction, a Wetland Compensation and Monitoring Plan. The Plan shall include:

a) the extent (hectares) by wetland type that will be impacted by the Project;

b) detailed compensation measures including restoration of existing degraded wetlands, enhancement of existing wetlands, and creation of replacement wetlands;

c) the details of a program to monitor the success of the wetland compensation measures to verify restoration and no net loss of wetland function; and

d) the results of consultation with appropriate regulatory authorities.

20. Traditional Land Use Investigations

At least 45 days prior to the commencement of construction, Vantage must file with the Board for approval, and serve a copy on Big Bear Band, File Hills Qu'Appelle Tribal Council, Pasqua First Nation, Siksika Nation and Stoney Nakoda Sioux Nation, a report outlining a plan for outstanding traditional land use (TLU) investigations for the Project. The report must include but not be limited to:

a) a summary of the status of TLU investigations undertaken for the Project, including group-specific TLU studies and any supplementary physical, bio-physical and heritage resource field investigation or reconnaissance activities relevant to potentially-affected Aboriginal groups;

b) a summary of the effects of the Project on the current use of lands and resources for traditional purposes identified in the investigations;

c) a summary of the mitigation measures proposed by Vantage or by affected Aboriginal groups to address Project effects identified in the investigations;

d) a description of how Vantage has incorporated any additional mitigation measures into its Environmental Protection Plan for the Project;

e) a description of any outstanding concerns raised by potentially-affected Aboriginal groups regarding potential Project effects on the current use of lands and resources for traditional purposes, including a description of how these concerns have been or will be addressed by Vantage; and

f) a summary of any outstanding TLU investigations or follow-up activities that will not be completed prior to commencing construction, including an explanation for why these will not be completed prior to construction, and an estimated completion date, if applicable.

21. Notice of Construction Overlap

In the event that the Project and the Keystone XL Pipeline (Certificate OC-56) are scheduled for construction between Empress, Alberta and Shaunavon, Saskatchewan at the same time, Vantage shall notify the Board in writing of the construction overlap at least 45 days prior to commencement of construction, or as soon as the proposed construction overlap becomes known to Vantage. Within 15 days of such notice being given, Vantage shall provide the following:

a) a Community Impact Monitoring Plan. The Plan shall include, but not be limited to:

   i) a description of activities that may impact residents and community infrastructure including issues or events related to increased noise, and impacts on accommodations, traffic and emergency services,

   ii) a description of monitoring that will be used to identify potential impacts, and the consultation with relevant agencies regarding the proposed monitoring program, and

   iii) a commitment to file a monthly report summarizing the results of the monitoring, any issues identified, and any mitigation to be applied until the commencement of the operation;

b) a workforce accommodation plan, developed in consultation with appropriate municipal or provincial authorities. The Plan shall include, but not be limited to:

   i) a final summary of all proposed accommodations,

   ii) the number of workers that will be housed,

   iii) a description of how the Plan addresses any concerns or requests raised in consultations with municipal or provincial authorities, and

   iv) in the event that temporary camp(s) are to be used, the Plan shall also include, but not be limited to:

      a. a description of the location of such temporary camp(s), how the potential environmental and socio-economic impacts have been assessed, and a description of all associated mitigation measures,

      b. copies of or reference to any mitigation or operational plans that will be required or implemented for the camp(s),

      c. a description of consultations with potentially affected residents and landowners where camps will be located, including the information provided, and

      d. a summary of all issues and concerns raised in the consultations and a description of how the Plan proposes to address the concerns raised; and

c) an update to the Traffic Management Plan, including, but not limited to, a description of:

   i) any concerns raised by TransCanada and municipal or provincial authorities regarding potential impacts on roadways, and

   ii) how these concerns are proposed to be addressed.

22. Construction Safety Manual

Vantage shall file with the Board, at least 30 days prior to the commencement of construction, a Construction Safety Manual for the Project.

23. Traffic Management Plan

Vantage shall file with the Board, at least 30 days prior to the commencement of construction, an updated Traffic Management Plan, developed in consultation with appropriate municipal or provincial authorities. The Plan shall include, but not be limited to:

a) a description of the predicted traffic flows, including vehicle types and volumes, at key construction points, marshalling areas, access roads and public roadways;

b) all mitigation and traffic management measures for the Project;

c) a description of how the Plan addresses any concerns or requests raised in consultations with municipal or provincial authorities;

d) a description of the traffic that will be permitted on native prairie RoW including vehicle types and expected volumes, and the traffic that will be restricted to existing roads and access roads; and

e) a commitment to assign a traffic monitor at all access points to native prairie during Project construction. This traffic monitor shall have the authority to restrict entry of non-essential traffic on the RoW in accordance with the Plan. The traffic monitor shall maintain a log of all traffic entering the RoW on native prairie during the construction period, including all traffic vehicle types.

24. Heritage Resources

Vantage shall file with the Board, at least 30 days prior to the commencement of construction:

a) copies of correspondence from the Saskatchewan Department of Tourism, Parks, Culture and Sport confirming that Vantage has obtained all of the required archaeological and heritage resource permits and clearances; and

b) a statement on how Vantage proposes to address any comments and recommendations contained in the permits and clearances referred to in (a).

25. HDD Noise Management Plan

At least 30 days prior to the commencement of any HDD activity, Vantage shall file with the Board a noise management plan containing information on day and potential night time HDD operations. The plan shall include, but not be limited to:

a) a final summary of proposed HDD noise mitigation measures for day and potential night time operations;

b) a commitment to notify residents potentially affected by HDD noise and to provide contact information for Vantage, at least 14 days prior to starting the HDD activities in the event residents have concerns about the HDD noise; and

c) a description of how Vantage plans to address any complaints received regarding HDD noise.

26. Commitments Tracking Table

Vantage shall:

a) file with the Board and post on its Company website, at least 30 days prior to the commencement of construction, a Commitments Tracking Table listing all commitments made by Vantage in its application, during questioning, in its related submissions, or during the OH-3-2011 proceeding in relation to the Project, including reference to:

   i) the documentation where the commitment is referred to (for example, the application, responses to information requests, hearing questions, permit requirements, condition filings, or other),

   ii) the accountability for implementing each commitment, and

   iii) the timelines associated with the fulfillment of each commitment;

b) update the status of the commitments in (a) on Vantage's website on a:

   i) monthly basis until the commencement of operation,

   ii) quarterly basis until the end of the fifth (5th) year following the commencement of operation, and

   iii) yearly basis until the end of the tenth (10th) year following the commencement of operation,

   and advise the Board in writing of such updates where the status has changed; and

c) maintain at its construction office(s):

   i) the relevant environmental portion(s) of the Commitments Tracking Table listing all regulatory commitments including, but not limited to, those commitments resulting from Vantage's application and subsequent filings and conditions from permits, authorizations and approvals,

   ii) copies of any permits, approvals or authorization for the Project issued by federal, provincial or other permitting authorities, which include

environmental conditions or site-specific mitigation or monitoring measures, and

iii) any subsequent variances to any permits, approvals or authorizations in (ii).

27. Construction Inspection Program

Vantage shall file with the Board for approval, at least 14 days prior to the commencement of construction, a construction inspection program. The program shall include:

a) a detailed list of the number and type of each inspection position, including job descriptions, qualifications, roles, responsibilities, decision-making authority; and

b) reporting structure of personnel responsible for inspection of the various pipeline construction activities, including environment and safety.

During Construction

28. Welding and Non-Destructive Examination (NDE)

Vantage shall file with the Board, at least 60 days prior to the commencement of any welding carried out during the construction of the Project, a Joining program, which shall include the following:

a) a list of Welding Procedure Specifications (WPSs) and the locations where they will be used;

b) WPSs and supporting Procedure Qualification Records (PQRs) for:

i) the pipeline, and

ii) the pump station piping and components;

c) non-destructive examination (NDE) procedures for the inspection of welded joints for both the pipeline and the pump station piping and components; and

d) weld acceptance criteria.

29. Painting and Coating Specifications

Vantage shall file with the Board, at least 60 days prior to any coating or painting of any piping and welded joints, the coating and painting procedures for the Project. These procedures shall include provisions that demonstrate the weld joint coating system would be compatible with yellow jacket.

30. Pressure Testing Program and Drying Procedure

Vantage shall file with the Board, at least 60 days prior to the start of any pressure testing

associated with the Project, for both the pipeline and pump station piping:

a) the pressure testing program; and

b) the pipeline drying procedure.

31. Pig Launching and Receiving Facilities

Vantage shall file with the Board, at least 60 days prior to the commencement of any pressurized operation of the pig launching and receiving facilities, a procedure for the safe operation of this equipment. The procedure shall include, but not be limited to:

a) the instructions for the operating personnel in order to operate the pig launching and receiving facilities safely; and

b) the supporting piping and instrumentation diagrams (P&IDs) or adequate drawings for pig launching and receiving facilities that will be used to follow written procedure when operating pig launching and receiving facilities.

32. General Construction Reporting

Vantage shall file construction progress reports with the Board, on a monthly basis, in a form satisfactory to the Board. The reports shall include, but not be limited to, information on:

a) the activities carried out during the reporting period;

b) any environmental, socio-economic, safety and security issues and issues of non-compliance; and

c) the measures undertaken for the resolution of each issue and non-compliance.

Prior to Application for Leave to Open

33. Operation and Maintenance Manuals

Vantage shall confirm with the Board in writing, at least 60 days prior to filing any application for Leave to Open, confirmation that Operation and Maintenance Manuals that provide information and procedures to promote safety, environmental protection and efficiency in the operation of the pipeline have been created.

34. Training and Competency

Vantage shall file with the Board, at least 60 days prior to filing any application for Leave to Open, the training and competency program for the employees, contractors and consultants who will be involved in the operation, maintenance and integrity of the Project. The training and competency program shall include, but not be limited to, details on:

a) the personnel qualifications for each position; and

b) the type and frequency of training associated with each position.

35. Leak Detection System (LDS) Manual

Vantage shall file with the Board, at least 60 days prior to filing any application for Leave to Open, the Leak Detection System (LDS) manual for the Project. The LDS manual shall include, but not be limited to, the following:

a) senior management policy and commitment to leak detection;

b) the roles, responsibilities, and authorities of personnel in the event of a suspected leak;

c) the theory and rationale for each LDS design and application;

d) the methodology and instrument requirements;

e) the accuracy, reliability, and sensitivity of the LDS;

f) leak alarms and diagnostic messaging as well as related procedures;

g) any information to be provided by the LDS to assist in operating the LDS and responding to any potential leak;

h) the estimated maximum amount of ethane released before a leak is detected;

i) the process to be followed with respect to the continuous improvement, non-conformity, audits and corrective protocols;

j) the procedures for LDS record keeping, training, and performance evaluation; and

k) the plan for maintenance and testing.

36. Integrity Management Program (IMP)

Vantage shall:

a) develop, implement, measure and continuously improve a pipeline and facility integrity management program (IMP) that proactively identifies, assesses, mitigates, monitors and prevents the integrity risks of the pipeline system during the entire pipeline life cycle from design to abandonment; and

b) file with the Board, at least 60 days prior to filing any application for Leave to Open, the IMP for the Project. The IMP shall include, but not be limited to, the following process elements:

i) Hazard Identification, Threat Susceptibility and Assessment,

ii) Consequence Assessment,

iii) Risk Assessment and Risk Control Planning,

iv) Baseline and Continual Assessments,

v) Mitigation,

vi) Condition Monitoring,

vii) Prevention,

viii) Performance Evaluation, and

ix) Integrity Continuous Improvement Plan.

These process elements shall be linked and supported by a management system.

37. Emergency Preparedness and Response Program and Training Program

Vantage shall file with the Board, at least 60 days prior to filing any application for Leave to Open, documentation demonstrating full implementation of the Emergency Preparedness and Response Program and the Training Program.

The documentation shall include an assessment of all potential hazards associated with the Project. The hazard identification and assessment shall include, but not be limited to:

a) all possible hazards to the public, responders, property and the environment;

b) the level of risk posed by each hazard; and

c) the risk ranking and appropriate control measures for the purpose of emergency response planning.

38. Emergency Procedures Manual

Vantage shall file with the Board at least 60 days prior to filing any application for Leave to Open, the final Emergency Procedures Manual for the Project and thereafter shall file with the Board any modifications to the Emergency Procedures Manual as they occur.

39. Emergency Procedures Manual Consultation Summary

Vantage shall file with the Board, at least 60 days prior to filing any application for Leave to Open, a report documenting evidence of consultation conducted with agencies, municipalities and landowners that may be involved in an emergency response related to the Vantage Pipeline, for the development of the final Emergency Procedures Manual

(EPM). The Report shall include, but not be limited to:

a) a description of the consultation program, addressing how Vantage:

   i) identified the parties with whom it would consult,

   ii) the methods and activities Vantage used to notify and consult with those parties, and

   iii) copies of the materials or information regarding the EPM that were used for consultation;

b) a description of any comments and concerns raised during the consultations; and

c) evidence demonstrating how the EPM addresses, to the extent possible, the issues raised during consultation.

40. Safety Program

Vantage shall file with the Board, at least 30 days prior to filing any application for Leave to Open, a Safety Program for the operation and maintenance of the pipeline pursuant to section 47 of the *Onshore Pipeline Regulations, 1999*. The Program shall include practices and procedures for:

a) the safety policy;

b) the responsibility and accountability for safety;

c) the organization of safety committees;

d) safety education and training;

e) the safety inspection system;

f) incident investigations, reporting, corrective actions and statistics; and

g) the safe working practices and procedures.

41. Environmental Protection Program

Vantage shall file with the Board, at least 30 days prior to filing any application for Leave to Open, a project-specific Environmental Protection Program for the operation and maintenance of the pipeline pursuant to section 48 of the *Onshore Pipeline Regulations, 1999*. The Program shall include practices and procedures for:

a) ongoing environmental training for employees;

b) the handling and disposal of all wastes associated with the operation and maintenance of the pipeline;

c) vegetation management;

d) wildlife management;

e) soil conservation and erosion control on the RoW;

f) the management of air and noise emissions;

g) travel on and access to the RoW;

h) environmental monitoring and surveillance of the RoW;

i) plans for regular review of the Program including documentation of all revisions in a revision log;

j) the reporting structure for environmental management during operations; and

k) the qualifications, roles, responsibilities and decision-making authority for each job title identified in the Program.

42. Audit Program

Vantage shall file with the Board for approval, at least 30 days prior to filing any application for Leave to Open, a project specific Audit Program for the operation of the pipeline pursuant to section 53 of the *Onshore Pipeline Regulations, 1999*. The Program shall include measures for the protection of:

a) property;

b) the environment;

c) the safety of the public; and

d) the company's employees.

Post-Construction Activities

43. In Line Inspection (ILI)

Vantage shall:

a) one (1) year after the commencement of operation, confirm the integrity of the pipeline and establish a baseline for future internal inspections by running deformation and metal loss internal inspection tools (Baseline In Line Inspection (ILI));

b) at least 90 days from completion of the Baseline ILI, file with the Board the following:

i) the pipeline ILI assessment,

ii) proposed mitigation measures (based on the ILI assessment), and

iii) the proposed re-inspection interval frequency for the next pipeline ILI; and

c) at least 180 days from completion of the Baseline ILI, file with the Board an updated risk assessment including:

i) the evaluation of the deformation and metal loss in-line inspections,

ii) investigation digs, and

iii) the re-inspection interval frequency.

The updated risk assessment shall also consider the effectiveness of the Leak Detection System, Public Awareness and Damage Prevention programs.

44. Emergency Response Exercise

Within one (1) year after the commencement of operation, Vantage shall:

a) conduct a full-scale emergency response exercise with the objectives of testing the effectiveness and adequacy of the:

i) Emergency Procedures Manual,

ii) training of company personnel,

iii) communications systems,

iv) coordination of emergency response activities with responders, mutual aid partners and other agencies,

v) response equipment,

vi) safety procedures, and

vii) exercise debrief process;

b) notify the Board in writing, at least 30 days prior to the date of the emergency response exercise, of the following:

i) location of the exercise,

ii) exercise coordinator,

iii) date of the exercise,

iv) duration of the exercise,

v) type of exercise (orientation, tabletop, drill, full simulation, full scale),

vi) goals (focus of exercise, scope, scale, extend of play, format, evaluation method),

vii) how success is measured, and

viii) the name and organization of each individual invited to participate in the exercise; and

c) file with the Board, within 60 days of completion of the exercise, a final report that documents the results of the exercise including:

i) how the exercise achieved the stated objectives,

ii) participant feedback and areas for improvement, and

iii) a corrective action plan to address the findings from the exercise.

45. Condition Compliance by a Company Officer

Within 30 days of the commencement of operation, Vantage shall file with the Board a confirmation, by an officer of the company, that the Project was completed and constructed in compliance with all applicable conditions in this Certificate. If compliance with any of these conditions cannot be confirmed, the officer of the company shall file with the Board details as to why compliance cannot be confirmed. The filing required by this condition shall include a statement confirming that the signatory to the filing is an officer of the company.

46. Post-Construction Environmental Monitoring Report

On or before the 31 of January of each of the first (1st), third (3rd), fifth (5th) and tenth (10th) years following the commencement of operation, Vantage shall file with the Board, and make available on its website for informational purposes, a post-construction environmental monitoring report that:

a) identifies any modifications from the monitoring protocols or methodology described in its EPP or Wildlife Protection Plan, as approved by the Board;

b) describes the criteria established for evaluating the effectiveness of the environmental mitigation measures;

c) evaluates the effectiveness of the environmental mitigation measures against the criteria referred to in (b);

d) identifies deviations from plans and alternate mitigation applied as approved by the Board;

e) identifies locations on a map or diagram where corrective action was taken during construction or operation and the current status of corrective actions; and

f) provides proposed measures and timelines Vantage will implement to address any unresolved environmental issues.

The report shall address, but not be limited to, the issues pertaining to soils, agricultural production, weeds, watercourse crossings, wetlands, rare plants and wildlife including species of management concern.

47. Native Prairie Monitoring Report

On or before the 31 of January of each of the first (1st), third (3rd), fifth (5th) and tenth (10th) years following the commencement of operation, and on other scheduled dates as set out in the Native Prairie Protection Plan, Vantage shall file with the Board a post-construction Native Prairie Monitoring Report that:

a) identifies on a map or diagram the location(s) of the monitoring sites for native prairie protection and reclamation;

b) provides a discussion of the scientific methodology applied;

c) provides the criteria to be used to verify the accuracy of the environmental assessment predictions;

d) evaluates the effectiveness of the mitigation applied pre-, during and post-construction;

e) evaluates the impacts of traffic on native prairie reclamation using the construction traffic logs as reference;

f) identifies the current status of the issues identified and whether those issues are resolved or unresolved; and

g) provides proposed measures and timelines Vantage shall implement to address any unresolved concerns.

Certificate Expiration

48. If Construction of the Project has not Commenced

Unless the Board otherwise directs prior to 19 January 2013, this Certificate shall expire on 19 January 2013 unless construction in respect of the Project has commenced by that date.

