

NORTH DAKOTA PUBLIC SERVICE COMMISSION

Application for Route Permit

Plains Pipeline, L.P.
Bakken North Pipeline Project

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INTRODUCTION

The proposed Bakken North Pipeline (BNP or Project) is a new 79-mile, 12.75-inch-
outside diameter crude oil pipeline that will originate at the proposed Plains Pipeline,
L.P. (Plains) Trenton Station (Station) near Trenton, North Dakota, and will terminate
at an interconnection to other existing Plains assets in Sheridan County, Montana
near the town of Outlook. The North Dakota portion of the proposed pipeline is
approximately 31.8 miles in length. From its origination at the Station, the proposed
Project will traverse both private and public lands.

The Project will also require the installation of pumping equipment for the BNP at the
Station, which will consist of two (2) 1,000 horsepower (hp) mainline pumps that will
operate in series to provide the necessary pressure to operate the pipeline. In addition
to the pumping equipment, a line integrity meter shall be installed and various
appurtenant piping associated with BNP shall be sited at the Station.

Plains is submitting to the North Dakota Public Service Commission (Commission) a
single consolidated application for a Certificate of Corridor Compatibility and Route
Permit for the BNP.

The application provides the requisite information as stipulated by:

- North Dakota Century Code, Energy Conversion and Transmission Facility Siting Act, Chapter 49-22-08; and,
- PCS Administrative Code, Chapter 69-06-05, Transmission Facility Permit.

The information presented in this application is organized according to the format
prescribed in the Commission's Application Guidelines for an Application for a Route
Permit, which divides the information into the following categories:

- SECTION 1: Type, Size and Design
- SECTION 2: Route Analysis and Findings
- SECTION 3: Evaluation of the Proposed Route in Regard to Applicable Considerations in Section 49-22-09 and Criteria Established in Section 49-22-05.1
- SECTION 4: Mitigative Measures
- SECTION 5: Description of Right-of-Way Preparation and Reclamation Procedures
- SECTION 6: Utility's Easement Acquisition, Landowner Notification, and Easement Compensation Plan
- SECTION 7: List of Preparers

SECTION 1: TYPE, SIZE AND DESIGN

1.1 TYPE

The BNP is a transmission pipeline designed to ship crude oil.

1.2 APPROXIMATE LENGTH OF FACILITY

The proposed BNP is approximately 79 miles in total length, of which approximately 31.8 miles will be located in North Dakota.

1.3 SIZE AND DESIGN OF PIPELINE FACILITY

The BNP is a transmission pipeline. The steel pipeline will meet U.S. Department of Transportation (DOT) regulations, specifically the design, installation, pressure testing, operations and maintenance requirements as outlined in 49 CFR Part 195.

1.3.1 PIPE SIZE

Plains will be constructed of steel pipe which shall, at a minimum, meet the following standards.

- 12.75-inch outside diameter;
- 0.250-inch wall thickness (standard);
 - 0.344-inch wall thickness (road crossings);
- API 5L PSL 2 X52.

1.3.2 MAXIMUM DESIGN OF OPERATING PRESSURE, FLOW RATE AND TEMPERATURE

The Project pipeline has been designed with the maximum design parameters listed below:

- Maximum Operating Pressure: 1468 pounds per square inch gauge (psig);
- Maximum Flow Rate: 48,000 barrels per day (bpd)
- Maximum Operating Temperature: 120°F;
- Normal Operating Conditions: 90° F at 1100 psig.

1.4 ABOVEGROUND FACILITIES

The Station is located north of Trenton, North Dakota at MP 0.0 in the SW/4 of Section 33, Township 154 North, Range 102 West across Highway 1804 from Plains' existing Trenton Station. The pumping equipment to be installed at the Station includes:

- Two mainline pumps, approximately 1,000 hp each to be installed in series.
- One ultrasonic integrity meter for the BNP.
- Miscellaneous appurtenant piping.

The proposed Project will include three (3) mainline block valves located in North Dakota. These valves will be installed to meet DOT regulations and will allow for the isolation of select segments of the pipeline for inspection and maintenance purposes as well as during abnormal operating conditions.

1.4.1 VALVE SPECIFICATIONS

Plains will utilize valves which shall, at a minimum, meet the following standards:

- 12-inch flanged end, through conduit, slab gate, motor operated block valve;
- API Standard 6D;
- ANSI 600;
- Maximum Operating Pressure: 1,468 psig;

1.5 WIDTH OF RIGHT-OF-WAY

- Typical Construction Right-of-Way (ROW) Width:
 - 70-feet wide typical
- Temporary Extra Workspace:
- Standard feature crossings (*e.g.*, railroad, waterbodies, roads)
 - 50-feet wide by 100-feet long
- US Highway 2 crossing (horizontal directional drill)
 - South workspace
 - 100-feet wide by 150-feet long
 - 50-feet wide by 650-feet long
 - North workspace
 - 1.5-acres
- Permanent ROW Width:
 - 30-feet wide

1.6 LOCATION

The total length of the proposed BNP is approximately 79 miles, of which approximately 31.8 miles are located entirely within Williams County, North Dakota.

1.7 PROJECT SCHEDULE

1.7.1 ROUTE PERMIT

Plains is seeking a Route Permit in or before October 2011.

1.7.2 CERTIFICATE OF CORRIDOR COMPATIBILITY

Plains is submitting the application for a Certificate of Corridor Compatibility in August 2011 which has been included with this application for Route Permit. The two

applications have been combined to form this Consolidated Application. Plains is seeking a Certificate of Corridor Compatibility in or before October 2011.

1.7.3 CONSTRUCTION SCHEDULE

Plains plans to commence construction in North Dakota as early as weather conditions permit in 2012, with an in-service date by the end of 2012. Generally, the second quarter is typically the earliest that construction activities can efficiently be conducted. Pipeline construction is expected to be completed in the late third or early fourth quarter of 2012. Restoration and commissioning activities will commence immediately after construction. Restoration will be temporarily suspended, as necessary, during frozen or saturated conditions, and shall resume when conditions allow. Plains anticipates final restoration to be completed in 2013.

SECTION 2: ROUTE ANALYSIS AND FINDINGS

2.1 PIPELINE ROUTE

The proposed Route was developed based upon a thorough analysis of the proposed Corridor (a 1-mile wide corridor centered upon the proposed Route, *i.e.*, one-half mile on either side of the proposed Route), as discussed in the application for a Certificate of Corridor Compatibility. This broad-based analysis confirmed that the proposed pipeline Corridor was suitable and that it would cause minimal environmental impacts, thus conforming to the Commission's siting criteria.

Once the Corridor was established, Plains studied routing alternatives and developed the proposed pipeline alignment (Route), which satisfies the Project's objectives while also conforming to the Commission's siting requirements for a transmission route. In support of Plains' Route selection, the analytical studies from the Corridor were refined and augmented with field studies. Field studies were conducted along the entire length of the Project by trained natural and cultural resource specialists. The environmental survey corridor was a 140-foot wide corridor centered upon the proposed pipeline Route. The purpose of these field studies was to inventory any potential resource issues (*e.g.*, wetlands, waterbodies, protected species, critical habitats, or cultural resources) that may intersect the proposed pipeline alignment and to collect the baseline field data necessary to prescribe alternative routing or mitigation to minimize environmental impacts. The results of these field surveys are discussed in the following sections. A full Natural Resources and Wetland Determination Report (Natural Resource Survey Report) is provided in Appendix D, and the Class I and Class III Cultural Resource Inventory Report is provided in Appendix E.

2.2 ENVIRONMENTAL SURVEY

All field surveys were conducted based upon a minimum 140-foot wide survey corridor, centered upon the proposed pipeline Route. Routing variants were developed when resources were identified that would likely require avoidance mitigation. In these instances, the area surveyed was increased to accommodate routing modifications. The surveys conducted for BNP covered the entire construction right-of-way, as well as temporary extra workspace.

2.2.1 TREE/SAPLING/SHRUB SURVEY

Surveys of the Route were conducted between April 18 and June 16, 2011. The natural resource surveys included a tree/shrub inventory. This inventory recorded the pre-construction status of this resource and shall form a baseline for restoration and mitigation reconciliation. The inventory tallied 439 trees, saplings, or shrubs that could potentially be impacted by the Project. Please see Appendix D for the complete survey report.

2.2.2 WETLAND AND WATERBODIES SURVEY

The proposed alignment was inventoried for wetland and waterbody features. Field crews identified features, characterized the feature as wetland or waterbody and recorded feature boundaries relative to the proposed centerline.