Appendix III

NEB Ruling on the Application by NOVA Chemicals for Confidential Treatment of the TSA

National Energy Board | Office national de l'énergie

File OF-Fac-Oil-V040-2010-01
16 August 2011

Ms. Donna Hammerschmidt
Business Development Analyst
Regulatory and Land
NOVA Chemicals Corporation
P.O. Box 2518, Station M
Calgary, AB T2P 5C6
Facsimile 403-750-3940

Mr. James H. Smellie
Partner
Gowling, Lafleur, Henderson LLP
1400, 700 – 2 Street S.W.
Calgary, AB T2P 4V5
Facsimile 403-695-3427

Dear Ms. Hammerschmidt and Mr. Smellie:

Hearing Order OH-3-2011 regarding Vantage Pipeline Canada Inc. (Vantage)
Vantage Pipeline Project Application of 7 February 2011
NOVA Chemicals Corporation (NCC) Application for an Order pursuant to section 16.1 of the *National Energy Board Act* (the Act) (Application)

On 15 June 2011, NCC applied to the National Energy Board for an order pursuant to section 16.1 of the Act to file, in confidence, information in a Transportation Service Agreement (TSA) between NCC and Vantage as redacted in "Exhibit A" of the Affidavit of Allan Broenink filed in support of the Application (the Information).

On 7 July 2011, the Board requested comments from parties in respect of the Application by 14 July 2011. On 14 July 2011, the Board received a letter from Vantage in support of NCC's Application. On 18 July 2011, the Board received a letter from NCC noting that the only comment submitted by any party in response to the Board's invitation to comment was that of Vantage, in support of the Application.

Section 16.1 of the Act authorizes the Board to issue a confidentiality order in two instances. The first is if the Board is satisfied that disclosure could reasonably cause loss or prejudice to a person's competitive position, as set out in subsection 16.1(a). The second, described in subsection 16.1(b), is if the Board is satisfied that the information is financial, commercial, scientific or technical information that has consistently been treated confidentially, and the Board considers that the person's interest in confidentiality outweighs the public interest in disclosure. If the Board is satisfied on either basis, it may treat a document confidentially.

…/2

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Facsimile/Télécopieur : 1-877-288-8803

The Board is of the view that the Information relates to transportation costs which are an important element of overall ethane supply costs. The Vantage Pipeline Project is one of several initiatives that NCC is pursuing to complement its traditional ethane sources in Alberta. Disclosure of the Information would provide others with the details of key commercial terms related to NCC's other initiatives. Accordingly, the Board finds that disclosure of the Information could reasonably be expected to result in a material loss to NCC or gain to others, or could reasonably be expected to prejudice NCC's competitive position. In light of the confidential nature of the Information, the absence of objection from any OH-3-2011 hearing participant or other person to the confidentiality request of NCC, and the public filing of the vast majority of the provisions in the TSA, the Board finds that in the context of this proceeding, NCC's interest in confidentiality of the Information outweighs the public interest in disclosure. Accordingly, the Board will permit the filing of the Information with the Board on a confidential basis.

The Board has issued the attached order allowing for the filing of the Information in confidence with the Board, pursuant to section 16.1 of the NEB Act. The Information will not be made a part of the public record or otherwise disclosed. However, the Board intends to fully examine the Information as part of its consideration of the Vantage Pipeline Project Application and further notes that it may make reference to the Information during the OH-3-2011 proceeding, for the purposes of oral and written questioning.

Yours truly,

Anne-Marie Erickson

Anne-Marie Erickson
Secretary of the Board

Attachment

National Energy Board

Office national de l'énergie

ORDER MO-019-2011

IN THE MATTER OF the *National Energy Board Act* (the Act) and the regulations made thereunder;

IN THE MATTER OF an application by NOVA Chemicals Corporation (NCC) dated 15 June 2011, for an order pursuant to section 16.1 of the Act filed with the Board under File OF-Fac-Oil-V040-2010-01 0201 (NCC's Application).

BEFORE the Board on 16 August 2011.

WHEREAS on 15 June 2011, NCC applied for an order pursuant to section 16.1 of the Act to file with the National Energy Board in confidence, information in a Transportation Service Agreement (TSA) between NCC and Vantage Pipeline Canada Inc. (Vantage) as redacted in Exhibit "A" of the Affidavit of Allan Broenink filed in support of NCC's Application (the Information);

AND WHEREAS the Board solicited comments in respect of this confidentiality request from all potentially affected parties to the OH-3-2011 proceeding;

AND WHEREAS on 14 July 2011, the Board received one letter of comment from Vantage which supported NCC's Application;

AND WHEREAS the Board received a reply submission from NCC dated 18 July 2011 in which it was noted that the only comment submitted was that of Vantage and that NCC's Application is entirely unopposed;

AND WHEREAS the Board is satisfied that the Information if disclosed on the public record, could reasonably be expected to result in a material loss to NCC or gain to others, or could reasonably be expected to prejudice NCC's competitive position;

AND WHEREAS the Board considers that in the context of this proceeding, NCC's interest in confidentiality outweighs the public interest in disclosure of the TSA on the public record;

AND WHEREAS the Board notes that the majority of the provisions in the TSA are publicly filed on the Board's electronic repository;

IT IS ORDERED THAT, pursuant to section 16.1 of the Act, the Information shall be filed with the Board in confidence and shall not be made part of the public record or otherwise disclosed.

NATIONAL ENERGY BOARD

Anne-Marie Erickson

Anne-Marie Erickson
Secretary of the Board

Canada

Appendix IV

Environmental Screening Report

National Energy Board

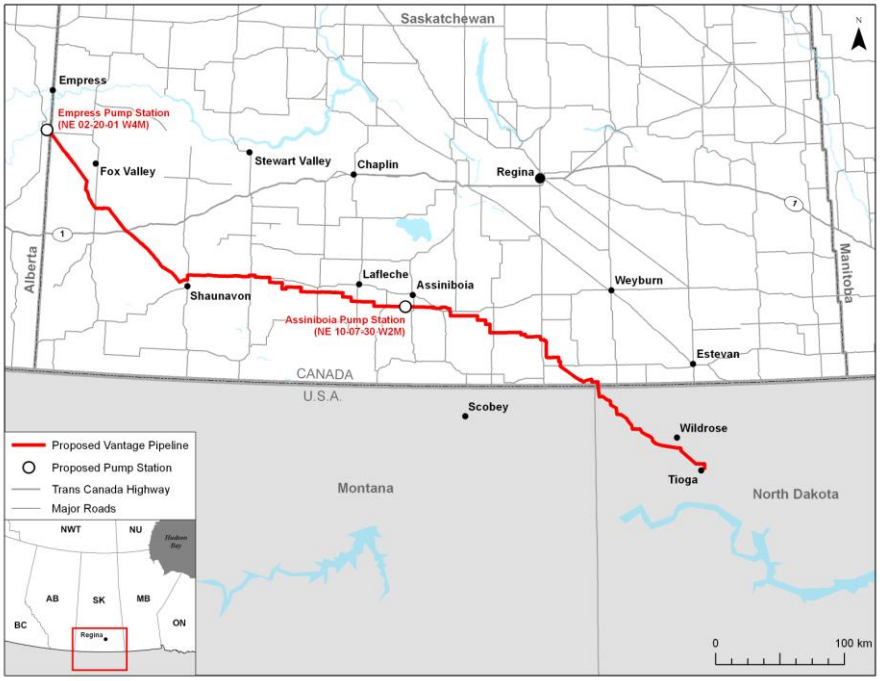
Office national de l'énergie

ENVIRONMENTAL SCREENING REPORT

Pursuant to the *Canadian Environmental Assessment Act* (CEA Act)

Vantage Pipeline Project

Applicant Name:	Vantage Pipeline Canada ULC, formerly Vantage Pipeline Canada Inc. (Vantage)		
Application Date:	7 February 2011	**CEA Act Registration Date:**	5 October 2010
National Energy Board (NEB or Board) File Number:	OF-Fac-Oil-V040-2010-01 02	**Canadian Environmental Assessment Registry Number:**	10-01-58204
CEA Act Law List Trigger:	Section 52 of the *National Energy Board Act* (NEB Act)	**CEA Act Determination Date:**	7 December 2011



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SUMMARY

This report represents an Environmental Screening Report (ESR) under the *Canadian Environmental Assessment Act* (CEA Act) for the Vantage Pipeline Canada ULC, formerly Vantage Pipeline Canada Inc. (Vantage) proposed Vantage Pipeline Project. On 7 February 2011, Vantage applied to the National Energy Board (NEB or the Board) for authorization to construct and operate the Vantage Pipeline Project, a proposed liquid ethane pipeline from North Dakota through Saskatchewan to Alberta.

The Canadian portion of the Vantage Pipeline Project (the Project) would involve the construction of approximately 578 kilometres (km) of new 273 millimetre (NPS 10 inch) outside diameter high vapour pressure steel pipeline from a point on the international border 75 km southwest of Estevan, Saskatchewan to an interconnection point with the Alberta Ethane Gathering System at Empress, Alberta.

New non-contiguous right of way would be required for 74.773 km of the pipeline. Additional facilities would include valve sites, metering and in-line inspection facilities, and two 500 horsepower electrically driven pump stations. Temporary infrastructure such as access roads, stockpile sites and contractor yards would be required during construction. Additional minimal disturbance access roads would be required for pipeline operations in areas where access is limited. The Project would require the crossing of several watercourses, drainages, and water bodies including wetlands. Vantage is proposing to begin construction in the fall of 2012 and to be completed by spring 2013.

The NEB is the Federal Environmental Assessment Coordinator for the Project. In this role, the Board coordinates the involvement of federal departments with an interest in the pipeline. The Canadian Transportation Agency has declared itself a Responsible Authority (RA) while Environment Canada, Fisheries and Oceans Canada, Natural Resources Canada and Health Canada have identified themselves as Federal Authorities (FAs) in possession of expert advice.

This ESR was prepared as part of the Board's responsibilities under the CEA Act and incorporates information provided by Vantage, RAs, FAs, Aboriginal groups, landowners, other interested parties and the public. The analysis in this ESR is based on the evidence placed on the record for the public hearing process held with respect to the Project, the full documentation of which can be found at the following Internet hyperlink: https://www.neb-one.gc.ca/ll-eng/livelink.exe?func=ll&objId=669661&objAction=browse&sort=-name&redirect=3.

Comments received on the ESR were considered by the Board in its preparation of a final ESR. The ESR was issued by the Board along with its Reasons for Decision in respect of Vantage's application.

As detailed in the ESR, a number of potential adverse environmental effects of the Project were identified, including effects on soils, native prairie, wetlands, and *Species at Risk Act* listed species. The Board is of the view that with the implementation of Vantage's environmental protection procedures and mitigation measures and the Board's recommendations as set out in this report, the Project is not likely to cause significant adverse environmental effects.

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LIST OF ABBREVIATIONS

AEGS	Alberta Ethane Gathering System
Board or NEB	National Energy Board
CDC	Saskatchewan Conservation Data Centre
CEA Act	*Canadian Environmental Assessment Act*
CEAR	Canadian Environmental Assessment Registry
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DFO	Fisheries and Oceans Canada
Draft Scope	Draft Scope of the Environmental Assessment
EA	environmental assessment
EC	Environment Canada
EPP	Environmental Protection Plan
ESA	Vantage's Environmental and Socio-economic Assessment
ESR	National Energy Board's Environmental Screening Report
FA	Federal Authority under the *Canadian Environmental Assessment Act*
FCN	Federal Coordination Notification
GHG	greenhouse gas
GSH	Great Sand Hills
HDD	horizontal directional drill
hp	horsepower
HRIA	Historical Resources Impact Assessment
Keystone XL	TransCanada Keystone XL
km	kilometre
Listed species	Species at Risk pursuant to Schedule 1 of the *Species at Risk Act*
LSA	Local Study Area
m	metre
NEB Act	*National Energy Board Act*
NGO	non-government organization
OD	outside diameter
OPR-99	*Onshore Pipeline Regulations, 1999*
PCM	post-construction monitoring
the Project	the Canadian portion of the Vantage Pipeline Project

PSA	Project Study Area
RA	Responsible Authority under the *Canadian Environmental Assessment Act*
RAP	Restricted Activity Period
RoW	right of way
RSA	Regional Study Area
SARA	*Species at Risk Act*
Scope	Scope of the Environmental Assessment
SE	Saskatchewan Ministry of the Environment
Species of Special Status	Species that meet any of the following criteria: ▪ legally designated and protected by the *Saskatchewan Wildlife Act* and the *Alberta Wildlife Act* as applicable to each province ▪ identified in government recommended timing or setback guidelines ▪ ranked by COSEWIC ▪ ranked as At Risk, May Be At Risk or Sensitive by the Canadian Endangered Species Conservation Council (CESCC) ▪ included on the CDC or Alberta Conservation Information Management System (ACIMS) tracking lists ▪ of economic importance (e.g. upland game birds, waterfowl, ungulates) These species may or may not also be listed on the federal SARA schedules.
TC	Transport Canada
TELC/CAEPLA	Tioga to Empress Landowner Committee / Canadian Association of Energy and Pipeline Landowner Associations
TLU	Traditional Land Use
TWS	Temporary Work Space
Vantage	Vantage Pipeline Canada ULC, formerly Vantage Pipeline Canada Inc.

1.0 INTRODUCTION

The Application for the proposed Vantage Pipeline Project (the Project) was filed with the National Energy Board (Board or NEB) by Vantage Pipeline Canada ULC (Vantage) pursuant to section 52 of the *National Energy Board Act* (NEB Act). Thus, the Project triggers the *Canadian Environmental Assessment Act* (CEA Act) *Law List Regulations*, thereby requiring the preparation of this Environmental Screening Report (ESR).

1.1 Project Overview

The Project would transport liquid ethane from the Hess Corporation Tioga Gas Plant in North Dakota through Saskatchewan to an interconnection point with the Alberta Ethane Gathering System at Empress, Alberta. The Project is the Canadian portion of the Vantage Pipeline. It involves the construction of approximately 578 km of new 273 mm (NPS 10 inch) outside diameter (OD) high vapour pressure steel pipeline, associated valve sites, metering and in-line inspection facilities, and two 500 hp electrically driven pump stations. Approximately 574 km of the Project would be located in Saskatchewan with 4 km in Alberta, and 74.773 of the pipeline would require new, non-contiguous right of way (RoW). Section 4.0 provides a detailed description of the work associated with the Project.

1.2 Rationale for the Project

The purpose of the Project is to transport liquid ethane from a natural gas processing plant near Tioga, North Dakota to the Alberta Ethane Gathering System (AEGS), an existing pipeline system near Empress, Alberta. AEGS transports ethane to the Alberta petrochemical industry. The Project would enable the Alberta petrochemical industry to access, through the AEGS, ethane extracted from natural gas production in North Dakota. According to Vantage, natural gas production in North Dakota and Saskatchewan has been increasing as oil reserves are developed, and is now at a level that makes it economically feasible to extract ethane from the natural gas and sell it to ethane consumers.

1.3 Baseline Information and Sources

The analysis for this ESR is based on information from the following sources:

- the Project Application including Vantage's Environmental and Socio-Economic Assessment (ESA);
- supplemental filings to the Project Application;
- responses to information requests;
- submissions from the public and interested parties including letters of comment; and,
- evidence obtained at the oral hearing.

Filed information pertaining to the Project Application can be found within "Regulatory Documents" on the NEB's website (www.neb-one.gc.ca). For more details on how to obtain documents, please contact the Secretary of the NEB at the address specified in Section 10.0 of this report.

2.0 ENVIRONMENTAL ASSESSMENT (EA) PROCESS

On 23 September 2010, Vantage filed a Project Description with the NEB regarding the proposed Project. This action initiated the CEA Act EA process.

2.1 Government Participation in the EA Coordination Process

The NEB is the Federal Environment Assessment Coordinator for this Project. On 6 October 2010, the NEB issued a Federal Coordination Notification (FCN) letter pursuant to section 5 of the CEA Act regulations, *Respecting the Coordination by Federal Authorities of Environmental Assessment Procedures and Requirements*, to identify the potential involvement of federal departments in the EA process. The following table summarizes the responses received from federal government authorities.

Responsible Authorities (RAs) and Regulatory Trigger(s)	Federal Authorities (FAs) in Possession of Specialist or Expert Information or Knowledge
NEB: Section 52 of the NEB Act Transport Canada (TC): Section 108 of the NEB Act, Section 5 of the *Navigable Waters Protection Act* (NWPA) Canadian Transportation Authority: Subsection 101(3) of the *Canada Transportation Act*	Environment Canada (EC) Fisheries and Oceans Canada (DFO) Natural Resources Canada Health Canada

Subsequently, TC reviewed the watercourse crossing information submitted by Vantage and determined that the proposed works are not subject to the NWPA. Approvals or leaves by TC are not required under Section 5 of the NWPA or Section 108 of the NEB Act, and as a result, TC is no longer an RA.

The FCN letter was also sent to provincial agencies in Saskatchewan and Alberta. The Saskatchewan Ministry of Environment (SE) expressed interest in receiving copies of Vantage's Environmental Impact Statement for its review and sharing any information from SE's review with the NEB.

The topics of comments received by government departments are described in Section 6.0.

2.2 Opportunities for Public Input into the EA

On 5 April 2011, the NEB released Hearing Order OH-3-2011 describing the process and requirements of the public hearing for the Project. The NEB process provided a number of opportunities for the public, including government authorities and Aboriginal groups, to provide input into the EA by commenting on the Draft Scope of the EA (Draft Scope) and List of Issues and by participating in the public hearing. Parties to the hearing had the option of filing a letter of comment, presenting an oral statement or participating as an Intervenor. The Government Participant option was also provided to government authorities to allow them to participate without becoming Intervenors.

2.2.1 Draft Scope

The Draft Scope was posted on the Canadian Environmental Assessment Registry (CEAR) on 7 April 2011. The Draft Scope was attached to Hearing Order OH-3-2011 as Appendix V and parties were encouraged to provide their suggested amendments or additions by 10 May 2011. Comments received on the document are described in Section 6.3.1.

2.2.2 NEB Hearing

The oral public hearing for the Project, pursuant to Hearing Order OH-3-2011, was held in Regina, Saskatchewan from 1 to 3 November 2011.

2.2.3 Draft ESR

On 25 November 2011, the NEB sent a letter to interested parties inviting comments on the Draft ESR. Further, a notice for public comment on the Draft ESR was posted on the CEAR. Appendix 2 of this ESR provides a summary of the comments, some of which resulted in wording changes to the ESR. Explanations have been provided for those comments that did not result in changes to the ESR.

3.0 SCOPE OF THE EA (SCOPE)

The Scope is composed of three parts:

- Scope of the Project;
- Factors to be Considered; and
- Scope of the Factors to be Considered.

The Scope, as determined by the RAs in consultation with the FAs and the public, is included in Appendix 1 of this ESR and provides detailed information on these three parts. Section 4.0 of this ESR addresses the first part, the "Scope of the Project".

4.0 DESCRIPTION OF THE PROJECT

The following table provides information on each phase of the Project: construction, operations and abandonment.

Physical Work and/or Activity
Construction Phase – Timeframe: Proposed start in fall 2012 to winter 2012
▪ Development of the Project RoW, consisting of a 20 metre (m) RoW (10 m of permanent RoW and 10 m of temporary workspace (TWS)). Additional TWS would be required on a site-specific basis at drainages, roads, railway and foreign line crossings, sidebends, and other locations to accommodate pipeline construction activity. ▪ Construction of approximately 578 kilometres (km) of new 273 millimetre (NPS 10 inch) OD high vapour pressure steel pipeline from a point on the United States border 75 km southwest of Estevan, Saskatchewan to a connection with the AEGS near Empress, Alberta. ▪ Temporary infrastructure including access roads, staging areas, stockpile sites and contractor yards.

Physical Work and/or Activity
▪ Approximately 100.9 km of construction on native prairie using a narrow trench width (0.6 m) and no strip or ditch line stripping. In other land use classes, the trench would be up to 1 m in width and blade-width stripping, trench and spoil side stripping or full RoW stripping would be used based on land condition and use. The trench would be backfilled in lifts, compacting each lift with a piece of equipment capable of adequately compacting the trench until backfilling is complete. It is expected that in a given location the total time from start of trenching to the time that the topsoil salvage crew completed its work would not exceed 24 hours. ▪ Construction of watercourse crossings, 17 of which are over watercourses that are considered fish bearing. The primary crossing method for seven of these crossings would be horizontal directional drill (HDD) with isolated open cut as a contingency method. Isolated open cut would be the primary crossing method for the other ten watercourses considered fish-bearing. These watercourses would be crossed outside the restricted activity period (RAP) or using an open-cut method when the watercourse would be dry or frozen to the bottom. ▪ Construction of wetland crossings by open cut or HDD, if they cannot be avoided. ▪ Two new 500 horsepower (hp) electrically driven pump stations, one at the midpoint of the pipeline between Lafleche, Saskatchewan and Assiniboia, Saskatchewan and the second at the interconnection with AEGS near Empress, Alberta, and associated access roads. Both pump stations would require approximately 0.73 hectares (ha) of land. ▪ Pipeline block valves, located at approximately 25 km intervals within the permanent RoW on 20 m x 10 m sites. Permanent access roads would be required for some valve sites, and would be approximately 6 m in width with a 10 m RoW. ▪ Construction of other associated facilities including: facilities to handle in-line inspection and cleaning, cathodic protection system, metering, control systems, pipeline interconnections, and miscellaneous works such as pipeline warning signs and markers. ▪ Pressure testing of all pipeline sections with water. Note: New electrical facilities and power lines required to operate the pump stations and valve sites would be constructed, owned and operated by third-party power providers and would be subject to a separate and distinct regulatory regime.
Operation Phase – Timeframe: Service life of the Project (>30 years)
▪ Ongoing transmission of liquid ethane. ▪ Operational maintenance of the pipeline. During normal operation, the pump stations would be accessed bi-weekly and the valve stations accessed monthly. In the event of maintenance at any of these sites, the sites would be accessed many times daily until the maintenance is complete. ▪ Equipment and vehicle operation for operations and maintenance. ▪ Operation of two 500 hp electrically driven pump stations. ▪ Venting of ethane may occur during pipeline maintenance activities, such as depressurizing a pump or blowing down pig senders/receivers. ▪ Maintenance flaring of ethane at pump stations during activities such as integrity inspection of the pipeline. ▪ Regular (bi-monthly) aerial surveillance flights by fixed wing aircraft. ▪ Vegetation control for noxious species at specific identified problem areas.
Abandonment Phase – Timeframe: At the end of the service life of the Project
▪ An application pursuant to paragraph 74(1)(d) of the NEB Act would be required for the Project's abandonment, at which time the environmental effects of the proposed abandonment activities would be assessed by the NEB under both the NEB Act and the CEA Act.

5.0 DESCRIPTION OF THE ENVIRONMENT

This section describes the environmental and socio-economic setting of the Project. Vantage used the following spatial boundaries to determine and assess each environmental and social component discussed in the ESA:

- The Project Study Area (PSA) is the area directly disturbed by the Project development, including the width of the RoW and the TWS. Project development includes both permanent structures such as the pipeline, block valves, pump stations and access roads, as well as temporary works such as contractor yards and stockpile sites.
- The Local Study Area (LSA) varies relative to each element being considered. It is the area in relation to the Project where direct interaction with the biophysical and human environment could occur as a result of construction or reclamation activities.
- The Regional Study Area (RSA) is the area beyond the LSA that might be affected on the landscape level where effects may be recognized. The RSA also varies relative to the element being considered.

Terrain and Soils

- The Project traverses three ecoregions or subregions: the Dry Mixedgrass Subregion (Alberta), the Mixed Grassland Ecoregion (Saskatchewan) and a small portion of the Cypress Hills Upland Ecoregion (Saskatchewan). The majority (94.5%) of the Project traverses the Mixed Grassland Ecoregion.
- The Alberta portion of the Project traverses the Brown Soil Zone of southeastern Alberta, which consists typically of a 25-40 cm soil profile with 5-10 cm of brown topsoil. Soils are generally Chernozemic with significant amounts of Solonetzic and other salt-affected soils.
- The Saskatchewan portion of the Project traverses primarily the Brown Soil Zone where Chernozemic soils dominate, developed under short and mixed grass prairie. In the Cypress Hills Upland Ecoregion the Project traverses the Dark Brown Soil Zone where upland mixed grasses dominate. The Project also traverses some extents of Solonetzic, Vertisolic and Regosolic soils.

Land Use

- The Project extends across 578.5 km, of which approximately 503.7 km are contiguous with other pipelines, roadways and railways. The Project traverses approximately 4.5 km in Alberta and 574 km in Saskatchewan.
- The land in Alberta is cultivated, while the land in Saskatchewan is primarily cultivated with extents of native prairie, hay land and improved pasture. Approximately 17% of the Project route consists of remnant native prairie. The following table categorizes land use classes along the Project route.

Land Use Class	Pipeline Length (Percentage of Total Pipeline)
Cultivated	352.8 km (61.0%)
Native prairie	100.9 km (17.4%)
Modified grassland	55.9 km (9.7%)
Hay	55.5 km (9.6%)
Other (wetlands, watercourses and treed areas)	13.4 km (2.3%)

- A small portion of the Project route traverses the Great Sand Hills (GSH) Regional Environmental Study Review Area north of Piapot, Saskatchewan, parallel to the Foothills pipeline.

Vegetation

- Commonly occurring grass species found throughout most of the PSA include *Hesperostipa comata* (needle-and-thread grass), *Bouteloua gracilis* (blue grama grass) and *Koeleria macrantha* (June grass). Many low-lying areas are dominated by vegetation characteristic of high saline/alkaline content in soils.
- Five distinctive vegetation communities of interest are traversed by the pipeline route in 25 quarter-sections.
- Forty-six provincially listed rare plant species were found along the pipeline route. Thirty-two of these species are listed as Critically Imperiled (S1), Imperiled (S2) or an intermediate variant (e.g. S2S3). No species listed under the federal *Species at Risk Act* (SARA) were found.
- Due to the contiguity of the majority of the Project with existing linear developments, both scattered occurrences and infestations of weed species were observed along the PSA. Twenty-seven species of noxious weeds and six species of nuisance weeds designated under Saskatchewan's *Weed Control Act (2010)* were identified to occur along the pipeline route. In Alberta, two noxious weeds under the Alberta *Weed Control Act (2008)* were observed along the pipeline route.

Watercourses and Aquifers

- The Project route traverses 159 watercourses across five sub-watersheds in southern Saskatchewan. Most of these have no visible channel or are undefined drainages (i.e. vegetated draws). Seventeen watercourses have defined bed and banks and are considered fish bearing.
- The Project traverses four main groups of aquifers: two of which indicate high vulnerability to ground surface disturbance according to the Aquifer Vulnerability Index. A total of 181 wells of 30 m or less in depth were identified within a 3 km boundary surrounding the Project, six in Alberta and 175 in Saskatchewan. The majority of wells are used for domestic purposes.

Fish and Fish Habitat

- Seventeen watercourses crossed by the Project route are considered fish bearing.
- Results from literature research and previous field programs conducted between 2004 and 2010 indicate the potential occurrence of 24 fish species near the proposed pipeline route. Historically, there are eight species of sportfish and 16 species of non-sportfish that may occur in the sub-basins crossed by the Project.
- All of the watercourses in the Project area containing spring spawners (e.g. northern pike and walleye) have a RAP from April 1 to May 31 (inclusive). Watercourses with spring and fall spawners (e.g. brook trout, brown trout) have a RAP from October 1 to May 31.
- There are no freshwater fish species occurring in the assessment area that are listed on Schedules 1 or 2 of the SARA. The mountain sucker (found in Bone Creek), the brassy

minnow (found in Bone Creek and Wood River), the creek chub (found in Swift Current Creek) and the northern redbelly dace (found in Bone Creek) are provincially ranked as S3S4 and are tracked by the Saskatchewan Conservation Data Centre (CDC).

Wetlands

- A total of 313 wetlands are traversed by the Project, and another 93 wetlands are located within 30 m of the pipeline route. The majority of the wetlands are Class III followed by wetlands of Classes I and II, as designated by the Stewart and Kantrud (1971) classification system.
- Species of Special Status[9] or Species at Risk pursuant to Schedule 1 of the SARA (Listed species) were observed in 46 wetlands traversed by the Project and 12 wetlands located within 30 m of the proposed RoW.

Wildlife and Wildlife Habitat and Species of Special Status

- Several areas of management concern are located within a 2-km wide LSA, including three Community Pastures, *Wildlife Habitat Protection Act* lands, private conservation easements, Willow Bunch Game Preserve, Prairie National Wildlife Area, Ducks Unlimited and North American Waterfowl Management Plan lands, two Important Bird Areas, and a Migratory Bird Site. However, the Game Preserve, National Wildlife Area and Community Pastures are not traversed by the Project itself.
- Habitats along the pipeline route include large tracts of native prairie, seasonal/semi-permanent/permanent wetlands with diverse vegetation structure, drainages including coulee or valley corridors, sandy habitats, and treed areas.
- Twenty-one Species of Special Status, in addition to those Listed species described in the following section, were observed in the vicinity of the Project, including one amphibian, two reptiles, 15 birds and three mammals.
- Three of these birds, barn swallow, bobolink and chestnut-collared longspur, are listed as threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Horned grebe and short-eared owl are listed as Special Concern by COSEWIC, with the short-eared owl also listed on Schedule 3 of the SARA. Sharp-tailed grouse leks are found in the vicinity of the Project RoW. Active nests of Swainson's hawk, red-tailed hawk and great horned owl were found within the vicinity of the RoW.
- Many wetlands and watercourses in the vicinity of the Project route provide habitat and breeding areas for amphibians including plains spadefoot toad. Potential smooth green snake hibernacula and potential garter snake hibernacula were found in the vicinity of the RoW.
- Pronghorn antelope, mule deer and white-tailed deer (or their sign) were frequently observed throughout the LSA during the 2010 and 2011 wildlife surveys as well as the

9 Collectively, Species of Special Status in this ESR include species legally designated and protected by the Saskatchewan Wildlife Act and the Alberta Wildlife Act as applicable to each province, species which have been identified in government recommended timing or setback guidelines, species ranked by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), species ranked as At Risk, May Be At Risk or Sensitive by the Canadian Endangered Species Conservation Council (CESCC), species which are included on the CDC or Alberta Conservation Information Management System (ACIMS) tracking lists, and species of economic importance such as upland game birds, waterfowl and ungulates. These species may or may not also be listed on the federal SARA schedules.

occasional moose. American badger, long-tailed weasel and mountain (Nuttall's) cottontail were also observed in the vicinity of the Project.

Wildlife Species at Risk (Listed on Schedule 1 of the SARA)

- Eleven Listed species were observed in the vicinity of the Project. These include: burrowing owl and Ord's kangaroo rat (Endangered); common nighthawk, ferruginous hawk, loggerhead shrike, olive-sided flycatcher and Sprague's pipit (Threatened); and northern leopard frog, Great Plains toad, long-billed curlew and monarch butterfly (Special Concern). Another 14 Listed species have potential to be in the RSA, including seven bird, one mammal and six butterfly and moth species.
- Active burrowing owl burrows exist at three sites and potential burrows were found at another two sites near the Project route and within the LSA.
- Ord's kangaroo rat burrows with tracks were found in four quarter sections traversed by the pipeline route.
- Twenty-seven ferruginous hawk nests were observed directly on the pipeline route (within the PSA) or within EC's recommended setback distance.
- Northern leopard frogs were observed to date at approximately 50 locations including watercourse crossing locations at Piapot, Jones, Skull, Notukeu, Grassy and Bone Creeks. Northern leopard frog tadpoles were observed in three locations. At least six breeding areas of Great Plains toad were also found along the pipeline route with individuals found at 13 locations.
- Milkweed (host plant for monarch butterfly) was found in three locations within 30 m of the Project RoW with one monarch individual observed near one of the locations. Sandy habitat associated with Listed moth species was found in two locations with no individuals observed. Rabbitbrush (host plant for Mormon metalmark butterfly) was found in one location with no butterfly individuals observed.

Air Quality and Greenhouse Gas Emissions (GHGs)

- The Project route traverses rural areas, where air emissions come from highway traffic, railway traffic, agricultural activities, oil and gas extraction and transmission and aggregate pits. Natural sources of air emissions include wind-blown soils, dust, pollen, and smoke and ash from fires.

Acoustic Environment

- The Project route traverses rural areas. Existing noise comes from highway traffic, railway traffic, agricultural activities, oil and gas extraction and transmission and aggregate pits.

Human Occupancy and Resource Use

- The proposed route is located in Alberta and Saskatchewan and is within Treaty 4 Territory.
- Population density is low along the Project route. The closest town of Cadillac, Saskatchewan is 1.7 km from the proposed route and has a population of 80 residents. The proposed pipeline traverses through 21 rural municipalities. The total population of the municipalities is 13 160.

- Vantage, the Board and the Major Projects Management Office identified a total of 41 Aboriginal communities or organizations in Alberta and Saskatchewan that may be potentially affected by the Project, and they were all contacted.
- The primary land use traversed by the Project is agricultural, and includes cropland with grazing on improved pasture and on native prairie. Other land uses include oil and gas activities and aggregate and mineral extraction.
- Outfitting, trapping and recreational activities are known to occur along the proposed route, predominantly within the seven Wildlife Management Zones, which the pipeline traverses. Within these zones there are 36 registered outfitters.
- The Project does not traverse lands under Parks Canada jurisdiction, Indian reserve lands or Métis settlements. The GSH Ecological Reserve core area is approximately 35 km northeast of the Project.
- An extensive infrastructure network for highways, airports, railways, accommodation, emergency services, pipeline and transmission lines exist throughout the RSA.
- The Project traverses 12 major highways, with traffic marshalling and warehouse points located along Highways 13 and 21.

Traditional Land and Resource Use

- The Project traverses privately held and Crown lands within the Treaty 4 area.
- Siksika Nation noted it continues to exercise its right to hunt, fish and gather plants for traditional and medicinal use in the GSH and Empress regions and that the GSH area is of particular cultural significance.
- File Hills Qu'Appelle Tribal Council indicated that the Project will cross traditional territory where traditional land use (TLU) activities are currently practiced by File Hills Qu'Appelle Tribal Council members to hunt, trap and gather food for themselves, their families and community members. The GSH area is important in regard to the traditional and current use of cultural, spiritual and ceremonial practices.
- Big Bear Band noted that it continues to hunt, trap, fish and gather plants for traditional and medicinal use in the Project area, with special reference to the Swift Current watershed region including Duncairn Dam, Swift Current Creek and Lake Pelletier. It also stated that the Empress and Maple Creek area sand hills hold spiritual significance.
- Pasqua First Nation noted that it continues to exercise its right to hunt in Treaty 4 territories, in particular with hunting in the region south of Assiniboia and in the Cypress Hills area.

Heritage and Palaeontological Resources

- For the Alberta portion of the proposed route, a Historical Resources Impact Assessment (HRIA) was not required due to the low potential for heritage resources on cultivated land.
- A HRIA was conducted on approximately 240 km of land in Saskatchewan.
- Ninety previously-recorded and newly identified historical or heritage sites of mostly moderate to high heritage value, including a prehistoric bison kill site and a site containing cultural stratigraphy rare on the Northern Plains, would be affected, either partially or completely by the proposed configuration of the Project. These would require avoidance or mitigation.

- Three areas along the proposed route contain significant palaeontological potential. One new palaeontological site containing a single Baculite fossil 150 m from the proposed RoW was discovered.

6.0 COMMENTS FROM THE PUBLIC

6.1 Project-Related Issues and Comments Raised through Consultation Conducted by Vantage

Vantage consulted with Aboriginal groups, landowners, various levels of government and non-government organizations (NGOs). Stakeholders' concerns were captured at several points in the consultation process including various formal notifications, land agent interactions with landowners, open houses, Environmental Round Table meeting, Aboriginal consultation, and discussions with various government departments.

Vantage held six public open houses for communities in Saskatchewan on topics related to the ESA, including access for environmental surveys, potential for environmental effects of the Project, soils handling, weeds, SARA and potential impacts to landowners. In addition, Vantage held an Environmental Round Table for government and NGO representatives. Topics for the Round Table included best practices for fieldwork, reporting sensitive data, pipeline operations, Aboriginal consultation, construction techniques for watercourse crossings, the GSH, GHGs and reclamation.

Primary issues identified by Vantage during consultation included:

- route selection;
- minimizing effects of construction, particularly on native prairie;
- weed management;
- conservation of soils;
- minimizing impacts at watercourse crossings;
- avoidance or mitigation of heritage resources (archaeology and palaeontology);
- protecting plant and animal species; and
- Aboriginal traditional land use and traditional knowledge.

6.1.1 Comments from Aboriginal Groups

Vantage contacted 41 Aboriginal communities or organizations in Alberta and Saskatchewan that may be potentially affected by the Project. Eight Aboriginal communities and one Aboriginal organization were granted intervenor status in order to participate in the OH-3-2011 proceeding: Big Bear Band, File Hills Qu'Appelle Tribal Council, Little Pine First Nation, Lucky Man Cree Nation, Mosquito Grizzly Bear's Head Lean Man First Nation, Pasqua First Nation, Poundmaker Cree Nation #114, Siksika Nation and Wood Mountain First Nation.

Concerns expressed by Aboriginal groups related to:

- consultation by the company;
- Crown consultation;
- potential impacts on traditional and treaty lands;
- traditional knowledge studies; and
- pipeline abandonment and financing.

6.1.2 Comments from Landowners

Vantage contacted all landowners within 900 m of the proposed Project RoW. Concerns expressed by landowners related to:

- restricting truck and all-terrain vehicle access;
- restricting access when lands are wet;
- maintaining trees near the RoW;
- reducing weeds by using clean equipment; and
- scheduling surveys once crops were harvested.

6.2 Project-Related Issues Raised in Comments Received by the NEB

Several Project-related issues were brought to the Board's attention. The table below lists the issues or topics of concern raised by members of the public, Aboriginal groups and government authorities. To view the submitted documents, please refer to the Project folder in the 'Regulatory Documents' area of the NEB website (www.neb-one.gc.ca), or click on the Filing Identification numbers provided. If computer access is not available, you may obtain copies through the Secretary of the Board via the contact information in Section 10.0.