2.2.2.1 WETLAND SURVEY

Survey crews conducted wetland inventories of the Route between April 18 and June 16, 2011. These efforts documented the wetlands that were present within the survey corridor. The location of each recorded feature included a reference to the proximity of the feature relative to the proposed centerline to facilitate avoidance mitigation where practicable. A total of 16 wetlands were recorded, totaling approximately 5.0 acres, of which 1.8 acres may be directly impacted by construction of the proposed Project. Plains will implement appropriate mitigation at each of these features, which may include avoidance (*e.g.*, workspace modification), construction mats, topsoil segregation, vegetation preservation and other Best Management Practices (BMPs) to minimize impacts when working in or around wetlands.

Please see Appendix B (see Figures SC 01 through SC 06) for the mapped location of each feature and Appendix D for a detailed survey report.

2.2.2.2 WATERBODIES SURVEY

Plains commissioned field studies of the proposed Route. Surveys were conducted between April 18 and June 16, 2011 that included an inventory of waterbodies that occurred within the survey corridor. The location of each recorded feature included a reference to the proximity of the feature relative to the proposed centerline to facilitate avoidance mitigation where practicable.

Survey personnel inventoried waterbodies (*e.g.*, ponds, creeks, streams) with a discernable ordinary high water mark (OHWM). The OHWM is a widely accepted physical characteristic used to identify features that are likely regulated by the U.S. Army Corps of Engineers (USACE.) A total of eight (8) waterbodies are crossed by the Route. The Route crosses the mainstream of Cow Creek and Sand Creek, and tributaries to Painted Woods Creek. Plains' preferred crossing technique is the open-cut method. Plains shall implement BMPs during construction and installation of waterbody crossings to minimize and avoid, where practicable, direct impacts to these features.

Please see Appendix B (see Figures SC 01 through SC 06) for the mapped location of each feature and Appendix D for a detailed survey report.

2.2.3 WILDLIFE INVENTORY

Approximately 160 wildlife species are resident or seasonal visitors to the Project Corridor. These include common mammals (raccoons, white-tailed and mule deer, and pronghorn); various songbirds (bobolink, grasshopper sparrow, western meadowlark and horned lark); eagles and raptors (bald and golden eagles, red-tailed hawk, and northern harrier); and numerous other fauna. A total of 32 different bird

species, four mammals, and one amphibian were observed during field studies. The proposed alignment was inventoried for sensitive species' and their critical habitat. No threatened or endangered species were observed by field biologists. Please see Appendix D for the complete survey report.

2.2.3.1 FEDERALLY PROTECTED SPECIES SURVEY

Under authority of the Endangered Species Act (ESA), the U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration - Fisheries Service have identified and maintain a list of species and critical habitats that have been afforded protection under the ESA. The ESA also provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they inhabit. A field survey was conducted for federally listed species and their habitats. No federally listed species or their critical habitats were identified by survey in North Dakota.

Consultation was initiated with the USFWS on May 25, 2011, and a response from the USFWS is pending. Plains will coordinate, as necessary, with the USFWS to address the agency's concerns, if any.

Least tern: Survey of the Route did not identify any suitable habitat in North Dakota.

Whooping crane: The Whooping Crane is present in North Dakota on semi-annual basis during the spring and fall migration between breeding grounds in Canada and winter grounds along the Gulf of Mexico. The proposed Project is located within the migration corridor of the Whooping Crane. Survey results identified potential foraging habitat within the proposed Route. Plains will continue to consult with the USFWS to develop appropriate mitigation measures for this species.

Please refer to Appendix C for related agency consultations, Appendix D for Natural Resource Survey Results and SECTION 4: Mitigative Measures of this application for proposed mitigation measures.

Piping plover: Survey of the Route did not identify any suitable habitat in North Dakota.

Pallid sturgeon: Survey of the Route did not identify any suitable habitat in North Dakota.

Sprague's Pipit: Field biologists recorded an occurrence of a single Sprague's Pipit during surveys, although it is unclear if it was a seasonal resident or migratory transient. The Sprague's Pipit is listed by the USFWS as a Candidate Species under the ESA; as such, conservation measures are suggested, but not specifically mandated.

Please refer to Appendix C for related agency consultations and Appendix D for Natural Resource Survey Results.

Bald and Golden Eagles: Field surveys canvassed a ½-mile corridor for raptors and, more specifically, evidence of eagle breeding habitat (*i.e.*, nests). An individual golden eagle was recorded, in flight, passing overhead during field surveys. No eagle nests were observed within ½ mile of the proposed Route.

2.2.4 NORTH DAKOTA STATE HISTORIC PRESERVATION OFFICE

The North Dakota State Historic Preservation Office (SHPO) is responsible for managing the historic and archaeological resources of the state. Plains commissioned, SWCA, Inc. (SWCA), to conduct a Class I Cultural Resource Inventory of the Corridor; background research was conducted on January 26, March 7 and 8, and April 12, 2011. The Class I Cultural Resource Inventory identified 59 previously recorded cultural resources within the proposed Corridor. These results were used to assess Corridor compatibility for routing and later for Route refinement and preparation for field studies.

The ensuing Class III Cultural Resource Inventory of the Route was completed between April 18 and June 16, 2011 by SWCA. Field studies identified 18 newly recorded cultural resources, representing 12 sites and six (6) isolated finds.

The previously recorded resources (32WI175 and 32WI176) and six (6) of the newly recorded resources (CRC-S-3, S-CRA-3, CRA-S-JS-1-ND, CRC-S-5, CRC-S-1, and CRC-S-7) are recommended as not eligible for the National Register of Historic Places (NRHP) and no further work is recommended. The six (6) isolated finds (CRA-IF-JS-1-ND, IF-CRA-2, IF-CRA-3, CRC-IF-1, CRC-IF-2, and CRC-IF-3) are also recommended as not eligible for the NRHP. The inventory identified five (5) prehistoric sites (S-CRA-4, CRA-S-JS-2-ND, CRC-S-2, S-CRA-5, and CRC-S-4), which have been left unevaluated regarding their NRHP eligibility and avoidance is recommended. The one (1) historic homestead site (CRC-S-6) is recommended eligible for nomination to the NRHP and avoidance is recommended. Reroutes have already been established to avoid the sites recommended eligible and those sites left unevaluated; however, in some instances, the recommended mitigation includes the establishment of a 50-foot exclusion buffer to be maintained around the sites and that all construction activities and vehicle traffic remain outside of this exclusion zone.

On July 27, 2011, Plains received concurrence of *No Historic Properties Affected* and *No Significant Sites Affected* for the Project, provided the proposed avoidance and mitigation measures are implemented.

Please refer to Appendix C for related agency consultations, Appendix E for the Cultural Resource Survey report and SECTION 4: Mitigative Measures of this application for proposed mitigation measures.

2.2.5 NORTH DAKOTA STATE LANDS DEPARTMENT

The North Dakota State Lands Department (NDSLDD) is in charge of managing surface acres and mineral interests held in trust for various schools and institutions.

Plains is seeking a surface easement from State Lands Trust to cross Section 16, Township 156 North, Range 102 West, Williams County, North Dakota. The NDSLDD has suggested co-locating the BNP with other pipelines. Easement negotiations are continuing. See Appendix B, Figure SC4 for a map depicting the location of the parcel and Appendix C for a copy of the correspondence.

Consultations with NDSLDD with respect to mineral interests were initiated on May 25, 2011. The NDSLDD identified the following mineral interests located in Williams County that are crossed by the Corridor:

- Section 32, Township 158 North, Range 103 West; and
- Sections 5 and 9, Township 157 North, Range 103 West.

Plains is currently engaged in discussions with NDSLDD regarding its mineral interests and the NDSLDD's suggested routing alternatives. See Appendix B, Figure SC 6 for a map depicting the locations of the parcels and Appendix C for a copy of the correspondence.

SECTION 3: EVALUATION OF THE PROPOSED ROUTE IN REGARD TO APPLICABLE CONSIDERATIONS IN SECTION 49-22-09 AND CRITERIA ESTABLISHED IN SECTION 49-22-05.1

3.1 EXCLUSION AREAS

Exclusion areas are geographical areas that should be excluded in the consideration of a route for a transmission facility. The following table and text identify and discuss exclusion areas identified along the proposed Route.

Exclusion Area	Crossed by Proposed Route
Federal	
National Parks or Memorial Parks	No
Historic Sites or Landmarks	No
Natural Landmarks or Monuments	No
Wilderness Areas	No
State	
Historic Sites, Monuments, or Historical Markers;	No
Archaeological Sites	Yes
Parks	No
Nature Preserves	No
County	
Parks	No
Recreation Areas	No
Municipal Parks	No
Other	
Areas Critical to the Life Stages of Threatened and Endangered Animal or Plant Species	No
Areas where Animal or Plant Species that are Unique or Rare to this State would be Irreversibly Damaged	No

3.1.1 FEDERAL RESOURCE REVIEW

Plains has initiated consultations with various Federal agencies and has conducted a comprehensive review of published information. Plains has concluded that no national parks, memorial parks, historic sites, landmarks, natural landmarks, monuments, or wilderness areas will be affected by the BNP.