Name	Topic(s) of Comments	Date of Submission	Exhibit Number / Filing ID
Aboriginal Groups			
Big Bear Band	Environmental protection of traditional lands TLU activities Pipeline abandonment	16 May 2011 1 November 2011	A1Z1W9 A2G9Z1
File Hills Qu'Appelle Tribal Council	Aboriginal consultation process Impacts to TLU activities Traditional Knowledge Study Pipeline abandonment and financing Effects on Treaty land entitlement claims	12 May 2011 28 June 2011 19 August 2011 1 November 2011 2 November 2011 3 November 2011	A1Z1I6 A2A0L2 A30830 A2G9Z1 A2H1C1 A2H2T6
Little Pine First Nation	Aboriginal consultation process Impacts to TLU activities	12 May 2011 28 June 2011	A1Z1I4 A2A0L2
Lucky Man Cree Nation	Aboriginal consultation process Impacts to TLU activities	12 May 2011 28 June 2011	A1Z1I0 A2A0L2

Name	Topic(s) of Comments	Date of Submission	Exhibit Number / Filing ID
Mosquito Grizzly Bear's Head Lean Man First Nation	Aboriginal consultation process Impacts to TLU activities	12 May 2011 28 June 2011	A1Z1I2 A2A0L2
Pasqua First Nation	Impacts to Pasqua First Nation's Traditional Territory of Treaty Four area Protection of the environment	9 May 2011 1 November 2011 2 November 2011 3 November 2011	A1Z1E1 A2G9Z1 A2H1C1 A2H2T6
Poundmaker Cree Nation #114	Aboriginal consultation process Impacts to TLU activities	12 May 2011 28 June 2011	A1Z1H8 A2A0L2
Siksika Nation	Siksika Nation's rights and traditional uses GSH Impacts to TLU activities	8 June 2011 17 June 2011 18 August 2011 1 November 2011	A1Z6U8 A1Z8E0 A30802 A2G9Z1
Wood Mountain First Nation	Aboriginal consultation process Impacts to TLU activities	12 May 2011 28 June 2011	A1Z1J0 A2A0L2
Landowner and Landowner Groups			
Tioga to Empress Landowner Committee / Canadian Association of Energy and Pipeline Landowner Associations (TELC / CAEPLA)	Abandonment and future land use Depth of cover Risk assessment Engineering and design Soils and soil management Water source protection Access Damages and compensation Liability Routing Easement agreement Safety	9 December 2010 28 June 2011 19 August 2011 1 November 2011 2 November 2011 3 November 2011	A2C4R0 A2A0L0 A30826 A2G9Z1 A2H1C1 A2H2T6
Government Authorities			
Environment Canada	Migratory birds Species at Risk Wetlands Invasive species Reclamation Monitoring Cumulative effects Emergency prevention, preparedness and response planning	19 August 2011	A30835
Fisheries and Oceans Canada	Protection of fish and fish habitat	12 May 2011	A1Z1K7

Name	Topic(s) of Comments	Date of Submission	Exhibit Number / Filing ID
Saskatchewan Environment	Protection of remnant native prairie Species at Risk Rare plants Noxious weeds Wetlands Stream crossings Shallow groundwater flows and springs Water Right projects Water use for pressure testing	27 October 2011	A2G5A9
Transport Canada	TC's requirements under the Navigable Waters Protection Program, regulatory and Aboriginal consultation requirements Watercourse crossings Surface water intakes for hydrostatic testing Survey protocols for rare plants and animals and survey reporting	9 May 2011 13 May 2011 28 June 2011	A1Z0Y0 A1Z1U0 A2A0I4

6.3 Comments Received by the NEB on its EA Documentation

6.3.1 Comments on the Draft Scope

Poundmaker Cree Nation #114, Lucky Man Cree Nation, Mosquito Grizzly Bear's Head Lean Man First Nation and Little Pine First Nation provided a joint response to the Board's request for comments on the Draft Scope. These First Nations requested clarification and confirmation that:

- mitigation of environmental effects also includes consideration of any accommodation owed by the Crown to Aboriginal groups; and
- consideration of cultural heritage, historical resources, and Aboriginal land use includes consideration of potential impacts on reserve lands, treaty land entitlement lands, Aboriginal title, and potential or established Aboriginal and treaty rights.

These First Nations also submitted that the Scope should specifically consider consultation with affected First Nations to identify impacts (including cumulative effects) and appropriate mitigation with respect to traditional harvesting and ceremonial uses within the environmental assessment process.

The Board clarified in its 15 June 2011 letter that the Scope includes consideration of potential impacts on Aboriginal cultural heritage, historical resources and the current use of lands and resources for traditional purposes. The Board considers the definition of environmental effect to already include these elements. The Board also noted in its letter that the EA would consider mitigation measures to accommodate Aboriginal concerns about potential adverse impacts on lands with potential or established Aboriginal interests, including impacts on traditional harvesting and ceremonial use. Parties were encouraged to bring any relevant evidence on this

subject to the Board's attention during the hearing process, so that the Board could consider it in its environmental assessment.

6.3.2 Comments on the Draft ESR

Following the release of the Draft ESR, the NEB received comments from TC, DFO, EC and Vantage. To view the submitted comments, please refer to the NEB website (www.neb-one.gc.ca) at https://www.neb-one.gc.ca/ll eng/livelink.exe?func=ll&objId=766805&objAction=browse&sort=name. Appendix 2 provides a summary of comments received on the Draft ESR, some of which resulted in wording changes to the ESR. Explanations have been provided for those comments that did not result in changes to the ESR.

7.0 THE NEB'S ENVIRONMENTAL ASSESSMENT METHODOLOGY

In assessing the environmental effects of the Project, the NEB used an issue-based approach. In its analysis within Section 8.2, the NEB identified interactions expected to occur between the proposed Project activities and the surrounding environmental elements. Also included were the consideration of potential accidents and malfunctions that may occur due to the Project and any change to the Project that may be caused by the environment. If there were no expected element or Project interactions then no further examination was deemed necessary. Similarly, no further examination was deemed necessary for interactions that would result in positive or neutral potential effects. In circumstances where the potential effect was unknown, it was categorized as a potential adverse environmental effect.

Vantage committed to several mitigation measures in its Application, subsequent updates and responses to questioning. The mitigation measures are intended to reduce or eliminate the potential adverse environmental effects of the Project. Some of these mitigation measures are considered standard to the industry, while some involve site- or Project-specific considerations. The NEB examined these mitigation measures and made additional recommendations where it thought necessary to satisfy itself that the potential adverse environmental effects of the Project would be adequately mitigated.

Section 8.3.1 provides an analysis for all potential adverse environmental effects of the Project that are resolved through the use of standard design or mitigation measures. In Section 8.3.2, the NEB has identified certain potential adverse environmental effects for detailed analysis based on public concern, the use of non-standard design or mitigation measures, or the relative importance of the elements in question in the context of this Application. Based on this detailed analysis, the NEB evaluated the significance of the residual adverse environmental effects after mitigation.

The Table below specifies the definitions for criteria used in evaluating the significance.

Criteria	Rating	Definition
All criteria	Uncertain	When no other criteria rating descriptor is applicable due to either lack of information or inability to predict.
Frequency (how often would the event that caused the effect occur)	Accidental	Rare and unplanned occurrence over the assessment period.
	Single	One time event within any phase of the Project lifecycle.
	Multiple	Multiple occurrences during any phase of the Project lifecycle.
	Continuous	Continuous through any phase of the Project lifecycle.
Duration (duration of the effect)	Short-term	Adverse environmental effect duration is in the order of months or limited to the proposed construction.
	Medium-term	Adverse environmental effect duration is in the order of a few years.
	Long-term	Adverse environmental effect would remain evident throughout the planned operation or beyond the lifecycle of the Project.
Reversibility	Reversible	Adverse environmental effect expected to return to baseline conditions within the life of the Project.
	Possible	Adverse environmental effect may or may not return to baseline conditions within the life of the Project.
	Irreversible	Adverse environmental effect would be permanent, or would last in the order of a few generations.
Geographic Extent	PSA	Effect would be limited to the area directly disturbed by the Project development, including the width of the RoW and the TWS.
	LSA	Effect would generally be limited to the area in relation to the Project where direct interaction with the biophysical and human environment could occur as a result of construction or reclamation activities. This area varies relative to the receptor being considered (e.g. 2 km wide corridor for wildlife).
	RSA	Effect would be recognized in the area beyond the LSA that might be affected on the landscape level. This area also varies relative to the receptor being considered.
Magnitude	Low	Effect is negligible, if any; restricted to a few individuals/species or only slightly affects the resource or parties involved; and would impact quality of life for some, but individuals commonly adapt or become habituated, and the effect is widely accepted by society.
	Moderate	Effect would impact many individuals/species or noticeably affect the resource or parties involved; is detectable but below environmental, regulatory or social standards or tolerance; and would impact quality of life but the effect is normally accepted by society.
	High	Effect would affect numerous individuals or affect the resource or parties involved in a substantial manner; is beyond environmental, regulatory or social standards or tolerance; and would impact quality of life, result in lasting stress and is generally not accepted by society except under extenuating circumstance.
Evaluation of Significance	Likely to be significant	Effects that are of high magnitude, or of continuous, long term, irreversible, RSA extent.
	Not likely to be significant	Any adverse effect that does not meet the above criteria for “significant”.

Cumulative impacts of the residual effects associated with the Project in combination with the residual effects from other projects and activities that have been or will be carried out were examined and the analysis is presented in Section 8.4. Section 8.5 addresses the applicability of follow-up programs under the CEA Act. Finally, Section 8.6 provides the compiled list of recommendations for any subsequent regulatory approval of the Project.

8.0 ENVIRONMENTAL EFFECTS ANALYSIS

8.1 Routing of the Pipeline

Vantage developed Project-specific routing criteria for evaluating three alternative routes for the Project. The Project was routed between the Hess Corporation Tioga Gas Plant and the AEGS at Empress, Alberta according to the following criteria:

- accommodate landowner and government requests, where feasible;
- minimize the pipeline length in order to limit the total area of disturbance;
- follow existing linear disturbances (pipelines, maintained roads, etc.);
- avoid or minimize the crossing of steep/moderate slopes, sensitive wildlife habitat, areas of high archaeological/palaeontological sensitivity and the quantity of watercourse crossings; and,
- where watercourse crossing cannot be avoided, cross at or near right angles where straight and stable reaches occur and where a successful directionally drilled or bored crossing is likely.

The Project route was selected from among the alternatives primarily because it crossed less native prairie and was situated farther from the GSH Representative Area Ecological Reserve than the alternative routes. The Project is contiguous with existing disturbances, such as maintained roads and existing pipelines, for over 85% of its length.

Valve and pump station locations were selected based on their proximity to existing roads, power supply, and avoidance of native prairie, where feasible.

8.2 Project-Environment Interactions

	Environmental Element	Description of Interaction (How, When, Where, or Why No Interaction is Expected)	Potential Adverse Environmental Effect	Mitigation Measures Discussed in Section:
Bio-physical	Terrain, Soil and Soil Productivity	Clearing, grading, trenching and backfilling during construction of pipeline, valve sites and pump stations	Change in soil quality due to admixing of horizons during soil storage and handling procedures, structural change from compaction or pulverization, or an increase of coarse fragments or saline or sodic material in topsoil and upper subsoil Soil loss due to improper salvage and replacement or by wind or water erosion during soil storage and handling procedures	8.3.2.1

	Environmental Element	Description of Interaction (How, When, Where, or Why No Interaction is Expected)	Potential Adverse Environmental Effect	Mitigation Measures Discussed in Section:
	Vegetation	Clearing of vegetation, grading, trenching and backfilling during construction of pipeline, valve sites and pump stations Human/equipment traffic during maintenance activities Vegetation management activities during operations	Impacts on native prairie vegetation, including localized disturbance, loss of vegetation and decline in species diversity, fragmentation, and loss or alteration of distinctive vegetation communities Destruction of rare plants or modifications to their habitat Introduction or spread of seeds of noxious weeds and invasive non-native species	8.3.2.2
	Water Quality and Quantity	Clearing, grading, trenching, watercourse crossings, stringing pipe, lowering, backfilling, hydrostatic testing, cleanup and final reclamation may disrupt surface and groundwater flows and quality	Localized alteration of natural flow patterns Reduction in surface water quality and quantity	8.3.2.3
	Fish and Fish Habitat	Pipeline construction (clearing, grading, trenching, stringing pipe, lowering, backfilling, hydrostatic testing, cleanup and final reclamation) at watercourse crossings	Physical alteration of fish habitat Increased suspended sediment concentrations Fish mortality or injury	8.3.1
	Wetlands	Pipeline construction (clearing, grading, trenching, watercourse crossings, strung pipe, lowering, hydrostatic testing, block valve install, cleanup and final reclamation) within proximity of wetlands	Loss of wetland habitat Alteration of natural flow patterns of both surface water and subsurface hydrologic flow Reduction in water quality Loss of wetland function	8.3.2.4
	Wildlife and Wildlife Habitat	Clearing of vegetation, grading, trenching, watercourse and wetland crossings, lowering pipe and backfilling during construction of pipeline, valve sites and pump stations Equipment traffic during operations and maintenance Vegetation management activities during operations	Alteration and loss of native habitats Habitat fragmentation and loss of habitat connectivity Sensory disturbance Mortality	8.3.2.5

	Environmental Element	Description of Interaction (How, When, Where, or Why No Interaction is Expected)	Potential Adverse Environmental Effect	Mitigation Measures Discussed in Section:
	Species at Risk pursuant to Schedule 1 of SARA	RoW traverses potential and confirmed habitat of several Listed species Clearing of vegetation, grading, trenching, watercourse and wetland crossings, lowering pipe and backfilling during construction of pipeline, valve sites and pump stations Equipment traffic during operations and maintenance Vegetation management activities during operations	Loss or alteration of site-specific habitats of Listed species Habitat fragmentation and loss of habitat connectivity Sensory disturbance Mortality	8.3.2.5
	Species of Special Status	RoW traverses habitat for several migratory birds and other Species of Special Status Clearing of vegetation, grading, trenching, watercourse and wetland crossings, lowering pipe and backfilling during construction of pipeline, valve sites and pump stations Equipment traffic during operations and maintenance Vegetation management activities during operations	Loss or alteration of site-specific habitats of Species of Special Status Habitat fragmentation and loss of habitat connectivity Sensory disturbance Mortality	8.3.2.5
	Air Quality	Operation of construction equipment Operation and maintenance of pump stations Fugitive emissions Emissions from monitoring and surveillance traffic during operations	Emissions from fuel combustion Dust GHG emissions	8.3.1
Socio-Economic	Human Occupancy / Resource Use	Pipeline construction (clearing, grading, trenching, watercourse crossings, strung pipe, lowering, backfilling, hydrostatic testing, block valve install, cleanup and final reclamation) Loss of agricultural lands to accommodate the construction and operation of above ground facilities	Disturbance to agricultural and ranching operations Temporary disruption of outfitting, trapping, hunting, recreational fishing	8.3.1

	Environmental Element	Description of Interaction (How, When, Where, or Why No Interaction is Expected)	Potential Adverse Environmental Effect	Mitigation Measures Discussed in Section:
	Heritage Resources	Clearing, grading, trenching and directional drilling operations during construction of pipeline, valve sites and pump stations	Disturbance or loss of previously identified or unidentified heritage or palaeontological resources	8.3.1
	Current Traditional Land and Resource Use	Pipeline construction (clearing, grading, trenching, watercourse crossings, strung pipe, lowering, backfilling, hydrostatic testing, block valve install, cleanup and final reclamation) Equipment traffic during operations and maintenance Operations and maintenance activities	Disruption of site-specific TLU identified during ongoing engagement Disruption of traditional activities during construction	8.3.2.6
	Human Health / Aesthetics	Decreased air quality during construction, operations and maintenance (refer to Air Quality section above) Construction activities could impact potable water (refer to Water Quality and Quantity sections above) Increased noise levels operation of pump stations Increased noise levels during HDD	Health effects on local residents from decreased air quality Health effects on local residents from changes to the acoustic environment as a result of HDD activities and pump station operations	8.3.1
			Health effects on local residents associated with impacts to surface water and groundwater	8.3.2.3
Other	Accidents / Malfunctions	Pipeline break or leak Pipeline repair or replacement Equipment traffic Spills of hazardous material (e.g. hydraulic fluid, motor oil, gasoline and antifreeze) Fire Release of mud during HDD	Change in soil quality or soil loss due to repair activities Soil contamination Direct mortality or damage to native vegetation or seedbed Disturbance to rare plant species and their habitat Introduction or spread of seeds of noxious weeds or invasive non-native species Reduction in surface or groundwater quality and quantity Physical alteration of fish habitat Fish mortality or injury Loss of habitat, sensory disturbance or mortality to wildlife Release of ethane, smoke or contaminants into the atmosphere	8.3.1

	Environmental Element	Description of Interaction (How, When, Where, or Why No Interaction is Expected)	Potential Adverse Environmental Effect	Mitigation Measures Discussed in Section:
	Effects of the Environment on the Project	Terrain destabilization Flooding Adverse weather Wildfire	Exposure, damage to or deformation of pipe Reduction in reclamation success Inundation of or damage to surface structures Delays in construction or maintenance schedules Threats to safety of personnel	8.3.1

8.3 Potential Adverse Environmental Effects

To address potential adverse environmental effects, Vantage has proposed several mitigation strategies. These include:

- avoidance through route and site selection;
- scheduling activities to avoid sensitive periods;
- reducing the Project footprint on native prairie, especially those areas that are not contiguous with existing linear developments;
- implementing HDD at watercourse crossings where fish issues are a concern;
- having qualified environmental or specialist inspectors involved during all stages of the Project; and
- developing an environmental training program for all Project employees.

The reader is referred to Vantage's Application and supporting documentation for details on all the proposed mitigation. These measures have provided the Board with a sufficient basis to assess the potential adverse environmental effects associated with the Project.

8.3.1 Analysis of Potential Adverse Environmental Effects to be Mitigated through Standard Measures

The NEB is of the view that many of the potential adverse environmental effects of the Project identified in Section 8.2 can be resolved through the use of standard design or routine mitigation measures. A standard mitigation measure is a specification or practice that has been developed by industry, or prescribed by a government authority, that has been previously employed successfully and is now considered common or routine and meets the expectations of the NEB. Vantage described many of these standard measures in a number of different documents, including its Application, related submissions, draft Environmental Protection Plan (EPP) and Environmental Alignment Sheets for the Project. In addition, the standard measures are complemented with numerous special mitigation measures also found in the documentation.

The Board notes that Vantage is a company new to the Board and does not have any company manuals on file with the NEB that document its environmental protection procedures. Currently,

Vantage's Project-specific environmental protection measures and commitments are contained in several places including its Application, draft EPP, and responses to questioning.

To ensure that all general and site-specific mitigation measures are appropriate and will be implemented according to their intent, the Board proposes the following recommendations.

8.3.1.1 Recommendation A – Environmental Protection Plan

The Board recommends Vantage file an updated, comprehensive EPP that will communicate all environmental protection procedures and mitigation measures to employees, contractors and regulators. The commitments should be as clear as possible. In cases where there may be multiple ways of achieving the desired outcome, it is helpful to state the goal, the environmental protection objective, mitigation options, and clear decision-making criteria for choosing which option to apply under what circumstances. Where a mitigation option is mandatory (e.g. a required setback distance), it should be clearly stated. As the EPP is intended to be a comprehensive document, it should cross-reference or contain the other more detailed plans, as appropriate (e.g. Wildlife Protection Plan, Traffic Management Plan, Waste Management Plan). Updated Environmental Alignment Sheets should also be included with the EPP.

Another important element of an effective EPP is to clarify the authority and reporting structure (i.e. the assignment of roles and responsibilities). This would include both employees and contractors, and would help to alleviate confusion over accountability, should circumstances require a quick decision to ensure environmental protection.

If the Project were approved, a Technical Meeting with Vantage would be organized by the NEB to finalize the details of the mitigation, monitoring and reclamation measures before construction begins and before filing the final EPP with the Board for approval.

While **Recommendation A** requires the EPP to be filed for the Board's approval 90 days prior to the commencement of construction, the Board notes that amendments to the EPP after the 90 days may be necessary based on pre-construction survey results for wetlands, wildlife or rare plants. Such site-specific updates to the EPP would be required by the Board no less than 15 days prior to the commencement of construction in order to allow sufficient time for the Board's review and approval process.

8.3.1.2 Recommendation L - Commitments Tracking Table

The Board also recommends Vantage maintain a Commitments Tracking Table for reporting on the status of commitments to be fulfilled during construction and operations.

8.3.1.3 Recommendation M - Environmental Protection Program

Section 48 of the *Onshore Pipeline Regulations, 1999* (OPR-99) requires a company to develop and implement an environmental protection program to anticipate, prevent, mitigate and manage conditions which have a potential to adversely affect the environment. The Board recommends Vantage file this Program with the Board for its review prior to Project operations. It is the Board's expectation that such a program would be ongoing throughout the life of the Project and would undergo regular review and updates as required.

8.3.1.4 Recommendation N - Post-construction Monitoring (PCM) Report

Vantage describes a PCM program lasting one year, after which reclamation results would be assessed to determine whether continued monitoring is warranted. At this point, the program would transition to the Operations group for ongoing monitoring of the Project RoW and facilities. The PCM program would cover vegetation, watercourse and wildlife monitoring. Vantage anticipates that the primary issue after the first year would be related to weed management and control.

Due to the spatial and temporal variability in the natural environment and the length of time required for native prairie communities to regenerate following disturbance, the Board instead recommends the PCM report be filed with the Board at the end of the first, third, fifth and tenth years following the start of operations.

Views of Parties

Pasqua First Nation submitted that protection of the environment is one of the issues it was concerned about; however, the way in which the monitoring of endangered species and vegetation would be conducted satisfied its concerns. Pasqua First Nation added that it would also like the relevant environmental agencies such as SE and EC involved in the monitoring.

Views of Vantage

Vantage stated that it anticipates that much of the RoW will be reclaimed within one year of construction, although it recognizes that the length of PCM cannot be determined until reclamation success is evaluated. Vantage submitted that there is no evidence that it will take ten years for the RoW to be fully reclaimed and requested that a PCM report not be required after the fifth year of operations. As Vantages believes that all of its commitments would be completed within five years of the commencement of pipeline operations, it also requested that commitment tracking beyond five years not be required.

Views of the Board

The Board maintains that Vantage should plan to file a PCM report at the close of the first, third, fifth and tenth years following the start of operations, based on the Board's experience with variable reclamation success at watercourse crossings and other areas in the prairie provinces due to differences in terrain and annual climatic variations. An area that may appear well-reclaimed at the end of a good season may revert following a year of drought. However, should a short-term issue be clearly resolved before the end of the PCM program, it may be indicated in the report, and monitoring of that site or issue can be dropped from subsequent reports provided the Board has no outstanding concerns at that time. The Commitment Tracking Table should continue to be updated according to the schedule set out in **Recommendation L**.

The methodology to be used for PCM should be described in the updated Project EPP, and if the Project were approved, would be finalized in a Technical Meeting with Vantage before construction begins and before filing the final EPP for approval by the NEB. In addition to the vegetation, watercourse and wildlife monitoring specified by Vantage, the Board also expects PCM to cover issues pertaining to soils (e.g. erosion, compaction, sensitive sandy areas), agricultural production and wetlands. PCM related specifically to native prairie is discussed below in Section 8.3.2.2.

With respect to the involvement of relevant environmental agencies in PCM, the Board notes Vantage's commitment that PCM methodology and duration would be discussed with SE and EC following construction, and that the PCM reports and subsequent updates would be submitted to SE, EC and the NEB. The Board supports Vantage's commitments in this regard. The Board also notes that **Recommendation A** requires Vantage to prepare reclamation and monitoring plans as part of the EPP prepared prior to construction, and to provide evidence of consultation with appropriate regulatory authorities at this stage.

8.3.1.5 Recommendation K - Heritage Resources

Should any previously unidentified resource sites be encountered during construction of the Project, activity at the site would be stopped and the Historical/Heritage Resources Contingency Plan would be implemented and the appropriate regulatory agencies notified.

In addition to this standard mitigation, the Board recommends that Vantage file with the Board copies of its correspondence from the Saskatchewan Department of Tourism, Parks, Culture and Sport confirming that Vantage has obtained all archaeological and heritage resource permits and clearances, and a statement indicating how Vantage intends to implement any recommendations provided by the provincial departments.

Section 8.6 describes the complete list of recommendations.

8.3.2 Detailed Analysis of Potential Adverse Environmental Effects

The nature of the Project is such that detailed analysis of potential adverse environmental effects is required. The following section provides a detailed analysis for each potential adverse environmental effect or issue which is either of public concern, involves non-standard mitigation measures, monitoring programs or requires the implementation of an issue-specific recommendation.

The analysis provides a background to the potential adverse environmental effect, specific mitigation measures and monitoring programs, ratings for the criteria used in evaluating significance, and concludes with the views of the Board along with any issue-specific recommendations.

8.3.2.1 Soils

Change in Soil Quality

Potential Adverse Environmental Effect	▪ Change in soil quality due to admixing of horizons during soil storage and handling procedures, structural change from compaction or pulverization, or an increase of coarse fragments or saline or sodic material in topsoil and upper subsoil
Background	Vantage committed to specific ditch and topsoil stripping widths based on soil conditions and land use. As part of a commitment to reduce impacts on native prairie, Vantage committed to using narrow ditch (0.6 m) and no-strip methods on native prairie where soil conditions allow, or using trench line stripping where soils are less stable. However, limitations of narrowing trench and stripping widths include the risk of admixing of topsoils and subsoils in high traffic areas, topsoil pulverization, and soil compaction. Changes to soil capability (including changes to soil quality and soil loss), if they occur, can be long-term and mostly irreversible.
Mitigation Measures	Vantage committed to several standard measures to mitigate physical and chemical changes in soil quality. In addition, to specifically manage the potential effects of construction traffic on unstripped native prairie, Vantage committed to: ▪ compiling a detailed traffic management plan relating to anticipated traffic on the RoW including vehicle types and volumes; and ▪ having an Environmental Monitor or other field support staff monitor and enforce restrictions on RoW traffic and usage.
Monitoring	Vantage committed to conducting a post-construction soils assessment that would include tests for subsoil compaction, topsoil depth and texture, degree of topsoil/subsoil admixing, stoniness and contour restoration.
Views of the Board	The Board is satisfied that Vantage's commitment to no-strip or trench line stripping on native prairie has many potential benefits including: minimizing the amount of native prairie that would have to be re-established, minimizing the disturbance to rare plants or archaeological sites, limiting the area where weeds would have to be treated, minimizing the amount of land that may be trapped due to fencing while pasture land was re-established, and minimizing the quantity of soil exposed to wind erosion. However, the Board also notes potential impacts to prairie soils from construction traffic travelling on unstripped RoW. To reduce these impacts, the Board supports Vantage's commitments to compiling a detailed Traffic Management Plan including the anticipated traffic on the RoW and to monitoring and enforcing traffic usage restrictions. It is the Board's view that actively restricting traffic access to the RoW on native prairie would reduce impacts related to admixing of soil horizons, compaction and pulverization of fragile prairie topsoils. The Traffic Management Plan would provide the means of identifying which traffic would be permitted on the RoW, including vehicle types and volumes, and which non-essential traffic would be denied access. To ensure the Traffic Management Plan is enforced, the Board believes that a traffic monitor would be required at all access points to native prairie RoW where active construction is occurring. It is the Board's view that **Recommendation J** (see Section 8.6) would reinforce Vantage's commitment to monitoring and enforcing restrictions on RoW traffic and usage, and thus protect soil quality on more than 100 km of native prairie traversed by the Project. The traffic monitor would have the ability to restrict entry and would ensure that the Traffic Management Plan was followed. Maintaining a log of all traffic on native prairie RoW would also confirm or update the anticipated traffic described in the Traffic Management Plan and help validate Vantage's environmental assessment predictions with respect to impacts on soil quality. The Board notes that the timing of PCM should be aligned with the overall monitoring and reporting schedule described in Section 8.3.1 and outlined in **Recommendation N** in Section 8.6.

Evaluation of Significance	Frequency	Duration	Reversibility	Geographical Extent	Magnitude
	Multiple	Short-term to Long-term	Reversible to Possible	PSA LSA	Low
	Adverse Effect				
	Not likely to be significant				

Refer to the Table in Section 7.0 for definitions of the Evaluation of Significance Criteria

8.3.2.2 Vegetation

Native Prairie Vegetation and Associated Communities

Potential Adverse Environmental Effect	▪ Impacts on native prairie vegetation, including localized disturbance, loss of vegetation and decline in species diversity, fragmentation, and loss or alteration of distinctive vegetation communities
Background	***Loss of native vegetation*** The Project traverses 100.9 km of native prairie, over 20 km of which is new, non-contiguous RoW. Loss of native vegetation would occur directly as a result of surface disturbance and indirectly as a result of invasive non-native species or from the loss and alteration of plant communities and their dynamics. Remnant tracts of native vegetation are an important part of Saskatchewan's natural heritage, play a vital role in ensuring the protection of biodiversity, and provide critical habitat for both native plant and wildlife species, among other important benefits. Both Vantage and SE noted the value of Saskatchewan's remaining native prairie, limited as it is, and SE recommended that every effort be made to avoid native prairie. ***Fragmentation of native vegetation*** Fragmentation of native prairie would also occur where the Project is located on new, non-contiguous RoW. Fragmented native landscapes are more susceptible to invasion by weed species, and may experience disruption in pollination and seed dispersal mechanisms of native species. Invasion by noxious weeds and non-native species is discussed in more detail in a separate table below. ***Success of reclamation*** Vantage stated that the loss and fragmentation of native prairie could be reversible provided that reclamation is successful. Recovery to early successional native communities may be achieved within five to ten years, but may take as long as 50 years to achieve late successional status.
Mitigation Measures	***Protection of native vegetation*** Vantage committed to minimizing the loss of native vegetation as much as possible through limiting topsoil stripping and reducing trench width on native prairie. The pipeline trench would be 0.6 m to 1 m in width depending on the stability of the soils. No-strip methods would be used where soil conditions permit, while trench width topsoil stripping would be used elsewhere on native prairie. Vantage provided examples of pipeline projects up to 10 inches in diameter where no-strip methods were used successfully, although the majority of examples were projects up to eight inches in diameter. Distinctive vegetation communities with high occurrences of rare plants would have the same mitigation measures as for rare plant species, described in the table below. Where possible, the valve sites would be located within previously disturbed areas, and all are adjacent to existing roads. The pump stations would not be located on native prairie and are also adjacent to roads. Vantage also submitted that, where possible, the Project route should avoid traversing through native prairie, especially those that are not contiguous with existing linear developments.

	Reclamation Natural recovery would be used as a reclamation strategy on native prairie where non-native species are low in abundance and where soils are not at risk of erosion. To facilitate natural recovery, construction activities would be scheduled during the dormant season of native plants in late summer or fall, or after seed set/release whenever possible, especially in a distinctive vegetation community. Where natural recovery is not feasible, native seed mixes would be developed to emulate the natural vegetation structure, only Certified Canada No. 1 seed from a local source with Certificates of Analysis would be used, and the seed mix appropriate for the land use and region would be determined in consultation with the landowner/lessee or provincial agencies. In accordance with the GSH recommendations, only locally adapted native seed sources would be used for reclamation and they would be carefully scrutinized for contamination by unwanted plant species. Vantage additionally committed to following EC's recommendation that reclamation seed mixtures mimic the dominant native vegetation in the surrounding area, be of local provenance, be certified and inspected to be free of invasive and noxious weed materials, and to contain no more than 10-15% western wheatgrass in any mix.
Monitoring	Vegetation monitoring of native communities would take place on native prairie quarter sections. Vantage committed to conducting post-construction assessments along the RoW to allow for early detection of weed species and to allow for timely vegetation control activities.
Views of the Board	The Board recognizes Vantage's efforts to use minimal disturbance techniques during construction and to route the Project contiguous to existing disturbances as important strategies to reducing loss and fragmentation of native prairie. However, given: the extent of native prairie crossed by the Project, the value of remaining native prairie in Canada and its sensitivity to potential impacts, the relative novelty of no-strip pipeline construction for a pipeline over eight inches in diameter, and the extended timelines associated with the recovery of native communities, the Board recommends that Vantage prepare a Native Prairie Protection Plan and Monitoring Program and a Native Prairie Monitoring Report to be submitted to the Board in accordance with **Recommendations B** and **O**. The Board expects that scientific methods will be used to monitor the success of native prairie reclamation, and that the monitoring program will be customized based on the vegetation communities and site-specific considerations of the areas being reclaimed. Adaptive approaches based on the results of the monitoring program may be required to ensure that mitigation and reclamation goals are met. The Board also expects Vantage to share the results of its monitoring program, as summarized in the Native Prairie Monitoring Reports, with appropriate other federal and provincial agencies as requested by such agencies. Further views with respect to routing and fragmentation of native prairie habitats are found in section 8.4 below.
Evaluation of Significance	Frequency: Multiple Duration: Short-term to Long-term Reversibility: Possible Geographical Extent: PSA to RSA Magnitude: Low to Moderate Adverse Effect: Not likely to be significant

Refer to the Table in Section 7.0 for definitions of the Evaluation of Significance Criteria

Rare Plants

Potential Adverse Environmental Effect	▪ Destruction of rare plants or modifications to their habitat

Background	Due to the sensitivity of rare plant species to the loss of individuals, any loss may have significant impacts on the distribution and long-term recovery of rare species in the area. The Project may have direct impacts on rare plant individuals or communities from construction equipment, alteration of microclimates or moisture regimes, or by the introduction of weeds that compete with rare plant species.
Mitigation Measures	Vantage committed to a number of possible mitigation measures of which three are preferred options: avoidance, cover, and transplanting/collection of seed/protection of topsoil seedbank. Vantage stated that it would determine its site-specific mitigation measures for identified populations of rare plant species in consultation with SE and EC after the 2011 field survey season. EC noted that Vantage's third preferred option, transplanting or seedbank salvage with reseeding, is not currently supported by the Recovery Team for Plant Species at Risk for the Prairies. EC recommends avoidance.
Monitoring	Vantage committed to conducting rare vascular plant monitoring on the native prairie quarter sections of the PSA and LSA, as well as those cultivated and improved portions where rare plants were reported in 2010 and 2011 surveys. Monitoring would assess the persistence and health of, and any threats to, the plants at each site. Where any transplanting is undertaken, Vantage would conduct two years of rare plant surveys.
Views of the Board	The Board notes that Vantage has not yet defined its site-specific mitigation measures for identified rare plant locations. The Board also notes that not all of Vantage's preferred mitigation measures are supported by EC at this time. The Board is of the view that avoidance is the best mitigation and encourages Vantage to avoid any rare plant sites to the extent possible. In order to confirm this and to have clear, defensible and effective mitigation, the Board recommends that Vantage submit a Rare Plant Mitigation Plan (**Recommendation F**) that specifies the mitigation measure(s) selected, and where avoidance is not the preferred option, the basis for the mitigation selected. The Plan should also include any site- or species-specific details to demonstrate why the chosen measure would be successful at mitigating Project impacts, and the outcomes of Vantage's consultation with SE and EC with respect to site- and species-specific mitigation.
Evaluation of Significance	Frequency: Single to Multiple Duration: Medium-term to Long-term Reversibility: Possible Geographical Extent: RSA Magnitude: Low Adverse Effect Not likely to be significant

Refer to the Table in Section 7.0 for definitions of the Evaluation of Significance Criteria

Noxious Weeds and Invasive Non-native Species

Potential Adverse Environmental Effect	• Introduction or spread of seeds of noxious weeds and invasive non-native species
Background	Existing conditions near the Project RoW are subject to noxious or invasive non-native species proliferation. Vantage observed that, in some areas, RoW adjacent to the Project was seeded with crested wheatgrass or a possible sheep fescue species, which were observed spreading into native prairie areas. Once invaded, native prairie habitats are difficult to return to native vegetation. Vantage notes that the construction process creates temporary soil disturbance, which provides an opportunity for weed species to establish themselves. Additionally, weed control measures themselves may have adverse effects on native vegetation and rare plant species.
Mitigation Measures	Vantage committed to preventing and controlling the spread of restricted, noxious and invasive plant species during the pre-construction, construction and post-construction period of the

	Project. Several standard mitigation measures are included in Vantage's Application and draft EPP including cleaning equipment, monitoring flagged problem locations, and conducting active weed control during all Project phases. SE emphasized the importance of setting up wash stations along the RoW where equipment has passed through noxious weed populations, to minimize potential transfer of seeds and rhizomes from these plants. Vantage indicated it would set up additional cleaning stations as necessary in close proximity to distinctive vegetation communities or rare plants to avoid the spread of noxious and invasive non-native species. Since vegetation control measures have the potential to damage or cause mortality of native vegetation, Vantage committed to: ▪ managing the timing of vegetation control activity to minimize impacts to native species, where possible; ▪ ensuring that the method of vegetation control does not have deleterious effects on populations of rare plant species and providing these locations to the vegetation management crews; ▪ using mechanical measures and avoiding the use of herbicides as a vegetation control measure whenever possible in native prairie; and, ▪ consulting with landowners regarding vegetation control measures, especially herbicide use, in all land use classes to ensure there are no conflicts with crops or livestock. EC recommended that weed mowing and other habitat destruction activities avoid at minimum the key breeding period for migratory birds in the Project area (April 15-July 31). In areas where Sprague's pipit and other migratory bird Listed species may be nesting, EC recommended this period be extended to August 31.
Monitoring	Vantage committed to conducting post-construction assessments to monitor and identify any problem areas where there are infestations of noxious weed and invasive non-native species.
Views of the Board	The Board recognizes Vantage's commitments to preventing and controlling the spread of weeds. The Board notes that appropriate choice of vegetation control measures is critical where there is a possibility of damaging native prairie or rare plant species or impacting nesting migratory birds. Appropriate choices are made when the options are presented clearly for different circumstances (e.g. site-specific conditions, weather constraints, landowner considerations, sensitive areas). For this purpose, the Board recommends that an updated Weed Management Plan be submitted with the revised EPP as part of **Recommendation A** in Section 8.6. This would include a decision tree or similar means of clearly identifying appropriate options for vegetation control based on different circumstances. The Plan should contain either a listing of sensitive areas where mechanical weed control or other specialized measure would be required, such as at rare plant, native prairie, or wildlife locations, or cross-reference the plans or Environmental Alignment Sheets where this information is found. As weed management would extend throughout the operations phase of the Project, the Weed Management Plan should be a part of Vantage's ongoing Environmental Protection Program. PCM and reporting for noxious weeds and invasive non-native species should be aligned with the overall monitoring and reporting schedule described in Section 8.3.1 and outlined in **Recommendation N** in Section 8.6.
Evaluation of Significance	Frequency: Continuous Duration: Short-term to Long-term Reversibility: Reversible Geographical Extent: LSA Magnitude: Low Adverse Effect: Not likely to be significant