Please see Appendix C for related agency consultations.

3.1.2 STATE RESOURCE REVIEW

Plains has confirmed, through a combination of agency consultations, review of publicly available information and field studies, that no state parks, historic sites, monuments, historical markers, or nature preserves are crossed by the proposed Route.

Plains commissioned a Class I Cultural Resource Inventory of the proposed Corridor and augmented that effort with a Class III Cultural Resource Inventory of the Route. The results of the Class III effort are summarized in Section 2.2.4. Plains has developed site-specific mitigation plans for culturally sensitive areas that intersect the proposed Route. On July 27, 2011, Plains received concurrence of *No Historic Properties Affected* and *No Significant Sites Affected* for the Project, provided the proposed avoidance and mitigation measures are implemented. Please see Appendix C for related consultations, Appendix E for the Cultural Resource Inventory Report and SECTION 4: Mitigative Measures for a detailed discussion of proposed mitigation at the archaeological sites identified during the Class III survey.

3.1.3 COUNTY RESOURCE REVIEW

Plains has confirmed through a combination of agency consultations, review of publicly-available information and field studies the absence of county parks, county recreation areas, municipal parks, or parks owned by other subdivisions of government bodies within the proposed Route.

3.1.4 AREAS CRITICAL TO THE LIFE STAGES OF THREATENED AND ENDANGERED ANIMAL OR PLANT SPECIES

Plains has commissioned surveys of the proposed Route. The scope of the surveys included documentation of Federally listed species identified during field surveys or evidence of their critical habitats. Emphasis was placed on those species indentified through public domain research, as well as the results of Project-specific consultations conducted for the Corridor analysis. The results of these field efforts are detailed in SECTION 2.2.3: Wildlife Inventory and proposed mitigation is discussed in SECTION 4: Mitigative Measures.

3.1.5 AREAS WHERE ANIMAL OR PLANT SPECIES THAT ARE UNIQUE OR RARE TO THIS STATE WOULD BE IRREVERSIBLY DAMAGED

Based upon agency consultations and subsequent field surveys, the proposed Project would not result in irreversible impacts that are detrimental to species or their habitats. Plains will implement proposed mitigation plans and fully comply with environmental permits in order to avoid potential impacts to unique or rare animal or plan species or their habitats.

3.2 AVOIDANCE AREA INVENTORY AND ANALYSIS

Avoidance areas are geographical areas that shall not be considered in the routing of a transmission facility unless, under the circumstances, it is shown that there is no reasonable alternative. The following table and text identify and discuss avoidance areas crossed by the proposed Route.

Avoidance Area	Crossed by Proposed Route
Federal	
Historic Districts	No
Wildlife Areas	No
Wild, Scenic or Recreational Rivers	No
Wildlife Refuges	No
Grasslands	No
State	
Wild, Scenic or Recreational Rivers	No
Game Refuges or Game Management Areas	No
Forests or Forest Management Areas	No
Grasslands	No
Other	
Historic Resources not meeting Exclusion Areas criteria	No
Areas of Known Geologic Instability	No
Areas within 500-Feet of a Residence, School, or Place of Business	Yes
Reservoirs and Municipal Water Supplies	No
Water Sources for Organized Rural Water Districts	No
Irrigated Land (Does not apply to underground facilities)	NA
Areas of Recreational Significance which are not designated as Exclusion Areas	No

3.2.1 FEDERAL RESOURCE REVIEW

A review of publicly available information was conducted, and Plains has concluded that no designated or registered historic districts, wildlife areas, wild, scenic or recreational rivers, wildlife refuges, or grasslands are crossed by the Route.

3.2.2 STATE RESOURCE REVIEW

Plains conducted a review of publicly available resources and has concluded that no designated or registered state wild, scenic, or recreational rivers, game refuges, game management areas, management areas, forests, forest management lands, or grasslands are crossed by the proposed Route.

3.2.3 HISTORICAL RESOURCES NOT MEETING EXCLUSION AREA CRITERIA

Plains conducted a review of publicly available resources and has concluded that there are no historical resources that do not meet the exclusion area criteria, crossed by the Route.

On July 27, 2011, Plains received SHPO concurrence of *No Historic Properties Affected* and *No Significant Sites Affected* for the Project. Please see SECTION 2.2.4 North Dakota State Historic Preservation Office for a discussion of related studies and results, Appendix C for related consultations, Appendix E for the Cultural Resource

Inventory Report and SECTION 4: Mitigative Measures for a detailed discussion of proposed mitigation at the archaeological sites identified during the Class III Cultural Resource Survey.

3.2.4 AREAS OF KNOWN GEOLOGIC INSTABILITY

There are no known areas of geological instability along the proposed Route. North Dakota has not experienced an earthquake of sufficient magnitude to damage welded steel piping or structural steel in recorded history. Sink holes are known to occur in North Dakota but are more closely related to mining activities and no evidence of mining or sink holes was identified. Finally, the potential for landslides was evaluated; earth movement of this nature is closely associated with areas of great topographic relief, high gradient slopes, recent deposits that have yet to reach a stable angle of repose, or where underground water movement may create a slurry of rock and mud resulting in a subsidence. There are no locations along the proposed Route that can be characterized as instable.

3.2.5 AREAS WITHIN 500-FEET OF A RESIDENCE, SCHOOL OR PLACE OF BUSINESS

Plains utilized aerial photography to identify structures located within 500 feet of the proposed pipeline alignment. Field surveys were conducted of each structure to characterize the structure as rural residence, school or place of business. Plains has identified one (1) location where an occupied structure is located within 500 feet of the proposed alignment. See Appendix B, Figure SC3 for a map depicting the location of this structure.

3.2.6 RESERVOIRS AND MUNICIPAL WATER SUPPLIES

Plains has confirmed that the Route does not contain reservoirs or municipal water supply sources.

3.2.7 WATER SOURCES FOR ORGANIZED RURAL WATER DISTRICTS

Plains has confirmed that the Route does not contain water sources that are utilized by organized rural water districts.

3.2.8 IRRIGATED LAND

This criterion does not apply to underground transmission facilities; as such, it is not applicable to this Project.

3.2.9 AREAS OF RECREATIONAL SIGNIFICANCE WHICH ARE NOT DESIGNATED AS EXCLUSION AREAS

Plains has confirmed that the Route does not cross areas of Recreational Significance.

3.3 FACTORS TO BE CONSIDERED IN EVALUATING APPLICATIONS AND DESIGNATIONS OF SITES, CORRIDORS AND ROUTES (49-22-09)

Available Research and Investigation Relating to the Effects of the Location, Construction, and Operation of the Proposed Facility on Public Health and Welfare, Natural Resources and the Environment:

Route selection between the Station and interconnect site identified and evaluated several options for routing this Project. These studies were designed to define a preferred route that achieves Project objectives, is technologically and economically feasible for construction, and minimizes impacts to landowners and the environment.

Field studies were conducted to identify environmental, biological, and cultural resources along the Route; the results of this effort are discussed in SECTION 2: Route Analysis and Findings and full reports are provided in Appendices D and E. SECTIONS 3.4: Selection Criteria and SECTION 3.5: Policy Criteria, included below, discuss possible effects on the public health and welfare.

The proposed Project will include three (3) mainline block valves located in North Dakota. These valves will be installed to meet DOT regulations and will allow for the isolation of select segments of the Project for inspection and maintenance purposes, as well as during abnormal operating conditions.

During operation of the BNP, the pipeline system shall be continuously monitored via Plains' Supervisory Control and Data Acquisition (SCADA) system, which is designed to shut in any section that exhibits abnormal operating parameters.

The Effects of New Energy Conversion and Transmission Technologies and Systems Designed to Minimize Adverse Environmental Effects:

The Project does not include energy conversion or transmission technologies and systems that are specifically designed to minimize adverse environmental impacts. The Project will be constructed in compliance with environmental permits. The conditions of these permits are designed to minimize adverse environmental impacts. Additionally, Plains may utilize low impact construction techniques (e.g.; horizontal directional drill) to reduce environmental impacts. Refer to SECTION 4: Mitigative Measures for a full description of the mitigation measures Plains has planned to minimize impacts resulting from the Project's location, construction, and operation.

Adverse Direct and Indirect Environmental Effects which cannot be Avoided Should the Proposed Site or Route be Designated:

Unavoidable adverse direct and indirect environmental effects will be temporary and shall be minimized through compliance with environmental permits. The potential impacts to resources including vegetation, wildlife, agricultural operations, transportation, and noise levels associated with construction are discussed in SECTION 3.5: Policy Criteria. Plains will mitigate these temporary impacts to the maximum extent possible.