Refer to the Table in Section 7.0 for definitions of the Evaluation of Significance Criteria

8.3.2.3 Water Quality and Quantity

Potential Adverse Environmental Effect	▪ Localized alteration of natural flow patterns ▪ Reduction in surface water quality and quantity ▪ Health effects on local residents associated with impacts to surface water and groundwater
Background	Following surveys completed in 2011, 17 watercourse crossing sites exhibited flowing water and defined bed and banks. Pipeline construction at these watercourses would be completed in accordance with applicable DFO terms and conditions as per DFO's Operational Statements. Watercourses that do not meet these conditions would require that approved mitigation measures be implemented to avoid or minimize impacts to fish and fish habitat, as recommended by DFO. An Aquatic Habitat Protection Permit would also be required from SE. Accidents, malfunctions and unplanned events which result in a spill of hazardous material near or in a watercourse have the potential to affect stream flows and water quality. Ethane has a low bio-concentration potential, and estimated toxicity data indicate that this material is slightly to moderately toxic to fish and other organisms. SE submitted that it is highly likely that the Project would intersect a number of springs/shallow aquifers. While individual springs may not be of regional significance, they can be of great significance to an individual landowner. SE advocated the use of appropriate mitigation when encountering springs.
Mitigation Measures	Vantage committed to several standard measures to mitigate the potential environmental effects on water quality and quantity. Vantage indicated that trenchless methods would be used on seven of the 17 watercourses with defined bed and banks. The other ten watercourses crossings would be completed using an isolated method approach outside the RAP or using an open-cut method when the watercourses would be dry or frozen to the bottom. In the event where site or engineering considerations prohibit a crossing from being completed according to the primary method and the secondary crossing method is necessary, Vantage would consult with SE, DFO and the NEB. In the event that the primary and secondary watercourse crossing methods were not feasible, and fall-back or alternate crossing methods needed to be implemented, it is likely that a harmful alteration, disruption or destruction of fish habitat would occur, which would require that a Section 35(2) *Fisheries Act* Authorization be issued. Vantage would consult with DFO, SE and the NEB when alternative crossing methods needed to be employed. To specifically manage the potential effects of spills of hazardous materials on surface water quality, Vantage committed to having a Spill Release Contingency Plan and an Emergency Response Plan that meets or exceeds regulatory requirements. In addition, a computer-based Leak Detection System that will report through the Supervisory Control and Data Acquisition system to the Central Control Facility would be installed to ensure a fast response and to minimize any impacts. Should springs be encountered during Project construction, Vantage would refer to geotechnical or hydrological specialists to ensure that appropriate mitigation measures would be implemented to allow springs to continue to flow. Vantage also committed to consulting with landowners regarding any springs or individual Water Rights projects they might have.
Monitoring	Vantage committed to having an environmental inspector or fisheries specialist present to monitor construction at all watercourse crossings. Further, Vantage would monitor the watercourse crossings every spring for at least two years following construction to document the effectiveness of the mitigation measures, and to continue monitoring at specific locations if chronic erosion occurs or if riparian vegetation had not fully established.
Views of the Board	The Board recognizes Vantage's commitments to protecting water quality and quantity during the construction and operation of the Project.

	The Board is satisfied with Vantage's choice of primary watercourse crossing methods and notes its consultation with DFO throughout. The Board also notes that Vantage is in the process of reviewing its updated watercourse crossings with DFO, and would consult with DFO, SE and the NEB should any change to the primary crossing methods be required. Should a change be necessary during construction, such as the failure of or other technical difficulty with an identified HDD crossing, the Board expects Vantage to have approved contingency plans in place. The Board therefore recommends that Vantage submit, as part of its updated EPP (**Recommendation A**), a contingency plan for trenchless watercourse crossings, including the criteria that would be applied to determine when a fall-back to the contingency plan would be required. Further, the Board recommends that Vantage follow **Recommendation E** to notify the Board of any intention to change from the primary crossing method to follow the approved contingency plan. The Board notes that Vantage committed to following EC's recommendation to provide a Project-related Spill Contingency and Emergency Response Plan to the appropriate regulatory agencies to review. The status of this commitment should be documented in the Commitments Tracking Table as outlined in **Recommendation L** in Section 8.6. Vantage's commitments related to spring and shallow aquifer mitigation and consultation should also be tracked. It is expected that Vantage shall adhere to authorizations and permits issued by DFO, TC, the Saskatchewan Watershed Authority and SE with respect to surface and ground water under their respective mandates.
Evaluation of Significance	Frequency: Multiple Duration: Short-term to Long-term Reversibility: Reversible to Possible Geographical Extent: PSA, LSA Magnitude: Low Adverse Effect Not likely to be significant

Refer to the Table in Section 7.0 for definitions of the Evaluation of Significance Criteria

8.3.2.4 Wetlands

Potential Adverse Environmental Effect	▪ Alteration of natural flow patterns of both surface water and subsurface hydrologic flow ▪ Reduction in water quality ▪ Loss of wetland function
Background	The proposed disruption of several hundred wetlands prompted a general comment of concern from SE, as a paramount goal and challenge is to conserve remaining biodiversity in a landscape subject to increasing development pressures. SE recommended that Vantage continue to examine the potential to further minimize or avoid wetland habitat disturbance. SE also stated its concerns with respect to scheduling of open cut construction of wetlands, and would require further information from Vantage in regard to potential wetland HDD. EC also expressed concern with respect to the loss of wetland function as a result of Project construction in a landscape that has suffered extensive wetland loss and drainage. EC submitted that there would be areas with a loss of wetland function for years following Project construction until the habitat recovered and, in several instances, the habitat would be permanently modified. EC recommended that Vantage develop a wetland compensation and monitoring plan to mitigate these potential impacts.
Mitigation Measures	Vantage stated that it is committed to the goals and objectives outlined in the *Federal Policy for Wetland Conservation*, the *Alberta Wetland Policy* and the *Saskatchewan Wetland Policy*, and that in planning the pipeline route it took a four-step approach to wetland mitigation including avoidance, minimizing impacts, mitigation and monitoring. EC recommended that Vantage avoid wetlands that provide breeding and overwintering habitat to Great Plains toads and northern leopard frogs, both Listed species.

	Vantage's draft EPP outlined the mitigation measures for pipeline construction in wetlands and these measures were provided on the preliminary Environmental Alignment Sheets. In addition, Vantage committed to undertaking the following: ▪ all wetlands of Class IV (semi-permanent) or V (permanent) traversed by the Project would be avoided or crossed via HDD; ▪ tilled or Class I (ephemeral), II (temporary), III (seasonal) or VI (alkali) wetlands traversed by the Project that are dry or frozen to the bottom would be open cut, using fencing to prevent siltation and to exclude wildlife from the construction area as necessary; ▪ tilled or Class I (ephemeral), II (temporary), III (seasonal) or VI (alkali) wetlands traversed by the Project that contain water would be assessed for open cut viability and wildlife concerns. If construction is necessary between April 1 and August 31, if water depth is too great for open cut, or if there are nesting migratory birds, the wetland would be avoided or crossed via HDD. If open cut is feasible, fencing would be used to prevent siltation and to exclude wildlife from the construction area as necessary. Amphibians would be removed from the RoW to suitable habitat using sterile handling techniques under permit from provincial wildlife authorities; and ▪ all wetlands within 30 m of the Project RoW but not traversed would be fenced to prevent siltation and to exclude wildlife from the construction area as necessary. Amphibians would be removed from the RoW to suitable habitat using sterile handling techniques under permit from provincial wildlife authorities. All wetlands would be assessed for depth and extent in 2012 prior to construction to determine site-specific mitigation options. Upon completion of the surveys, Vantage committed to reviewing the results, the site-specific crossing plans and mitigation measures with SE and EC prior to construction. Vantage also committed to following EC's recommendations to describe the extent of wetlands impacted by the Project and to provide detailed wetland compensation measures, a discussion of how these would meet the *Federal Policy on Wetland Conservation*, and a program to monitor the success of the wetland compensation.
Monitoring	Vantage committed to developing a detailed monitoring program to monitor the success of wetland compensation (including restoration, enhancement or creation).
Views of the Board	The Board notes that Vantage has presented procedures and measures for the protection of wetlands and added criteria for their applicability, including wetland class, presence of water, and wildlife concerns. It is expected that the final site-specific wetland mitigation measures, decided in consultation with SE and EC, would be submitted as part of the updated EPP and referenced in the appropriate Environmental Alignment Sheets. Where wetlands would be crossed using HDD, the engineering details would be submitted to the Board in a generic plan applicable to all wetlands crossed by the Project, as part of the NEB's engineering assessment. The Board is satisfied with the approach Vantage is taking to wetland protection and mitigation, but also notes the value of wetland habitat in an area which has been highly subject to disturbance. The Board, therefore, proposes that Vantage follow **Recommendation G** outlined in Section 8.6 wherein the details of a Wetland Compensation and Monitoring Plan, as committed to by Vantage, would be provided to the Board together with the outcomes of consultation with EC and SE on the Plan.
Evaluation of Significance	Frequency: Multiple Duration: Short-term to Long-term Reversibility: Reversible to Possible Geographical Extent: PSA, LSA Magnitude: Low to Moderate Adverse Effect Not likely to be significant

Refer to the Table in Section 7.0 for definitions of the Evaluation of Significance Criteria

8.3.2.5 Wildlife and Wildlife Habitat Protection

Potential Adverse Environmental Effect	▪ Alteration and loss of native habitats ▪ Habitat fragmentation and loss of habitat connectivity ▪ Loss or alteration of site-specific habitats of Listed species ▪ Loss or alteration of site-specific habitats of Species of Special Status ▪ Sensory disturbance ▪ Mortality
Background	The Project is located in an area with a high concentration of Listed species. Both SE and EC recommended setbacks for Listed species and Species of Special Status that apply to activities during all or parts of the year. SE considers construction of pipelines with diameters of <1 foot to be within the medium disturbance category in relation to recommended setbacks for site-specific habitats of sensitive species. EC submitted that it considers the Project to have a high level of disturbance on the landscape and recommended a generally more stringent set of setbacks for Listed species' habitats, including burrowing owl burrows, ferruginous hawk nests, northern leopard frog wintering sites and breeding ponds, Ord's kangaroo rat burrows, piping plover nesting beaches, Sprague's pipit nests, and suitable habitat and host plants of four arthropod Listed species. The actual setbacks to be implemented are still an outstanding issue between Vantage, EC and SE. EC and SE also recommended Vantage implement timing restrictions on construction activities to protect the habitat of migratory birds during key periods in their lifecycle, such as commencing construction after August 15. There is also potential for the Project to increase disturbance or mortality to wildlife. Increased traffic on roads and RoW due to pipeline construction and reclamation has potential to increase the mortality of wildlife including Listed species. Collisions with vehicles are thought to be a major source of mortality for species such as burrowing owl and loggerhead shrike. Increased activity, noise and nighttime illumination from construction or operations may cause disturbance to wildlife, resulting in reduced productivity, nest or habitat desertion.
Mitigation Measures	Vantage committed to several standard and non-standard mitigation measures, both general and species- and site-specific, to reduce impacts on wildlife species and their habitats. Potential effects were reduced during route selection by following existing disturbances where possible and by using minimal disturbance construction techniques through native habitats such as no-strip/ditch line stripping. In any given location, the trench would be expected to be open for less than 24 hours. ***Setbacks and timing restrictions for Listed species and Species of Special Status*** The SARA requires that measures are taken to avoid or lessen the adverse effects of the Project on Listed species and their critical habitats, and to monitor them. Vantage committed to generally following SE's recommended setbacks and timing restrictions, but stated that many of EC's recommended setback distances for Listed species would result in a longer pipeline which would increase the amount of disturbance to native prairie and may increase conflicts with other wildlife and wildlife habitat. Vantage submitted that where the RoW is located within EC's recommended setbacks, its primary mitigation would be adhering to timing restrictions and constructing when species have nested, fledged and moved on. Vantage re-routed the pipeline in one location to meet EC's recommendation that no project activity occur within 500 m of an active burrowing owl burrow at any time of the year. In two other locations, the pipeline was re-routed to a location further from existing burrows within the constraints of existing development, although still within EC's recommended setback distance. In one location, because of the close proximity of the RoW to two burrowing owl burrows, Vantage committed to EC's request to create artificial burrows in suitable habitat nearby and monitor nesting activity for a period of two years. Vantage additionally committed to creating artificial nesting structures for ferruginous hawk where Project activity would occur within

	250 m of ferruginous hawk nests (only after young have fledged and left the nest). Again, Vantage would monitor nesting activity for a period of two years in consultation with the Canadian Wildlife Service. Vantage indicated that northern leopard frog breeding areas would not be traversed and that, due to the pipeline size, in most cases the pipeline would be routed to avoid wetlands. Wetlands used for breeding and hibernation that could not be avoided would be trenched in late fall prior to hibernation, with fencing to keep the amphibians out of the trench and environmental monitors and biologists onsite to relocate any individuals to suitable habitat nearby. Where Ord's kangaroo rat burrows were found, Vantage committed to undertaking additional mitigation measures such as winter construction, surveying and flagging burrows, following traffic management plans, avoidance or HDD. SE stated that Vantage would resurvey a location where burrows were found within 20 m of the RoW and determine whether re-routing was feasible. With respect to migratory birds, Vantage's preferred construction timing would be outside the April 15 to July 15 breeding season, commencing just after the end of August and finishing before freeze-up of 2012. In addition, Vantage committed to consulting with environmental agencies on options to prevent damage to migratory bird nests should reclamation activities not be complete by spring 2013. Vantage committed to ongoing discussions with SE and EC through all stages of the Project. ***Potential disturbance or mortality to wildlife*** Vantage listed several mitigation measures related to reducing impacts of traffic on wildlife and Listed species including access control measures, reduced speed limits in areas of high wildlife potential, minimal vehicle traffic through sensitive habitat areas and restrictions on non-essential vehicle traffic on the RoW. Additional mitigation specific to managing the effects of artificial illumination on Listed species would include, among other commitments, having no surface infrastructure, nighttime construction or lighted activity including traffic within 1000 m of Ord's kangaroo rat burrows, siting facilities requiring lighting away from site-specific habitats of amphibian Species of Special Status or Listed species, and scheduling HDD and other activities requiring lighting during the fall outside of the breeding period for amphibians. Vantage additionally committed to several mitigation measures related to potential impacts of bi-weekly low-altitude surveillance flights on wildlife during operations, including restricting overflights over areas with known sensitive or threatened species during the breeding season, using fixed-wing aircraft rather than helicopters, and minimizing the use of aircraft in areas with little existing disturbance.
Monitoring	Vantage committed to post-construction wildlife surveys in the year following construction in areas with recommended regulatory setbacks in habitats of Species of Special Status and Listed species. Vantage also committed to completing a two-year monitoring program for locations where artificial burrows or nests were created in accordance with EC's recommendation.
Views of the Board	The Board notes the potential for the Project to impact several Listed species and Species of Special Status including birds protected by the *Migratory Birds Convention Act*. The Board recognizes the detail in the background information compiled by Vantage and commends Vantage for its survey work and its collaborative approach in consulting with provincial and federal agencies to date. The Board supports Vantage's general wildlife mitigation measures including those to reduce the Project footprint and minimize sensory disturbance and mortality to wildlife species. It also recognizes Vantage's commitments to constructing outside of the breeding season in sensitive areas and to continue consulting with federal and provincial environmental authorities for site- and species-specific mitigation. However, given the Project's location in an area with a high concentration of Listed species and Species of Special Status, the Board proposes that Vantage meet the following Recommendations in order to verify appropriate protection of wildlife and to confirm the results of consultation with other government agencies regarding mitigation.

Recommendation C - Wildlife Protection Plan

All measures related to wildlife protection would be found in this Plan and cross-referenced appropriately with the updated EPP, Traffic Management Plan, and other relevant documents. Recommendation C also includes the submission of monitoring protocols specific to wildlife, which is expected to include Listed species as required by the SARA. If monitoring results show that any of the mitigation measures are not achieving the desired objectives, the Plan would describe the means by which mitigation measures would be adapted. The Plan would be developed in consultation with EC and SE.

With respect to setback distances, the Board notes the differing standards between EC and SE, the challenges on Vantage's RoW, and the resulting outstanding issue. The Board is of the view that, in addition to temporal separation between a project and environmental receptors, spatial separation is a key means of reducing or avoiding project impacts. Furthermore, subject to particular circumstances, the Board is also of the view that where differing environmental protection standards may apply, the higher standard should be met. Implementing the best available mitigation options is especially relevant in the case of Listed species, which have by definition already exceeded an impact threshold as a result of previous cumulative disturbances.

Therefore, in order to resolve the outstanding issue of uncertain setback distances and ensure adequate environmental protection, the Board expects that, as part of **Recommendation C**, the Wildlife Protection Plan would list the specific mitigation measures selected for each site-specific habitat of a Listed species, including the setback to be maintained at that site, and that it be cross-referenced with the Environmental Alignment Sheets. For those sites where the more stringent recommended setback distance would not be met during the time period in which the setback is applicable, the Board would look at a rationale for why the setback would not be met in that location and an evaluation of any trade-offs involved, additional explanation on how the alternative mitigation measures are expected to be effective, and for that site to be included in the monitoring plan.

If the Project were approved, a Technical Meeting with Vantage would be organized by the NEB to finalize the details of the mitigation measures prior to the filing of the final EPP and Wildlife Protection Plan and the commencement of construction.

Recommendation D - Construction Schedule

Given the different timing of setback restrictions for the many Listed species, Species of Special Status and migratory birds observed in the vicinity of the Project, the Board recommends early submission of Vantage's construction schedule to ensure that any conflicts between construction timing and Vantage's commitments related to restricted activity periods for wildlife be resolved before commencing construction.

PCM of wildlife and Listed species should be aligned with the overall monitoring and reporting schedule described in Section 8.3.1 and outlined in **Recommendation N** in Section 8.6. The Board expects that PCM reports would include results of the two-year monitoring programs for artificial burrows and nests created according to Vantage's commitment to EC.

Further views with respect to routing and fragmentation of native prairie habitats are found in section 8.4 below.