The Project will be constructed in compliance with environmental permits. The conditions of these permits are designed to minimize adverse environmental impacts. Refer to SECTION 4: Mitigative Measures for a full description of the mitigative measures planned to minimize impacts resulting from the Project's location, construction, and operation.

Alternatives to the proposed corridor or route which are developed during the hearing process and which minimize adverse effects:

Plains will fully participate in the hearing process and will address any alternatives developed during the hearing process, as applicable.

Irreversible and irretrievable commitments of natural resources should the proposed corridor and route be designated:

Plains is not aware of any of any irreversible or irretrievable commitments of natural resources that would result from the requested approvals.

Direct and Indirect Economic Impacts of the Proposed Facility:

Construction of this Project will provide firm, reliable service for approximately 48,000 bpd of crude oil and a critical transportation link between the Station and markets in the upper midwest. The crude oil will be shipped on various pipelines, some of which are located in Canada, prior to reaching markets in the midwest.

Existing Plans of the State, Local Government, and Private Entities for Other Developments at or in the Vicinity of the Proposed Route:

Through the course of Project planning and subsequent routing, Plains identified and is coordinating with other pipeline operators in the region where the proposed Route crosses parcels to developed in the future (i.e.; Bear Paw Energy, LLC) or common rights of way (Hiland Operating Company). Plains is not aware of any other future development plans within or in close proximity to the Route.

The Effect of the Proposed Route on Existing Scenic Areas, Historic Sites and Structures and Paleontological or Archaeological Sites:

Plains has commissioned Class I and Class III Cultural Resource Surveys of the Route. Plains has developed mitigation plans for registered or eligible sites that encroach into the proposed construction corridor. The proposed mitigation is detailed in SECTION 4: Mitigative Measures. All related correspondence can be found in Appendix C and supporting documentation of field studies can be found in Appendix E.

Project-specific consultation with various Federal, State and Local agencies did not identify any scenic areas within the Route. All related correspondence can be found in Appendix C.

SWCA, on behalf of Plains, initiated a Project review with experts who possess knowledge of North Dakota's paleontological resources; these consultations concluded that there are no known resources within the proposed Corridor or Route.

The Effect of the Proposed Route on Areas Which are Unique Because of Biological Wealth or Because they are Habitats for Rare and Endangered Species:

The proposed Route is not anticipated to result in permanent adverse impacts to the environment. No Federal or State listed species or their critical habitats were identified during field surveys. Please see SECTION 2: Route Analysis and Findings for a comprehensive discussion of Plains' efforts to identify sensitive environmental resources along the proposed Route. Provided that Plains adheres to environmental permit conditions, the Project will not result in impacts to listed or sensitive species or their habitats. See Appendix C for complete Federal and State agency consultations. Detailed survey results can be found in Appendix D.

Problems Raised by Federal Agencies, Other State Agencies and Local Entities:

Plains has consulted with several Federal and State agencies to identify possible environmental resources within the Corridor and any related agency concerns. Resource issues raised by agencies included:

- USFWS - agency response to Project consultations is pending.
- NDSLD -
- Easement negotiations are on-going with the State regarding surface land interests in Section 16, Township 156 North, Range 102 West, Williams County, North Dakota.
- Routing discussions are on-going with respect to State mineral interests located in Section 5, Township 157 North, Range 103 West, Williams County, North Dakota

The Route selection process has taken into consideration comments received from responding agencies. Plains has also modified the Route, as necessary, where field studies confirmed the presence of sensitive resources and where avoidance was the recommended mitigation. Through these efforts, Plains has refined the Route or developed mitigation strategies to avoid or minimize direct impacts. Further details regarding agency consultations and concerns can be found in the Application for Certificate of Corridor Compatibility and avoidance, planning and mitigation measures are further detailed in SECTION 4: Mitigative Measures of this application. See Appendix C for complete Federal and State agency consultations. Detailed survey results can be found in Appendix D.

3.4 SELECTION CRITERIA

The selection criteria require a study of environmental impacts and changes in land use that may result from the siting of the proposed Project. Plains has successfully avoided or minimized negative effects with respect to the selection criteria to the maximum extent practicable.

3.4.1 AGRICULTURAL IMPACT ASSESSMENT

Agricultural Production: The Project will temporarily impact approximately 270 acres of land in North Dakota, of which approximately 51.2% are cultivated. The majority (96%) of the land crossed can be characterized as agricultural. Once the construction is complete, the land will be restored to its pre-construction contours and land use to the extent practical. Plains will provide payments to landowners for crop loss resulting from Project construction.

The installation of three (3) block valves will permanently impact an estimated 0.04 acres per site; as such, an estimated total of 0.12 acres of agricultural lands will be removed from agricultural production.

Family Farms and Ranches: The Project's impact to family farms and ranches will be temporary and closely associated with construction of the pipeline. Plains will negotiate easements with landowners crossed by the Project. Prior to clearing, landowner fences will be braced and cut to allow the passage and operation of equipment; temporary gates and fences will be installed to control livestock where necessary. Once construction is complete, the land will be restored to its pre-construction contours and land use, to the extent practicable. Fences and gates impacted by the Project will be replaced in accordance with landowner agreements. See SECTION 4: Mitigative Measures for the mitigation plan for agricultural and range lands.

The Project will have minimal impact to lifestyle or farm/ranch operations once construction has been completed. Buried pipelines will not impact typical farm or ranch operations, and those areas directly impacted by construction will be restored to their pre-construction condition. Direct impacts are anticipated to be limited to approximately 0.12 acres associated with the block valve installation as previously described.

Lands Suitable for Irrigation: This section is not applicable to buried pipelines (69-06-08-02.2h).

Surface Drainage: All areas disturbed by construction will be returned to pre-construction contours to the extent practicable, which should result in no change in surface drainage. Impacts to surface drainage will be temporary and limited to construction activities. During construction, Plains will implement a project specific Storm Water Pollution Prevention Plan (SWPPP) approved by the NDDoH to manage stormwater run-off and will employ proper erosion and sediment control measures throughout construction and restoration.

Ground Water: The aquifers that underlay North Dakota are typically associated with two types of geologic formations, specifically bedrock and glacial drift. Bedrock aquifers in the area are known to occur from 3,000 to 5,000 feet below the surface while glacial drift aquifers are known to occur at depths of a few feet to 500 feet below the surface. Ground excavation associated with the Project will generally be limited to depths no greater than 10 feet; as such, it is unlikely that the Project would have significant or permanent impact on groundwater resources.

3.4.2 THE IMPACTS UPON

Noise-Sensitive Land Uses: The Project is located in a rural setting, effectively isolating it from the majority of sensitive receptors. Once constructed and in-service, normal pipeline operations are not audible. A review of the Corridor found one (1) potential noise-sensitive resource, an inhabited structure located within 500-feet of the proposed pipeline Route. In the event that routing alternatives are not available that this location to provide a minimum 500-foot buffer, Plains will negotiate with the landowner to obtain a waiver. See Appendix B, Figure SC3 for a map depicting this structure.

Visual Effect on Adjacent Areas: The proposed Project will include three (3) mainline block valves in North Dakota. Block valves are small above-ground features. Each block valve assembly occupies approximately 0.04 acres with exposed piping and appurtenances that may be up to 6 feet in height. These facilities are typically enclosed within fences, which are padlocked shut against vandalism. Each location is clearly marked with a small placard that details ownership and contact information. The visible piping and equipment are finished and maintained with a white painted surface. These features are common throughout the landscape and are not obtrusive. No other permanent above-ground features are to be installed as a part of the Project.

Extractive and Storage Resources: This Project will not impact any extractive or storage resources.

Wetlands, Woodlands, and Wooded Areas: A comprehensive desktop review of published data, including aerial photography and National Wetland Inventory data was conducted to assess the presence or absence of wetlands, woodlands, and wooded areas. The review of the proposed Corridor confirmed the presence of these resources. Plains commissioned field surveys to identify and record the locations of these resources with respect to the proposed Route. The results of these field studies have resulted in the development of a preferred alignment to minimize impacts to wetlands, woodlands, and wooded areas. Please refer to SECTION 2: Studies of Corridor Certificate Application for a comprehensive discussion of Plains' consultations, Appendices C and D for reference. Mitigation details are discussed in SECTION 4: Mitigative Measures of this Application.

Radio and Television Reception, and other Communication or Electronic Control Facilities: Plains does not anticipate that the Project will impact radio, television, or other electronic control facilities.

Human Health and Safety: Plains' corporate policy meets or exceeds Federal and State laws, rules and regulations and is enforced and adhered to by all Plains' employees and contractor employees. Plains utilizes procedures designed to protect property and personnel, and to maintain regulatory compliance, in its operations and construction activities. By implementing these policies and practices, Plains promotes a safe and healthy workplace during construction and operation of all its assets.

The design of BNP incorporates the use of block valves at regular intervals. The purpose of the block valves is to segment the system to allow for the isolation of select portions of the system to facilitate maintenance in a safe and controlled manner. Additionally, in the event of an abnormal operating condition, block valves can be closed as necessary to prevent an uncontrolled release of crude oil. Finally, the operation of the BNP will be continuously monitored via Plains' SCADA system, which is designed to shut in any section that exhibits abnormal operating parameters.

Animal Health and Safety: The wildlife currently inhabiting the Route are common and generally mobile. The local wildlife inhabitants will be temporarily displaced by the Project without a measurable impact to the viability of these populations. No species of special concern are anticipated to experience direct impacts due to construction or operation of the Project.

Plant Life: The Project will not result in the permanent loss of agricultural or pastureland. Construction impacts will be temporary and the restoration will return the fields to their pre-construction condition to the extent practicable. No species of special concern will be impacted by the Project.

3.5 POLICY CRITERIA

3.5.1 POLICIES AND COMMITMENTS TO LIMIT ENVIRONMENTAL IMPACT

Plains selects pipeline corridors and routes to minimize impact as required by the statutes, rules and regulations of the Commission. As appropriate, Plains may employ local environmental consultants and archaeologists to assist with planning. Local farmers may also be employed for restoring cropland to tillable condition following construction. Plains is proud of its safety record in the operation of facilities in North Dakota and is prepared to meet any emergency that should arise in order to minimize the impact of any pipeline failure.

The operation of BNP would be monitored by Plains' Pipeline Control Center located in Midland, Texas. This facility monitors most of Plains' Pipeline operations in North Dakota. With this system in place, abnormal operating parameters will be quickly identified and the proper response shall be implemented quickly and efficiently. The operation of the pipeline conforms to DOT standards, as such, Plains maintains a rigid pipeline integrity program and periodically runs internal line inspection tools to find anomalies, and perform repairs as required.

3.5.2 LOCATION AND DESIGN

The North Dakota portion of the Project will be located entirely within Williams County, originating approximately 9 miles southwest of Williston. The routing of BNP will be oriented generally north and west, terminating roughly 2.5 miles north of Outlook in Sheridan County, Montana. Please refer to maps provided in Appendix B.

The pipe will be a 12.75-inch outside diameter pipe. The pipe installed will meet the following minimum specifications: API 5L PSL 2 X52 line pipe with a nominal wall thickness of 0.250 inches; the nominal wall thickness will increase to 0.344 inches for specific locations, such as road crossings. The MOP of the pipeline will be 1,468 psig.

The proposed Project will include three (3) mainline block valves located in North Dakota. These valves will be installed to meet DOT regulations and will allow for the isolation of select segments of the pipeline for inspection and maintenance purposes.

The valves to be installed will be 12-inch ANSI 600, flange end by flange end, through conduit, slab gate valves with motor operators for remote actuation. All block valves installed in the pipeline will be manufactured in accordance with API Standard 6D. The MOP of each valve will be 1,468 psig.

Plains will ensure the design of the pipeline to be in full compliance with applicable DOT standards.

3.5.3 TRAINING AND UTILIZATION OF AVAILABLE LABOR IN THIS STATE FOR THE GENERAL AND SPECIALIZED SKILLS REQUIRED

The construction labor pool utilized by the Project will be primarily comprised of a non-local workforce because pipeline construction is a specialized niche construction market that relies extensively on skilled trades with specific knowledge of pipeline construction techniques. The primary contractor will be a non-local contractor, supplying specialized skilled labor. Plains will draw upon the local labor force to supply general laborers. The workforce is anticipated to reach a peak of approximately 100 personnel, of which up to 10 percent could be local hires.

3.5.4 ECONOMIES OF CONSTRUCTION AND OPERATION

The Project represents a total investment of approximately \$160-200 million of which an estimated \$25 million will be spent in Williams County, North Dakota on the BNP pipeline and appurtenant facilities. Once constructed and in-service, the continued costs of maintenance and operation of the proposed pipeline are expected to be minimal.

3.5.5 USE OF CITIZEN COORDINATING COMMITTEES

Plains has established and maintains a good relationship with the local residents through its long-term regional presence operating various assets in the area. Through these relationships Plains has maintained several grass roots communication channels to inform local residents regarding the developments associated with the Project.

3.5.6 COMMITMENT OF A PORTION OF THE TRANSMITTED PRODUCT FOR USE IN THIS STATE

Currently the result of this Project will be the delivery of crude oil to market points in the midwest.

3.5.7 LABOR RELATIONS

Plains does not anticipate encountering any adverse labor relations on this Project. The labor market in the Project area is supportive of the oil and gas industry.

3.5.8 THE COORDINATION OF FACILITIES

Plains owns and operates all of the affected facilities; thus, coordination will be seamless and executed from within Plains' internal management systems.

3.5.9 MONITORING OF IMPACTS

During construction and for the duration of the Project, Plains' primary contractor shall be responsible for providing oversight of construction activities. Plains will manage environmental obligations throughout construction and restoration. Plains will identify responsible parties to provide onsite environmental oversight of construction activities.

3.5.10 UTILIZATION OF EXISTING AND PROPOSED ROW AND CORRIDORS

Approximately 6.0 miles (19%) of the proposed Route would parallel existing or proposed pipelines. Please see Appendix B, Figures SC1, SC2 and SC 4 for maps of these locations.

3.5.11 OTHER EXISTING OR PROPOSED TRANSMISSION FACILITIES

Plains is actively marketing in the region, and projects of various form and function are frequently studied. However, Plains does not have current plans to construct or expand transmission facilities in North Dakota in the foreseeable future, as reported in their current 10-Year Plan (see Appendix F).

SECTION 4: MITIGATIVE MEASURES

4.1 LOCATION

The location of the proposed Route is a function of the location of the Station and the location of the interconnection with the Wascana Pipeline, as well as the process of evaluating various alternatives to identify the most desirable and suitable route. Plains commissioned field surveys of the proposed Route to address specific agency concerns expressed during consultations, inventory the resources present along the Route, define the location and boundaries of resources that intersect the proposed Route, identify potential impacts to natural resources and identify avoidance or other mitigation opportunities to further minimize the impacts of the Project.

Trees and shrubs: Plains shall comply with the Commission's tree and shrub mitigation specifications. Field surveys included a pre-construction tree and shrub inventory. The clearing or removal of trees or shrubs will be done selectively, in a manner that minimizes the disturbance to woody vegetation and in compliance with the Commission's specifications. The replacement of trees and shrubs will be based upon actual impacts due to construction and shall meet the 2:1 ratio specified by the Commission and shall be fully documented.

Wetlands and waterbodies: Waterbody crossings will be conducted in accordance with Plains' BMPs and shall adhere to the conditions included in Federal and State permits. Plains anticipates that the open-cut crossing method will be used on all streams that have no perceptible flow at the time of crossing. This method may also be used on streams that are classified as perennial waterbodies, yet there is no perceptible flow across the construction right-of-way.

Wetland Mitigation: To minimize impacts on wetlands, Plains will implement the procedures and adhere to USACE permit conditions for construction mitigation in wetlands. The primary means to minimize impacts to wetlands during construction are:

- Limiting the amount of equipment and use of additional extra work areas in and adjacent to wetlands;
- Using equipment stabilization methods such as timber mats within wetlands with saturated soils;
- Limiting grading in wetlands; and,
- Preserving the topsoil layer removed from the trench line in unsaturated wetlands with its seed source, roots, and rhizomes and replacing that soil over the trench as final backfill to promote natural revegetation.

Trench spoil excavated in wetlands will be stored in the construction corridor adjacent to where it was removed. Where there is the possibility of excavated trench spoil flowing into undisturbed areas outside of the wetland, silt fences and/or hay bales will

be installed at the edges of the construction right-of-way to prevent sediment migration.

If the pipeline trench contains water, trench plugs may be left in the trench where the trench enters and exits the wetland until immediately before the pipe is installed and the trench is dewatered. Following installation of the pipe segment, permanent trench breakers will be installed at those same locations, if necessary, to maintain the hydrologic integrity of the wetland.

If dewatering the trench is necessary, it will be conducted in a manner to prevent heavily silt-laden water from entering the wetland. Trench water will be discharged into temporary sediment containment structures or filter bags, as appropriate. These filtering structures are typically placed immediately adjacent to the right-of-way in upland areas.

Following pipeline installation, the trench will be backfilled with the material excavated and, to the maximum extent possible, restored to pre-construction contours. Replacing the wetland soil and restoring pre-construction hydrology will promote the rapid re-establishment of hydrophilic vegetation.