Evaluation of Significance

Frequency	Duration	Reversibility	Geographical Extent	Magnitude
Multiple	Short-term to medium-term	Possible	PSA to RSA	Low to Moderate
Adverse Effect				
Not likely to be significant				

Refer to the Table in Section 7.0 for definitions of the Evaluation of Significance Criteria

8.3.2.6 Disruption of Site-Specific TLU Identified During Ongoing Engagement

Potential Adverse Environmental Effect	▪ Disruption of site-specific TLU identified during ongoing engagement ▪ Disruption of traditional activities during construction
Background	Vantage's engagement and consultation with Aboriginal communities is ongoing and TLU investigations will continue throughout the Spring of 2012. ***Stoney Nakoda Sioux Nation*** Vantage indicated that Stoney Nakoda Sioux Nation raised concerns regarding potential impacts on traditional practices. Vantage stated that Stoney Nakoda Sioux Nation has initiated a desktop assessment to determine TLU and to identify impacts. ***Siksika Nation*** Siksika Nation noted it continues to exercise its right to hunt, fish and gather plants for traditional and medicinal use in the Project area. It further indicated it has a spiritual, ceremonial and cultural importance in the area. Vantage has agreed to additional meetings with Siksika Nation hunters and members of the Siksika Traditional Society to review project maps and to identity plant, animal and culturally significant sites. Vantage will further review Siksika Nation's existing traditional use information gathered in relation to other projects. If necessary, site visits may occur in the Spring of 2012. ***File Hills Qu'Appelle Tribal Council*** File Hills Qu'Appelle Tribal Council stated that the Project will cross traditional territory where TLU activities are currently practiced by File Hills Qu'Appelle Tribal Council members to hunt, trap and gather food for themselves, their families and community members. It further indicated it has a spiritual, ceremonial and cultural importance in the area. Vantage committed to continued consultation with File Hills Qu'Appelle Tribal Council to identify and address specific concerns. ***Big Bear Band*** Big Bear Band noted it continues to exercise its right to hunt, fish and gather plants for traditional and medicinal use in the Project area. It further indicated it has a spiritual, ceremonial and cultural importance in the area. Vantage committed to continued consultation with Big Bear Band to identify and address specific concerns. ***Pasqua First Nation*** Pasqua First Nation noted that it continues to hunt in the Project area. Vantage committed to continued consultation with Pasqua First Nation to identify and address specific concerns.
Mitigation Measures	Vantage indicated that, if any additional sites requiring mitigation are identified during further consultation and TLU investigations, it would develop and implement mitigation measures in consultation with affected Aboriginal groups. Vantage has developed standard mitigation measures for potential undiscovered historical/heritage resource sites that may be encountered during construction. In the event previously unidentified sites are encountered during construction, Vantage will implement its Historical/Heritage Resources Contingency Plan. Vantage committed to the use of monitors from interested Aboriginal groups to observe construction activities in areas of identified TLU sites.
Views of the Board	The Board notes that Vantage continues to work with the Aboriginal communities listed above in respect of obtaining site-specific TLU information for the Project area. If necessary, potential ground reconnaissance is planned for the spring of 2011. The Board recommends that, in any Certificate that may be granted, a condition be included requiring Vantage to file for approval, in advance of commencing construction, a report on TLU investigations for the Project. See **Recommendation H** in Subsection 8.6 for more detailed wording of this condition. The Board is of the view that any potential impacts on TLU

	can be resolved through the use of the mitigation measures developed and implemented in consultation with affected Aboriginal groups along with measures to address potential effects to resources used for traditional purposes. Therefore, the potential adverse effects on the current use of lands and resources for traditional purposes by Aboriginal persons are not likely to be significant.
Evaluation of Significance	

Frequency	Duration	Reversibility	Geographical Extent	Magnitude
Single	Short-term to medium-term	Possible	PSA LSA	Low to Moderate
Adverse Effect				
Not likely to be significant				

Refer to the Table in Section 7.0 for definitions of the Evaluation of Significance Criteria

8.4 Cumulative Effects Assessment

The assessment of cumulative effects considers the impact of the residual effects associated with the Project in combination with the residual effects from other projects and activities that have been or will be carried out, within the appropriate temporal and spatial boundaries and ecological context.

Vantage developed lists of current and ongoing development activities and known proposed development activities to allow an assessment of cumulative effects of the Project in combination with other Projects or activities that are reasonably foreseeable.

Past activities contributing to environmental effects include agriculture, resource extraction (oil, gas, coal and potash), development of transportation and utility networks, and creation of parks and protected areas.

Other existing projects and facilities, including approved, but not yet built projects and facilities in proximity to Vantage's proposed Project, with potential to result in cumulative effects include:

- existing adjacent pipelines, including the Foothills Pipeline;
- other existing adjacent oil and gas facilities;
- the existing Nova Chemical Plant at Joffre, Alberta;
- TransCanada Keystone XL pipeline construction;
- Saskatchewan Energy pipeline construction near Shaunavon, Saskatchewan; and
- electrical power line construction required for the Project's pump stations and valve sites.

Potential cumulative effects include:

- loss, alteration and fragmentation of native prairie (including wetlands, rare plants and distinctive vegetation communities);
- disturbance of wildlife and wildlife habitat (including Listed species and Species of Special Status);
- increase in air emissions; and
- impacts on local communities related to availability of commercial accommodations and increase in construction traffic.

Loss, Alteration and Fragmentation of Native Prairie Habitats

Approximately 75% of Canada's Listed species rely on prairie habitats while less than 20% of native prairie remains in Saskatchewan. Wildlife, including many Species of Special Status and Listed species which have potential to occur within the LSA and RSA, have shown population limitations or declines linked to habitat loss, alteration or fragmentation of native prairie upland and wetland or riparian habitats. Several distinctive vegetation communities and rare plants are also associated with native prairie.

Potential cumulative effects from the Project and other activities on native prairie include direct loss and fragmentation of remaining native prairie habitats, and indirect loss and alteration of those habitats through weed infestation. Vantage noted that there is potential for future development of additional pipeline routes paralleling at least portions of the Vantage PSA, becoming a preferred corridor for future development. Such development may increase the loss and fragmentation of native prairie, and magnify those impacts associated with disturbance and weed spread particularly in sensitive habitats.

Vantage identified a number of High Potential Wildlife Areas, which are quarter sections of land that consist of large undisturbed tracts of native prairie, wetlands, drainage riparian areas, sand hills and dunes, and tree patches. Thirty-three of these Areas would be crossed by new, non-contiguous RoW. This amounts to new fragmentation in an already highly fragmented environment. One large (>200 ha) patch of native habitat crossed by new Project RoW was a re-route from the original proposed route. Vantage submitted that the reason for the re-route was a landowner issue for which it had to move the pipeline and that it was very difficult to traverse this area without disturbing the native prairie as there are very few linear disturbances to follow. Vantage maintained that it expects fragmentation effects to be temporary, and as reclamation goes on that fragmentation would be reduced to a point that the vegetation matrix would be very similar to that of the adjacent lands.

The combined breadth of the Project pipeline, and other existing and potential future paralleling pipelines and utilities, may eventually compromise distinctive vegetation communities especially if they are relatively small, if they have too close a proximity, or if mitigation measures are inadequate. Similar effects may occur in the case of rare plants with low regional representation.

Vantage noted that weed and invasive species may spread from existing pipeline RoWs, other oil and gas developments in the vicinity of the Project, and other adjacent lands onto the Project RoW, which may represent a longer term effect on wildlife habitat by degrading native habitats and increasing edge effects on linear RoWs. The introduction or spread of weed species during and after construction is of concern as weed species are known to become established in disturbed areas. Past disturbances such as transportation corridor development, agricultural activities and industrial development have resulted in weed infestations in native prairie areas. Vantage submitted that its proposed mitigation measures, including the identification of infested areas prior to construction, the implementation of Project-specific mitigation measures during construction and operations, and the execution of a PCM program will likely reduce the magnitude of the cumulative residual effects.

Disturbance of Wildlife and Wildlife Habitat

With the potential for the Project and the TransCanada Keystone XL (Keystone XL) pipeline to be constructed during the same time, activities associated with these projects have potential to act cumulatively on wildlife and wildlife habitat in terms of habitat alteration, weed spread, increased mortality, disturbance or displacement of wildlife. Vantage noted that it plans to work with Keystone XL in the situation where construction is scheduled during 2012 in order to avoid intensive construction activities at the same time at any one area and to share information during construction activities so that appropriate mitigation plans may be undertaken. Traffic control measures such as reducing the amount of construction-related traffic on the RoW, enforcement of speed limits, restriction of traffic in sensitive areas and worker information would be implemented to reduce traffic-related wildlife mortality. Setbacks and timing constraints would also mitigate potential cumulative effects on wildlife.

Electrical power lines required for the Project's pump stations and valve sites have potential cumulative effects on wildlife in terms of habitat alteration, disturbance and mortality such as bird strikes. Vantage plans to work with third party power supply providers to consider the best environmental options available in providing power, such as appropriate routing of power lines and avoiding areas with high potential for bird concentrations, and using other options available such as the use of bird flight diverters and raptor perch deterrents.

Increase in Air Emissions

Cumulative environmental effects may result from the release of air emissions from adjacent oil and gas facilities combined with the construction of the Project and the construction of the Keystone XL pipeline, if construction schedules were to overlap in time and place. Effects may result in a temporary, localized increase in dust, fugitive gas emissions, or vehicle and construction equipment emissions. Vantage indicated that these effects would be of short-term duration and immediately reversible. Vantage indicated it plans to explore the opportunities to work with other projects to mitigate the cumulative effects of activities occurring at the same time and location.

Change in Availability of Commercial Accommodations during Construction and Potential Use of Temporary Camps

With the potential for the Project and the Keystone XL pipeline to be constructed between Empress, Alberta and Shaunavon, Saskatchewan during the same time, the increase in workforce numbers associated with these projects have potential to act cumulatively on the availability of commercial accommodations. Vantage noted that it plans to work with Keystone XL in the situation where construction is scheduled during 2012. In the event that construction of these two projects coincide, Vantage indicated it plans to explore alternate options including seeking commercial accommodations outside of the immediate Project area, and if necessary, identifying potential sites where small temporary campsites can be located.

Increase in Construction Traffic

With the potential for the Project and the Keystone XL pipeline to be constructed during the same time, activities associated with these projects have the potential to act cumulatively on

local communities in terms of increased traffic. Vantage noted that it plans to work with Keystone XL in the situation where construction is scheduled during 2012. Traffic control measures such as establishing designated marshalling points, altering hours of work and bussing the personnel to the worksite would be implemented to reduce traffic-related pressures.

Views of the Board

The Board is of the view that the cumulative effects assessment presented by Vantage for the Project fulfills the requirements outlined in the Scope of the Factors for the Project.

The Board recognizes that the Project RoW is contiguous to existing linear disturbances for over 85% of its length and that the length and number of roads required for the Project would be minimized by using existing access and siting facilities in close vicinity of roads, which would reduce potential fragmentation effects. The Board notes that Vantage is relying on its routing choices, as well as on its use of minimal construction techniques, narrow Project footprint, reclamation and weed management practices, to reduce the potential contribution of the proposed Project to cumulative native prairie loss, alteration and fragmentation.

However, the Project would create over 20 km of new RoW on native prairie, creating potential for further linear disturbance in an area where many Listed species already demonstrate declines linked to habitat fragmentation. Noting the potential for future development to parallel portions of the Vantage PSA, the Board relies on the success of Vantage's reclamation to mitigate cumulative effects of further fragmentation of the prairie landscape. Therefore, the Board reiterates its view that a Native Prairie Monitoring Program be scheduled at intervals over a period of ten years following construction as described in **Recommendations B** and **O**. The Native Prairie Monitoring Program would be required to have a scientific basis in order to verify successful reclamation and the absence of lasting fragmentation effects from the Project.

With respect to cumulative disturbance to wildlife and wildlife habitat, the Board notes that **Recommendation J**, intended to protect native prairie soils from excessive traffic, would also help to mitigate cumulative impacts of traffic on wildlife. The Board also notes Vantage's commitments to work with other projects such as the Keystone XL pipeline and third party power providers in order to mitigate cumulative impacts on wildlife in terms of spatial and temporal cumulative disturbance.

The Board is also satisfied with Vantage's commitment to working with other projects and oil and gas facilities to mitigate the cumulative effects on the atmospheric environment of activities occurring at the same time and location.

With respect to the potential impacts to the local community in the event of the Project and Keystone XL pipeline schedules coinciding, the Board notes that **Recommendation I** would require that Vantage adequately monitors and predicts potential impacts on local residents and the community. **Recommendation I** would also require that, in the event that temporary camp(s) would be used, Vantage would need to provide the Board with: a description of the location of such temporary camp(s) and how the potential environmental and socio-economic impacts were assessed; and a description of all associated mitigation measures.

The Board is of the view that, taking into consideration Vantage's Project-specific environmental protection and mitigation measures and the Board's recommendations outlined in Section 8.6, the Project would not likely result in significant adverse cumulative environmental effects.

8.5 Follow-Up Program

The Project and its associated activities contain many aspects that are routine in nature. With Vantage's commitments and the Board's recommendations, the potential adverse environmental effects of the Project are expected to be similar to those of past projects of a similar nature in a similar environment. Based on this fact, and on the NEB's ongoing regulatory oversight and condition compliance verification, the Board is of the view that a follow-up program pursuant to the CEA Act would be redundant for this Project.

The Board understands that other RAs may rely on the NEB's ESR to the extent possible in making their respective CEA Act determinations and may produce an appendix to the ESR if necessary. Other RAs may require a follow-up program to confirm that mitigation measures related to their areas of responsibility, and any associated conditions attached to their licenses and approvals are effectively implemented.

8.6 Recommendations

It is recommended that in any Certificate that the NEB may grant, a condition be included requiring Vantage to carry out all of the environmental protection and mitigation measures outlined in its Application and subsequent submissions.

Further, other recommendations include:

A. Environmental Protection Plan

Vantage shall file with the Board for approval, at least 90 days prior to the commencement of construction, an updated project-specific Environmental Protection Plan (EPP).

The EPP shall be a comprehensive compilation of all environmental and socio-economic protection procedures, mitigation measures and monitoring commitments, as set out in Vantage's application for the Project, subsequent filings, or as otherwise agreed to during questioning or in its related submissions, or through consultations with other government authorities. The EPP shall describe the criteria for implementing all procedures and

measures, and shall use clear and unambiguous language that confirms Vantage's intention to implement all of its commitments.

The EPP shall include, but not be limited to, the following elements:

a) environmental protection procedures and plans applicable to all Project phases and activities, including:
   i) site-specific plans,
   ii) criteria for implementing the procedures,
   iii) mitigation measures, and
   iv) monitoring plans;
b) policies and procedures for environmental training;
c) the reporting structure for environmental management during construction, including the qualifications, roles, responsibilities and decision-making authority for each job title identified in the EPP;
d) management of air and noise emissions;
e) an updated Weed Management Plan;
f) a contingency plan for trenchless watercourse crossings, including the criteria that will be applied to determine when this crossing method will be used on a case by case basis;
g) updated Environmental Alignment Sheets and Watercourse Data Sheets;
h) a reclamation plan for those areas not covered by the Native Prairie Protection Plan and Monitoring Program, which includes a description of the condition to which the applicant intends to reclaim and maintain the RoW once the construction has been completed, including a description of measurable goals for reclamation; and
i) evidence of consultation with appropriate regulatory authorities regarding the EPP.

B. Native Prairie Protection Plan and Monitoring Program

Vantage shall file with the Board for approval, at least 60 days prior to the commencement of construction, a Native Prairie Protection Plan and Monitoring Program for the protection and reclamation of native prairie. The Plan and Program shall include, but not be limited to, the following components:

a) the locations where native prairie protection and monitoring will be applied, on a map or Environmental Alignment Sheets;
b) goals and measurable objectives for mitigation and reclamation;
c) mitigation measures, including a discussion of the anticipated effectiveness of the proposed measures and locations or conditions that may have specific challenges;
d) criteria to determine if mitigation and reclamation goals have been met;
e) protocol or methodology for monitoring the success of mitigation measures and progress of reclamation;

f) frequency, timing and locations of monitoring and the rationale for each;

g) evidence of consultation with appropriate federal and provincial authorities on the Plan; and

h) a schedule for filing monitoring reports for native prairie protection and reclamation with the Board, which shall include the first (1st), third (3rd), fifth (5th) and tenth (10th) years following the commencement of operation.

C. Wildlife Protection Plan

Vantage shall file with the Board for approval, at least 60 days prior to the commencement of construction, a Project-specific Wildlife Protection Plan. The Plan shall include, but not be limited to, the following components:

a) pre-construction survey plans and methods;

b) communication plans for employee awareness and training related to wildlife protection;

c) general mitigation measures and species-specific measures for species at risk and their habitats, including:

   i) measures to avoid traffic mortality to wildlife,

   ii) goals and measurable objectives for mitigation, and

   iii) the criteria to determine if mitigation goals have been met;

d) site-specific mitigation measures for species at risk and rationale for those measures;

e) the protocol or methodology for monitoring;

f) frequency, timing and locations of monitoring and the rationale for each;

g) protocols for how mitigation measures will be adapted based on monitoring results; and

h) evidence confirming consultation with Environment Canada, Canadian Wildlife Service and the appropriate provincial authorities regarding the Plan.

D. Construction Schedule

Vantage shall file with the Board, at least 30 days prior to the commencement of construction, a construction schedule identifying key construction activities for the Project and shall notify the Board of any modifications to the schedule(s) as such modifications occur.

E. Change from Horizontal Directional Drill (HDD) Crossing Method to another Crossing Method

In the event that Vantage changes from using the HDD crossing method at a particular crossing, whether to comply with CSA Z662-11 or otherwise, Vantage shall file with the Board at least 3 days prior to construction of the crossing, notice in writing of its intention to follow the approved contingency plan referred to in the Environmental Protection Plan for that crossing and include the results of Vantage's consultation with Fisheries and

Oceans Canada regarding the requirement for an authorization under subsection 35(2) of the *Fisheries Act*.

F. Rare Plants

Vantage shall file with the Board, at least 45 days prior to the commencement of construction, a Rare Plant Mitigation Plan. The Plan shall itemize the mitigation option selected for each rare plant site identified in the Environmental Alignment Sheets. In addition, for those sites where avoidance is not the selected mitigation option, the Plan shall explain:

a) the rationale for why avoidance is not selected as the mitigation option;

b) how the success of the selected mitigation option will be achieved, based on site-specific conditions and species-specific requirements; and

c) the results of consultation with appropriate regulatory authorities.

G. Wetland Compensation and Monitoring

Vantage shall file with the Board, at least 45 days prior to the commencement of construction, a Wetland Compensation and Monitoring Plan. The Plan shall include:

a) the extent (hectares) by wetland type that will be impacted by the Project;

b) detailed compensation measures including restoration of existing degraded wetlands, enhancement of existing wetlands, and creation of replacement wetlands;

c) the details of a program to monitor the success of the wetland compensation measures to verify restoration and no net loss of wetland function; and

d) the results of consultation with appropriate regulatory authorities.

H. Traditional Land Use Investigations

At least 45 days prior to the commencement of construction, Vantage must file with the Board for approval, and serve a copy on Big Bear Band, File Hills Qu'Appelle Tribal Council, Pasqua First Nation, Siksika Nation and Stoney Nakoda Sioux Nation, a report outlining a plan for outstanding traditional land use (TLU) investigations for the Project. The report must include but not be limited to:

a) a summary of the status of TLU investigations undertaken for the Project, including group-specific TLU studies and any supplementary physical, bio-physical and heritage resource field investigation or reconnaissance activities relevant to potentially-affected Aboriginal groups;

b) a summary of the effects of the Project on the current use of lands and resources for traditional purposes identified in the investigations;

c) a summary of the mitigation measures proposed by Vantage or by affected Aboriginal groups to address Project effects identified in the investigations;

d) a description of how Vantage has incorporated any additional mitigation measures into its Environmental Protection Plan for the Project;

e) a description of any outstanding concerns raised by potentially-affected Aboriginal groups regarding potential Project effects on the current use of lands and resources for traditional purposes, including a description of how these concerns have been or will be addressed by Vantage; and

f) a summary of any outstanding TLU investigations or follow-up activities that will not be completed prior to commencing construction, including an explanation for why these will not be completed prior to construction, and an estimated completion date, if applicable.