Plains will also take precautionary measures outside wetland boundaries to prevent construction in uplands from having an impact on wetlands. These measures include:

- Installing sediment barriers across the entire construction right-of-way immediately upslope of the wetland boundary where necessary to prevent sediment flow into the wetlands.
- Installing sediment barriers along the edge of the construction work area where wetlands are adjacent to the construction right-of-way and the ground surface slopes toward the wetland.

Waterbody Crossing Mitigation: Plains is proposing to cross flowing waterbodies using methods that will minimize the length of time to install and restore the stream bank and thereby also minimize the amount of sediment from entering the waterbody during construction. These efforts will reduce the impacts of BNP construction on the waterbody. For all ephemeral, intermittent, and perennial crossings, Plains will implement the following mitigative measures:

- Plains will observe all setbacks stipulated by permits when utilizing temporary extra workspaces adjacent to waterbodies.
- Temporary extra workspaces will be limited to the minimum size needed to construct the waterbody crossing.
- Riparian vegetation will be preserved by limiting clearing of vegetation between temporary extra workspace areas and waterbody edges.
- Temporary sediment and erosion control devices will be installed across the width of the right-of-way after clearing and before ground disturbance and

throughout construction until stream banks and adjacent upland areas are stabilized.

- Trench spoil placement will be restricted to at least 10 feet from the water's edge on the right-of-way, or in temporary extra workspace areas.
- Waterbody buffers will be maintained (*e.g.*, temporary extra workspace area setbacks, refueling restrictions) in the field with signs until construction related ground-disturbing activities are complete.
- The use of equipment operating in the waterbody will be limited to that needed to construct the crossing.
- Storage and refueling activities will be restricted near surface waters and procedures in the SPCC Plan will be promptly implemented if a spill or leak occurs during construction.
- Bank stabilization and re-establishment of stream bed and bank contours will be required after construction.
- A permanent slope breaker will be installed across the right-of-way at the base of slopes greater than 5 percent that are less than 50 feet from the water's edge.

Migratory Bird Treaty Act: Consultations regarding Migratory Bird Treaty Act mitigation are on-going. Plains will continue to engage the USFWS to complete consultations in this regard.

Cultural Resources: On July 27, 2011, SHPO concurred with Plains' mitigation plan summarized herein. The SHPO confirmed that the required mitigation is limited to 14 sites of potential cultural or historic significance found to occur within Route.

32W1175: This site was one of two sites identified in the Class I inventory that was revisited. SWCA revisited 32W1175 on April 19, 2011. No artifacts were observed at this time. The assemblage identified in 1986 has likely been plowed and disturbed and is buried within the plow zone or lies beneath vegetated cover. No changes have been made to the site boundary, as testing below the plow zone would be necessary to determine whether intact deposits exist and to properly define the boundary. Plains shall modify the alignment of the BNP and related construction right of way to provide the site with a 50 foot, no impact, exclusion buffer; fencing shall be installed to visually reinforce the boundaries of the exclusion during construction. Please see Appendix C for related agency correspondence and Appendix E for survey results.

32W1176: This site is comprised of cultural material lithic scatter originally recorded in 1986 on a terrace above Sand Creek, though the site was left unevaluated regarding its NRHP eligibility. During the current revisit, a single lithic artifact was observed. Researchers concluded that the majority of the assemblage identified in 1986 no longer remains on the surface or is not visible due to poor ground surface visibility. The site has been repeatedly impacted from years of plowing and agricultural practices and is in poor condition. No shovel testing was conducted at this time. SWCA recommends the site remain unevaluated. Plains has modified its alignment of BNP

such that it will no longer impact this resource. Please see Appendix C for related agency correspondence and Appendix E for survey results.

CRC-S-1: This is a newly discovered historic cultural material site consisting of one feature and a sparse cultural material scatter. SWCA recommends the site not eligible for nomination to the NRHP, because no standing structures remain at the site that reflect the work of a master or embody distinctive characteristics of a type, period, or method of construction. All relevant material data have been recovered with the current recording of the site and no additional work is warranted. Avoidance of this site is not necessary during construction. Please see Appendix C for related agency correspondence and Appendix E for survey results.

CRC-S-3: This is a newly discovered historic cultural material site consisting of one feature and a sparse cultural material scatter. However, because the site was not found to be linked to historically significant events or people, CRC-S-3 is recommended not eligible for nomination to the NRHP. All relevant material data have been recovered with the current recording of the site and no additional work is warranted. Avoidance of this site is not necessary during construction. Please see Appendix C for related agency correspondence and Appendix E for survey results.

CRC-S-4: This site is a newly discovered prehistoric site of undetermined significance due to potential cultural sensitivity. Field studies recorded the site boundaries and characterized the site for reporting purposes to the SHPO. Plains shall modify the alignment of the BNP and related construction right of way to provide the site with a 50 foot, no impact, exclusion buffer; fencing shall be installed to visually reinforce the boundaries of the exclusion during construction. Please see Appendix C for related agency correspondence and Appendix E for survey results.

CRC-S-5: The site consists of an historic cultural material scatter or trash dump. The site appears to have been an historic dump area possibly associated with the two-track road to the east. No features were observed. Because the site was not found to be linked to historically significant events or people, the site has not been recommended to be eligible for nomination to the NRHP. All relevant material data have been recovered with the current recording of the site and no additional work is warranted. Avoidance of this site is not necessary during construction. Please see Appendix C for related agency correspondence and Appendix E for survey results.

CRC-S-6: This site is a newly recorded homestead site that consists of two historic features and a cultural material scatter. However, because the site was not found to be linked to historically significant events or people, CRC-S-6 is recommended not eligible for nomination to the NRHP. Plains shall modify the alignment of the BNP and related construction right-of-way to provide the site with a 50 foot, no impact, exclusion buffer; fencing shall be installed to visually reinforce the boundaries of the exclusion buffer during construction. Please see Appendix C for related agency correspondence and Appendix E for survey results.

CRC-S-7: This site is a newly recorded homestead site that consists of two historic features and a cultural material scatter. However, because the site was not found to be linked to historically significant events or people, CRC-S-7 is recommended not eligible for nomination to the NRHP. All relevant material data have been recovered with the current recording of the site and no additional work is warranted. Avoidance of this site is not necessary during construction. Please see Appendix C for related agency correspondence and Appendix E for survey results.

S-CRA-5: This site is a newly discovered prehistoric site of undetermined significance due to potential cultural sensitivity. Field studies recorded the site boundaries and characterized the site for reporting purposes to the SHPO. Plains shall modify the alignment of the BNP and related construction right-of-way to provide the site with a 50 foot, no impact, exclusion buffer; fencing shall be installed to visually reinforce the boundaries of the exclusion buffer during construction. Please see Appendix C for related agency correspondence and Appendix E for survey results.

CRA-S-JS-2-ND: This site is a newly discovered prehistoric site of undetermined significance due to potential cultural sensitivity. Field studies recorded the site boundaries and characterized the site for reporting purposes to the SHPO. Plains has modified its alignment of BNP such that it will no longer impact this resource. Please see Appendix C for related agency correspondence and Appendix E for survey results.

CRC-S-2: This site is a newly discovered prehistoric site of undetermined significance due to potential cultural sensitivity. Field studies recorded the site boundaries and characterized the site for reporting purposes to the SHPO. Plains has modified its alignment of BNP such that it will no longer impact this resource. Please see Appendix C for related agency correspondence and Appendix E for survey results.

S-CRA-4: This site is a newly discovered prehistoric site of undetermined significance due to potential cultural sensitivity. Field studies recorded the site boundaries and characterized the site for reporting purposes to the SHPO. Plains has modified its alignment of BNP such that it will no longer impact this resource. Please see Appendix C for related agency correspondence and Appendix E for survey results.

CRA-S-JS-1-ND: This site is a newly recorded Historic period site consisting of cultural material scatter, depression, and a foundation. However, because the site was not found to be linked to historically significant events or people, CRA-S-JS-1-ND is recommended not eligible for nomination to the NRHP. All relevant material data have been recovered with the current recording of the site and no additional work is warranted. Avoidance of this site is not necessary during construction. Please see Appendix C for related agency correspondence and Appendix E for survey results.

S-CRA-3: This site is a newly recorded Historic period site consisting of a depression and sparse cultural material scatter. However, because the site was not found to be linked to historically significant events or people, S-CRA-3 is recommended not eligible for nomination to the NRHP. All relevant material data have been recovered with the current recording of the site and no additional work is warranted. Avoidance of this

site is not necessary during construction. Please see Appendix C for related agency correspondence and Appendix E for survey results.

4.2 CONSTRUCTION

The proposed construction of the pipeline will be conducted in an orderly sequence designed to complete the Project in the minimum amount of time required to safely prepare the site, install the pipeline and restore the areas disturbed by construction.

Construction is estimated to require approximately 90 days with restoration to immediately follow. Construction techniques will be employed that minimize the area of ground disturbance, off-site deposition of sediments and long-term impacts to agricultural productivity.

Restoration will immediately follow pipeline construction and commissioning. Final grading will restore the original contours of the land to the extent practicable. Disturbed areas will be prepared for re-seeding and restoration will be coordinated to meet landowner specifications.

4.3 OPERATION

Once constructed and put into service, the proposed Project will operate continuously delivering crude oil from the Project's origin at the Station to the interconnection with the Wascana system. Normal pipeline operations are imperceptible to the general public, as they are silent, buried and therefore not visible, and require only minimal above-ground activity. Standard operating procedures will conform to DOT standards and requirements, as such periodic inspection and maintenance of the right-of-way will be required.

SECTION 5: DESCRIPTION OF RIGHT-OF-WAY PREPARATION AND RECLAMATION PROCEDURES

Construction will be an assembly-line process and will include the following general tasks: surveying and staking, clearing and grading, trenching, pipe stringing, pipe bending, welding, coating, hydrostatic testing, lowering in, tie-ins, backfilling, rough grading, and final restoration (*e.g.*, topsoil replacement, final grading, seeding and mulching, where required). The pipeline may be placed into service before final restoration has been completed in all areas.

At any location along the Project, construction activities will require approximately eight to ten weeks to complete from start to finish, except when weather-related delays affect the schedule. Construction activity at any location is not continual, but occurs in distinct phases with several days or weeks between each phase. For example, clearing and grading may require 10 hours to progress for one mile along the Project right-of-way, but trenching may not follow in that area for several weeks. During the interim, there may not be any construction-related activity in the area, or it may be limited to occasional vehicular or pedestrian traffic.

Surveying and Staking

Prior to construction activities, Plains will stake the centerline and establish the boundaries of the approved work areas (*e.g.*, the construction right-of-way boundaries and temporary extra workspace areas), and flag the location of approved access roads and foreign utility lines. Wetland boundaries and other environmentally sensitive areas will also be marked or fenced for protection at this time.

Clearing and Grading

Prior to clearing, landowner fences will be braced and cut, and temporary gates and fences will be installed to control livestock where necessary. A clearing crew will clear the work area of vegetation and obstacles that may be encountered (*e.g.*, remaining trees, stumps, logs, brush, and rocks) in the work area.

The right-of-way will be graded, where necessary, to provide a reasonably level work surface and to segregate topsoil. Topsoil will be carefully removed and stored along the edge(s) of the right-of-way in a manner that allows for a haul road and trench line. The topsoil depth in the area is variable, but generally the topsoil is between 2-9 inches deep with the deepest topsoil in valleys and the thinnest topsoil on the hill sides and hill tops. The topsoil depth and the layer removed will be determined in the field. Upon completion of pipeline construction, the trench will be backfilled and topsoil will to be returned to the upper soil horizon. All disturbed areas shall be graded to restore the original contours, as reasonably practicable.

Where steep slopes or side slopes are encountered, the construction contractor may grade the slope to reduce the grade, or in areas of side slopes, two-tone the area to create a level working surface. At these locations, excess spoil will be pushed to the

side of the construction right-of-way, distributed over the working area and travel lane, or stored in alternative temporary work space. This material will be returned to the original location and preconstruction contours will be reestablished to the extent practicable during restoration.

Concurrent with grading, erosion and sediment control devices will be installed as required by state stormwater permit conditions. The pipeline will be placed such that adequate cover from the bottom of the waterbody is in place. This is individual to the waterbody but is to be no closer than 5 feet to the bottom of the waterbody. Construction mats will also be installed across saturated wetlands to prevent rutting as equipment travels the right-of-way. Erosion and sediment control devices, which may include silt fences, straw wattles, straw bales, and road access pads, will be installed where necessary to prevent soil and sediment from leaving the construction work area.

Following installation of the pipe and backfilling of subsoil in the trench, the right-of-way will be returned to the original grade and the topsoil will be redistributed over the work area.

Trenching

The trench will be excavated by using track-mounted backhoes to a depth that provides sufficient cover over the pipeline after backfilling. The bottom width of the trench will be sufficient to accommodate the 12.75-inch-outside diameter pipeline. Typically, the trench will be excavated to a sufficient depth to allow for a minimum of three feet of cover after construction. In cultivated areas, the depth of cover will be sufficient to be safely below the maximum tillage depth. Additional cover requirements may be applicable at public road crossings and waterbody crossings.

Pipe Stringing, Bending, and Welding

Sections of externally coated pipe up to 65 feet long (*e.g.*, joints) will be transported over public roads to the right-of-way by truck and placed or “strung” along the right-of-way parallel to the trench in a continuous line. After the pipe sections are strung along the trench and before they are welded together, individual sections of the pipe may be bent, where necessary, so that the finished pipeline sections conform to the natural contours of the land. Typically, a track-mounted, hydraulic pipe-bending machine will be used. Where multiple or complex bends greater than what can be properly bent in the field are required, a factory made “fitting” will be used.

After the pipe sections are bent, the joints will be welded together into sections and placed on temporary supports. Welding will comply with requirements listed in Title 49 CFR Part 195 and API Standard 1104 *Welding of Pipelines and Related Facilities*. Each weld will be tested by using radiographic non-destructive examination (NDE) to ensure that no defective welds are present and that Plains’ engineering standards are met. Welds that do not meet standards and specifications will be removed and/or repaired.

A third-party contractor certified in non-destructive inspection will be used and inspections will be performed as outlined in Title 49 CFR Part 195. After the welds are approved, a protective coating will be applied to the welded joints. The pipeline will subsequently be electronically and visually inspected for defects in the external coating. Damage to or defects in the coating will be repaired prior to lowering-in the pipeline. Cathodic protection systems will also be directly bonded to the pipe at this time.

Hydrostatic Testing

Plains will hydrostatically test the pipeline once it has been aligned and welded. Hydrostatic testing shall conform to DOT standards and shall establish the MOP for the pipeline when it is operational. Testing involves installation of test headers that control the pressure applied and are later removed upon the completion of a successful pressure test. The test procedures are a function of pressure and time, once the desired test pressure has been achieved, the test section must hold the pressure for an 8 hour period, without a significant change in pressure. Once testing is completed, the test water is evacuated from the pipeline, and the line is prepared for commissioning. Plains will obtain a discharge permit from the NDDoH to authorize the pipeline dewatering activities; the ensuing discharge(s) will conform to the conditions stipulated in the permit.

Lowering-in and Backfilling

The trench will be inspected for the presence of rocks and other debris that could damage the pipe or protective coating. If rocks or other obstructions are observed, these will be removed and/or if necessary the pipeline trench bottom will be padded with rock shield subsoil or sand prior to the pipeline being lowered into the trench.

If the trench bottom is obscured by water, the trench will be dewatered. Where dewatering is required, Plains will remove the water with a pump and discharge it in accordance with the applicable permit conditions.

In areas of steep slopes, breakers consisting of sand bags or foam will be installed to prevent 'piping' from occurring along the pipe in the trench after the area is backfilled.

The trench will be backfilled using the native material removed and compacted; however, the trench may be slightly crowned to accommodate settling.

Final Tie-in and Commissioning

Following successful pressure testing, test manifolds will be removed and the final pipeline tie-ins will be made. After final tie-ins are complete, the tie-in welds have been radiographically inspected, then the pipeline will be commissioned. Commissioning involves activities to verify that equipment is properly installed and working, the controls and communications systems are functional. After commissioning activities are complete, the pipeline will be filled with crude oil and purged of air and then the pipeline is ready for service.

Cleanup and Restoration

Final cleanup will begin after backfilling as soon as weather and site conditions permit. During cleanup, construction debris remaining on the right-of-way will be collected and disposed of properly. Work areas will be graded and restored to preconstruction contours as closely as practical.

During restoration, segregated topsoil will be spread over the surface after final grading and permanent erosion controls will be installed. After permanent erosion control devices are installed, disturbed, non-cultivated areas will be seeded and slopes mulched where required. Seed mixes will be approved in advance and seeding will occur. Restoration in cultivated areas will be in accordance with landowner easement agreements.

Markers will be installed as required. The pipeline markers will be labeled to clearly identify pipeline ownership and emergency contact information in accordance with relevant DOT regulations. Aerial pipeline markers providing information and guidance to aerial patrol pilots will also be installed.

Waterbody Restoration

Waterbodies affected by construction of the Project are typically narrow, low gradient, meandering streams exhibiting lentic conditions in the late summer and early fall period. Since these waterbodies derive most of the flow from spring runoff (*e.g.*, snowmelt and rainfall) and summer thunderstorms, the dry period typically extends from August to October resulting in dry channels and pools of standing water only in the deepest reaches and meanders; water may not be flowing between pools. Plains will be using the open cut method to cross all streams. This method can accomplish each crossing efficiently and minimize the duration of the construction disturbance, thereby allowing restoration efforts to be initiated in a timely manner. Upon completion of construction, the restoration of disturbed areas shall be initiated immediately.