I. Notice of Construction Overlap

In the event that the Project and the Keystone XL Pipeline (Certificate OC-56) are scheduled for construction between Empress, Alberta and Shaunavon, Saskatchewan at the same time, Vantage shall notify the Board in writing of the construction overlap at least 45 days prior to commencement of construction, or as soon as the proposed construction overlap becomes known to Vantage. Within 15 days of such notice being given, Vantage shall provide the following:

a) a Community Impact Monitoring Plan. The Plan shall include, but not be limited to:

   i) a description of activities that may impact residents and community infrastructure including issues or events related to increased noise, and impacts on accommodations, traffic and emergency services,

   ii) a description of monitoring that will be used to identify potential impacts, and the consultation with relevant agencies regarding the proposed monitoring program, and

   iii) a commitment to file a monthly report summarizing the results of the monitoring, any issues identified, and any mitigation to be applied until the commencement of the operation;

b) a workforce accommodation plan, developed in consultation with appropriate municipal or provincial authorities. The Plan shall include, but not be limited to:

   i) a final summary of all proposed accommodations,

   ii) the number of workers that will be housed,

   iii) a description of how the Plan addresses any concerns or requests raised in consultations with municipal or provincial authorities, and

   iv) in the event that temporary camp(s) are to be used, the Plan shall also include, but not be limited to:

      a. a description of the location of such temporary camp(s), how the potential environmental and socio-economic impacts have been assessed, and a description of all associated mitigation measures,

b. copies of or reference to any mitigation or operational plans that will be required or implemented for the camp(s),

c. a description of consultations with potentially affected residents and landowners where camps will be located, including the information provided, and

d. a summary of all issues and concerns raised in the consultations and a description of how the Plan proposes to address the concerns raised; and

c) an update to the Traffic Management Plan, including, but not limited to, a description of:

i) any concerns raised by TransCanada and municipal or provincial authorities regarding potential impacts on roadways, and

ii) how these concerns are proposed to be addressed.

J. Traffic Management Plan

Vantage shall file with the Board, at least 30 days prior to the commencement of construction, an updated Traffic Management Plan, developed in consultation with appropriate municipal or provincial authorities. The Plan shall include, but not be limited to:

a) a description of the predicted traffic flows, including vehicle types and volumes, at key construction points, marshalling areas, access roads and public roadways;

b) all mitigation and traffic management measures for the Project;

c) a description of how the Plan addresses any concerns or requests raised in consultations with municipal or provincial authorities;

d) a description of the traffic that will be permitted on native prairie RoW including vehicle types and expected volumes, and the traffic that will be restricted to existing roads and access roads; and

e) a commitment to assign a traffic monitor at all access points to native prairie during Project construction. This traffic monitor shall have the authority to restrict entry of non-essential traffic on the RoW in accordance with the Plan. The traffic monitor shall maintain a log of all traffic entering the RoW on native prairie during the construction period, including all traffic vehicle types.

K. Heritage Resources

Vantage shall file with the Board, at least 30 days prior to the commencement of construction:

a) copies of correspondence from the Saskatchewan Department of Tourism, Parks, Culture and Sport confirming that Vantage has obtained all of the required archaeological and heritage resource permits and clearances; and

b) a statement on how Vantage proposes to address any comments and recommendations contained in the permits and clearances referred to in (a).

L. Commitments Tracking Table

Vantage shall:

a) file with the Board and post on its Company website, at least 30 days prior to the commencement of construction, a Commitments Tracking Table listing all commitments made by Vantage in its application, during questioning, in its related submissions, or during the OH-3-2011 proceeding in relation to the Project, including reference to:

   i) the documentation where the commitment is referred to (for example, the application, responses to information requests, hearing questions, permit requirements, condition filings, or other),

   ii) the accountability for implementing each commitment, and

   iii) the timelines associated with the fulfillment of each commitment;

b) update the status of the commitments in (a) on Vantage's website on a:

   i) monthly basis until the commencement of operation,

   ii) quarterly basis until the end of the fifth (5th) year following the commencement of operation, and

   iii) yearly basis until the end of the tenth (10th) year following the commencement of operation,

   and advise the Board in writing of such updates where the status has changed; and

c) maintain at its construction office(s):

   i) the relevant environmental portion(s) of the Commitments Tracking Table listing all regulatory commitments including, but not limited to, those commitments resulting from Vantage's application and subsequent filings and conditions from permits, authorizations and approvals,

   ii) copies of any permits, approvals or authorization for the Project issued by federal, provincial or other permitting authorities, which include environmental conditions or site-specific mitigation or monitoring measures, and

   iii) any subsequent variances to any permits, approvals or authorizations in (ii).

M. Environmental Protection Program

Vantage shall file with the Board, at least 30 days prior to filing any application for Leave to Open, a project-specific Environmental Protection Program for the operation and maintenance of the pipeline pursuant to section 48 of the *Onshore Pipeline Regulations, 1999*. The Program shall include practices and procedures for:

a) ongoing environmental training for employees;

b) the handling and disposal of all wastes associated with the operation and maintenance of the pipeline;

c) vegetation management;

d) wildlife management;

e) soil conservation and erosion control on the RoW;

f) the management of air and noise emissions;

g) travel on and access to the RoW;

h) environmental monitoring and surveillance of the RoW;

i) plans for regular review of the Program including documentation of all revisions in a revision log;

j) the reporting structure for environmental management during operations; and

k) the qualifications, roles, responsibilities and decision-making authority for each job title identified in the Program.

N. Post-Construction Environmental Monitoring Report

On or before the 31 of January of each of the first (1st), third (3rd), fifth (5th) and tenth (10th) years following the commencement of operation, Vantage shall file with the Board, and make available on its website for informational purposes, a post-construction environmental monitoring report that:

a) identifies any modifications from the monitoring protocols or methodology described in its EPP or Wildlife Protection Plan, as approved by the Board;

b) describes the criteria established for evaluating the effectiveness of the environmental mitigation measures;

c) evaluates the effectiveness of the environmental mitigation measures against the criteria referred to in (b);

d) identifies deviations from plans and alternate mitigation applied as approved by the Board;

e) identifies locations on a map or diagram where corrective action was taken during construction or operation and the current status of corrective actions; and

f) provides proposed measures and timelines Vantage will implement to address any unresolved environmental issues.

The report shall address, but not be limited to, the issues pertaining to soils, agricultural production, weeds, watercourse crossings, wetlands, rare plants and wildlife including species of management concern.

O. Native Prairie Monitoring Report

On or before the 31 of January of each of the first (1st), third (3rd), fifth (5th) and tenth (10th) years following the commencement of operation, and on other scheduled dates as set out in the Native Prairie Protection Plan, Vantage shall file with the Board a post-construction Native Prairie Monitoring Report that:

a) identifies on a map or diagram the location(s) of the monitoring sites for native prairie protection and reclamation;

b) provides a discussion of the scientific methodology applied;

c) provides the criteria to be used to verify the accuracy of the environmental assessment predictions;

d) evaluates the effectiveness of the mitigation applied pre-, during and post-construction;

e) evaluates the impacts of traffic on native prairie reclamation using the construction traffic logs as reference;

f) identifies the current status of the issues identified and whether those issues are resolved or unresolved; and

g) provides proposed measures and timelines Vantage shall implement to address any unresolved concerns.

9.0 THE NEB'S CONCLUSION

Pursuant to the CEA Act, the NEB is of the view that with the implementation of Vantage's environmental protection procedures and mitigation measures, and the Board's recommendations, the Project is not likely to cause significant adverse environmental effects.

This ESR was approved by the NEB on the date specified on the cover page of this report under the heading "CEA Act Determination Date".

10.0 NEB CONTACT

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APPENDIX 1: Scope of the EA

Scope of the Environmental Assessment Pursuant to the *Canadian Environmental Assessment Act* for the Vantage Pipeline Canada ULC, formerly Vantage Pipeline Canada Inc. (Vantage) Proposed Vantage Pipeline Project

1.0 INTRODUCTION

On 7 February 2011, Vantage Pipeline Canada ULC, formerly Vantage Pipeline Canada Inc. (Vantage) applied to the NEB for a Certificate of Public Convenience and Necessity pursuant to section 52 of the *National Energy Board Act* (NEB Act) to construct and operate the Vantage Pipeline Project (the Project). The Project is subject to a screening under the *Canadian Environmental Assessment Act* (CEA Act).

Pursuant to section 5 of the CEA Act *Regulations Respecting the Coordination by Federal Authorities of Environmental Assessment Procedures and Requirements* (Federal Coordination Regulations), the following departments identified themselves either as a Responsible Authority (RA) likely to require an EA under the CEA Act or as a Federal Authority (FA) in possession of specialist or expert information or knowledge in respect of the proposed project EA:

- National Energy Board – RA
- Transport Canada (TC) – RA
- Canadian Transportation Agency (CTA) – RA
- Department of Fisheries and Oceans (DFO) – FA
- Environment Canada (EC) – FA
- Health Canada (HC) – FA
- Natural Resources Canada (NRCan) – FA

Subsequently, TC reviewed the watercourse crossing information submitted by Vantage and determined that the proposed works are not subject to the NWPA. Approvals or leaves by TC are not required under Section 5 of the NWPA or Section 108 of the NEB Act, and as a result, TC is no longer an RA. Should the location of the watercourse crossings change, approvals or leaves under the NWPA or the NEB Act may be required, and therefore a federal EA may again be required.

The Provinces of Saskatchewan and Alberta were notified, although Provincial EA legislation is not triggered.

On 7 April 2011, the NEB issued a draft scope for public comment. The draft scope was also posted on the CEA Registry.

This scope of the EA was established by the RAs, after consulting with the FAs, in accordance with the CEA Act and the Federal Coordination Regulations.

2.0 SCOPE OF THE ASSESSMENT

2.1 Scope of the Project

The scope of the Project for the purposes of the EA includes the various components of the Project as described by Vantage in its 7 February 2011 Project Application and subsequent submissions to the NEB. The physical activities include construction, operation, maintenance and foreseeable changes, and reclamation, relating to the entire Project, including the following physical works described in greater detail in the Vantage Pipeline Project Application:

Pipeline:

The Canadian portion of the Project would involve the construction and operation of approximately 578 km of new 273 mm (NPS 10 inch) outside diameter high vapour pressure (HVP) steel pipeline, from a point on the U.S. border 75 km southwest of Estevan, Saskatchewan to the Alberta Ethane Gathering System (AEGS) near Empress, Alberta. The pipeline route would consist of approximately 574 km in Saskatchewan and 4.5 km in Alberta. New non-contiguous right of way (RoW) would be required for 74.773 km of the pipeline.

Other Facilities:

- Pipeline block valves, located at regular intervals within the permanent RoW
- Facilities to handle pipeline in-line inspection and cleaning
- Cathodic protection system
- Metering
- Control systems
- Pipeline interconnections
- Associated miscellaneous works such as pipeline warning signs and markers
- Two new 500 hp electrically driven pump stations, one at the midpoint of the pipeline between Lafleche, Saskatchewan and Assiniboia, Saskatchewan and the second at the interconnection with AEGS near Empress, Alberta, and associated access roads
- Permanent access roads for valve sites
- Temporary infrastructure such as access roads, pipe storage sites, contractor yards, stockpile sites and staging areas

Vantage is proposing to begin construction in the fall of 2012 and to be completed by spring 2013.

Any works and activities associated with additional modifications or associated with the decommissioning or abandonment phase of the Project would be subject to future examination under the NEB Act and consequently under the CEA Act as appropriate. Therefore, at this time,

any works or activities associated with these phases of the Project will be examined in a broad context only.

2.2 Factors to be Considered

The EA will include a consideration of the following factors listed in paragraphs 16(1) (a) to (d) of the CEA Act:

(a) the environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project and any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out;

(b) the significance of the effects referred to in paragraph (a);

(c) comments from the public that are received during the environmental assessment process; and

(d) measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project.

For further clarity, subsection 2(1) of the CEA Act defines "environmental effect" as:

(a) any change that the project may cause in the environment, including any change that the project may cause to a listed wildlife species, its critical habitat or the residence of individuals of that species as defined in the *Species at Risk Act*;

(b) any effect of any change referred to in paragraph (a) on

  i. health and socio economic conditions,

  ii. physical and cultural heritage,

  iii. the current use of lands and resources for traditional purposes by aboriginal persons,

  iv. any structure, site or thing that is of historical, archaeological, paleontological, or architectural significance; or

(c) any change to the project that may be caused by the environment,

whether any such change or effect occurs within or outside Canada.

2.3 Scope of the Factors to be Considered

The EA will consider the potential effects of the proposed Project within spatial and temporal boundaries within which the Project may potentially interact with, and have an effect on components of the environment. These boundaries will vary with the issues and factors considered, and will include but not be limited to:

- construction, operation and site reclamation, as well as any other undertakings proposed by the Proponent or that are likely to be carried out in relation to the physical works proposed by the Proponent, including mitigation and habitat replacement measures;

- seasonal or other natural variations of a population or ecological component;
- any sensitive life cycle phases of species (e.g. wildlife, vegetation) in relation to the timing of project activities;
- the time required for an effect to become evident;
- the area within which a population or ecological component functions; and,
- the area affected by the Project.

As indicated above, the EA will consider cumulative environmental effects that are likely to result from the Project in combination with other projects or activities that have been or will be carried out.

APPENDIX 2: Comments on the Draft ESR

Government Authorities and Applicant	Comments	Section in ESR where wording was modified	Explanation of why change was not made to the ESR
Transport Canada (TC)	TC submitted that it is no longer an RA in the federal EA, as the proposed works at the watercourse crossing sites indicated by Vantage are not subject to the NWPA. Approvals or leaves by TC are not required under section 5 of the NWPA or section 108 of the NEB Act.	Summary Section 2.1 Government Participation in the EA Coordination Process Appendix 1 Scope of the EA, Section 1.0 Introduction	n/a
Fisheries and Oceans Canada (DFO)	DFO suggested a wording change to the detailed analysis of Water Quality and Quantity to specify that watercourses that did not meet the conditions in DFO's Operational Statements would require approved mitigation measures to be implemented to avoid or minimize impacts to fish and fish habitat as recommended by DFO.	Section 8.3.2.3 Water Quality and Quantity	n/a
	DFO recommended including a statement to indicate that, in the event that alternate crossing methods needed to be implemented, it is likely a Section 35(2) *Fisheries Act* Authorization would be required, and that Vantage would consult with DFO, SE and the NEB in these circumstances.	Section 8.3.2.3 Water Quality and Quantity	n/a
	DFO suggested an addition to Recommendation E to require Vantage to consult with DFO regarding a *Fisheries Act* Authorization in the event that a contingency watercourse crossing method would result in harmful impacts to fish and fish habitat.	Section 8.6 Recommendations, Recommendation E	The Board made a minor modification in response to the suggestion to require Vantage to file with the Board the results of consultation with DFO regarding a *Fisheries Act* Authorization.
Environment Canada (EC)	EC requested the opportunity to review the Native Prairie Protection Plan and Monitoring Program, and the Native Prairie Monitoring Report	Section 8.3.2.2 Vegetation, Native Prairie Vegetation and Associated Communities	The Board fully expects EC to have the opportunity to review both documents. Recommendation B (g) requires Vantage to provide evidence of consultation with appropriate federal and provincial authorities (which would include EC) on the Native Prairie Protection Plan and Monitoring Program. At that time, EC would have the opportunity to

Government Authorities and Applicant	Comments	Section in ESR where wording was modified	Explanation of why change was not made to the ESR
			comment on all aspects of the Plan, including the monitoring methodology. The Board added to Section 8.3.2.2 of the ESR its expectation that the results of the monitoring, as summarized in the Native Prairie Monitoring Reports, be shared with appropriate other federal and provincial agencies requesting it, such as EC.
	EC suggested an addition to specify that EC recommends avoidance as a mitigation measure for rare plants.	Section 8.3.2.2 Vegetation, Rare Plants	n/a
	EC suggested adding that it recommends weed mowing and other habitat destruction activities avoid the key breeding period for migratory birds (April 15-July 31) and that this period be extended to August 31 in areas where Sprague's pipit and other migratory bird Listed species may be nesting.	Section 8.3.2.2 Vegetation, Noxious Weeds and Invasive Non-native Species	n/a
	EC suggested an addition to specify that the choice of vegetation control measures is also critical where there is a possibility of impacting nesting migratory birds.	Section 8.3.2.2 Vegetation, Noxious Weeds and Invasive Non-native Species	n/a
	EC suggested adding "EC recommended that Vantage avoid wetlands that provide breeding and overwintering habitat to SARA-listed Great Plains toads and northern leopard frogs."	Section 8.3.2.4 Wetlands	n/a
	EC noted the discrepancy between Vantage's statement that "…in most cases the pipeline would be routed to avoid wetlands" and the fact that 313 wetlands are traversed by the Project.	n/a	The Board notes that Vantage plans to submit its final site-specific wetland crossing plans and mitigation measures for each wetland currently traversed by the Project route following additional pre-construction surveys, in consultation with SE and EC. The Board understands the options include avoidance, HDD, or open cut with several mitigation measures in place, based on criteria described in Section 8.3.2.4. The total number of wetlands crossed by the Project would decrease if avoidance is chosen as a mitigation option for specific sites.

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Vantage	Vantage clarified that the regular aerial surveillance flights of the Project will be conducted on a bi-monthly basis, as opposed to a bi-weekly basis.	Section 4.0 Description of the Project	n/a
	Vantage requested amending Recommendations B(h), L(b)(iii), N and O such that Vantage only be required to monitor or track commitments for a five year period, noting that the ESR issued for the TransCanada Keystone XL Pipeline Project and the Draft ESR issued for the Enbridge Bakken Pipeline Project only impose an obligation on those project proponents to monitor and track commitments for a five year period, and that there is no evidence that ten years will be required for the Vantage RoW to be reclaimed following construction.	n/a	The Board maintains its views on the duration of monitoring programs and commitments tracking, as expressed in Sections 8.3.1.4, 8.3.2.2 and 8.4 of the ESR. With respect to Recommendations B and O, the Board explains in the ESR the value of remaining native prairie in Canada and its sensitivity to potential impacts. The Board recognizes the extent of native prairie crossed by the Project, the relative novelty of no-strip pipeline construction for a pipeline over eight inches in diameter, and the extended timelines associated with the recovery of native communities. The Board also explains its reliance on the success of Vantage's native prairie reclamation to mitigate cumulative effects of further fragmentation of the prairie landscape, noting the potential for future development to parallel new portions of the Vantage PSA in an area where many Listed species already show declines linked to habitat loss and fragmentation. The Board is of the view that a Native Prairie Monitoring Program should be scheduled at intervals over a period of ten years following construction. The Board also notes that 1%, or approximately 1.2 km, of the Enbridge Bakken Pipeline Project route traverses native grassland; the Vantage Project route traverses over 100 km of native prairie, over 20 km of which is new, non-contiguous RoW. In addition, the Board notes that TransCanada Keystone has implemented a Native Range Management Plan and Follow-up Program for the protection and reclamation of native range with

Government Authorities and Applicant	Comments	Section in ESR where wording was modified	Explanation of why change was not made to the ESR
			scientific monitoring extending over a period of ten years following construction. TransCanada Keystone XL committed to applying the results of the monitoring and research program from the existing Keystone project to the Keystone XL project. With respect to Recommendation N, which refers to PCM reports for issues not restricted to native prairie, the Board provides its reasons for the reporting schedule in Section 8.3.1.4. The Board acknowledges the possibility that all issues may be resolved and reclamation may be clearly well-established by the fifth year. In this case, Vantage has the option to apply to vary the condition at that time.