The presence of water at the time of construction will determine the crossing technique to be employed at a given location. The open cut method may be completed as either a dry or wet technique. Wet technique open cut crossings are appropriate for intermittent waterbodies that are either dry or exhibiting low flow conditions at the time of construction. The alternative is a wet crossing, which is typically employed when the waterbody is flowing. This technique ensures adequate downstream flows are maintained throughout the duration of the crossing to support aquatic life. Downstream flows are maintained during wet crossings by installing either a flume (*e.g.*, rigid open conduit of sufficient size to maintain the flow) or implementation of a pump around system (also known as a dam and pump technique). The pump(s) takes water from upstream of the crossing, bypasses the workspace with hoses and discharges the flow back into the waterbody but downstream from the workspace. Both the wet and dry techniques rely upon a temporary bridge from which to operate equipment, installation of upstream and downstream temporary dams to isolate the

workspace, and dewatering of the workspace to remove the water and to facilitate the excavation of the trenchline. Generally, it is desirable to complete these crossings in a single continuous effort.

Following installation of the pipeline, the stream bank will be restored, as necessary. Plains will, compact the banks and install erosion and sediment control blankets as necessary on the banks after seeding to prevent scour and a discharge of sediment into the waterbody. In addition, sediment control barriers will be installed, as necessary, on the top of the banks to prevent sediment generated from the right-of-way from entering the waterbody. These barriers will remain in place until the right-of-way is adequately vegetated.

Plains is proposing to cross flowing waterbodies using methods that will minimize the length of time to install the pipe and to restore the stream bank to prevent sediment from entering the waterbody during construction and to reduce the impacts on the waterbody. For all ephemeral, intermittent, and perennial crossings, Plains will implement the following mitigative measures:

- Plains will observe all setbacks required by permits when utilizing temporary extra workspaces adjacent to waterbodies.
- Temporary extra workspaces will be limited to the minimum size needed to construct the waterbody crossing.
- Riparian vegetation will be preserved by limiting clearing of vegetation between temporary extra workspace areas and waterbody edges;
- Temporary sediment and erosion control devices will be installed across the width of the right-of-way after clearing and before ground disturbance throughout construction until stream banks and adjacent upland areas are stabilized.
- Trench spoil placement will be restricted to at least 10 feet from the water's edge on the right-of-way, or in temporary extra workspace areas.
- Waterbody buffers will be maintained (*e.g.*, temporary extra workspace area setbacks, refueling restrictions) in the field with signs until construction-related ground-disturbing activities are complete.
- The use of equipment operating in the waterbody will be limited to that needed to construct the crossing.
- Storage and refueling activities will be restricted near surface waters and procedures in the SPCC Plan will be promptly implemented if a spill or leak occurs during construction.
- Bank stabilization and re-establishment of stream bed and bank contours will be required after construction.
- Additional erosion control measures, such as permanent slope breakers, shall be installed, as necessary, at the base of significant slopes. Minimum setback limits required by permits shall be observed

Wetland Restoration

Following pipeline installation, the trench will be backfilled with the material excavated and, to the maximum extent possible, restored to pre-construction contours. Replacing the wetland soil and restoring pre-construction hydrology will promote the rapid re-establishment of hydrophilic vegetation.

Plains will also take precautionary measures outside wetland boundaries to prevent construction in uplands from having an impact on wetlands. These measures include:

- Installing sediment barriers across the entire construction right-of-way immediately upslope of the wetland boundary where necessary to prevent sediment flow into the wetlands.
- Installing sediment barriers along the edge of the construction work area where wetlands are adjacent to the construction right-of-way and the ground surface slopes toward the wetland.

Following backfilling, topsoil segregated before trenching will be returned to the area from which it was stripped. If timber mats or riprap were used, Plains will remove the supports from the wetland. No lime, mulch, or fertilizer will be used in wetlands, but Plains will apply annual ryegrass in wetlands without standing water.

All materials used for equipment crossings in wetlands will be removed in their entirety following construction, and the area will be restored and stabilized according to the relevant permit authorizations.

Agricultural Land Restoration

Extensive portions of the Project will involve heavy construction through agricultural areas. These areas consist of active croplands predominately used to grow hard red spring wheat, red winter wheat, barley, durum, sunflowers and canola. Additionally, agricultural lands are also used as range or pasture land for livestock production. Plains has developed the following general construction methods in agricultural areas to complement the standard terms of easement agreements established with landowners:

- Plains shall observe land owner agreements negotiated for the BNP. Easement conditions shall be detailed in construction documents and communicated to personnel responsible for construction and restoration services.
- Water flow will be maintained in supply systems unless shutoff is coordinated with the affected parties.
- Existing fences will be cut and braced along the right-of-way, and temporary gates and fences, if necessary, will be installed to control livestock and limit public access.

- On all actively cultivated lands, the trench would be excavated to sufficient depth to allow for a minimum of 3 feet of soil cover between the top of the pipe and the final land surface after backfilling.
- Restoration and revegetation practices (*i.e.*, seeding) will comply with the requirements outlined in landowner easement agreements and applicable agency regulations.
- Plains will not plant an annual cover crop on actively cultivated land unless requested by the landowner.
- Plains will respond to landowner concerns regarding issues related to site restoration following construction to mitigate to landowners satisfaction.

**SECTION 6: UTILITY'S EASEMENT ACQUISITION, LANDOWNER NOTIFICATION
AND EASEMENT COMPENSATION PLAN**

**6.1 LANDOWNER INFORMATION REGARDING EASEMENT ACQUISITION, AND
NECESSARY EASEMENT CONDITIONS AND RESTRICTIONS**

Once a preliminary route has been established, a title review is conducted of courthouse records for the purpose of identifying the current landowner. Plains will initiate contact with affected landowners via telephone to be followed with personal visits and e-mail correspondence. Contact by U.S. mail may be used as a last resort if no other means of landowner contact is successful.

During easement negotiations, landowners will be informed of the easement conditions and restrictions. Landowners will be compensated for the easement, as well as for damages resulting from construction of the Project. The Route, includes adjustments made per landowner request. Plains, at all times, negotiates in good faith with landowners.

6.2 COMPENSATION POLICY

Plains' practice for determining landowner compensation for easements is based on research of comparable fair market pricing and prior experience negotiating easements locally.

SECTION 7: LIST OF PREPARERS

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Senior Project Engineer

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M.S. Business Administration, University of Houston; and B.S. Civil Engineering, Louisiana State University – Baton Rouge. Mr. Bordelon is Senior Project Engineer with 27 years of experience in the pipeline industry. As a Senior Project Engineer he has managed various natural gas and crude oil pipeline construction projects. His experience and technical expertise includes 10 years of experience with Williams Gas Pipeline divided between Pipeline Design and Operations Technical Support; three years experience as a consultant in pipeline engineering and construction management; four years experience in terminal project engineering design, construction and project management; one year experience managing environmental, health and safety; and ten years experience in pipeline project engineering.

William McCarthy, C.W.B.

Senior Environmental Compliance Analyst

E3 Environmental, LLC, 817 Vandalia Street, St. Paul, MN 55114

M.S. Wildlife Biology, University of Minnesota – Twin Cities; and B.S. Wildlife Biology, Michigan State University. Mr. McCarthy is an environmental compliance analyst with 15 years of environmental consulting experience working with various energy assets and regulatory agencies. As a compliance analyst he has managed the environmental requirements for facility siting, pipeline routing, federal licensing, and various federal, state and local permits. Mr. McCarthy is a certified wildlife biologist and in this role conducts and coordinates field studies, agency consultations, mitigation and avoidance plans.

Katie Schmidt, EIT

Environmental Engineer and Compliance Analyst
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B.S. Civil Engineering with an emphasis in Environmental Engineering-Iowa State University. Ms. Schmidt has pursued a career focused on regulatory compliance. Her experience includes providing permitting and compliance support associated with maintaining assets for safe and reliable distribution and transmission of energy throughout the continent. Ms. Schmidt has developed a broad working knowledge of NPDES construction stormwater compliance by working with distribution systems located in MN, OK, TX, LA and AR. Ms Schmidt also has extensive experience working with transmission assets involving COE permitting, ESA and SHPO consultations.

Scott Slessman, M.A., RPA

Principal In Charge/Principal Investigator
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M.A. Anthropology, Colorado State University and B.A. Anthropology, Purdue University. Mr. Slessman has over 18 years of experience in North American archaeology and has been both directly involved and supervised as a Principal Investigator for survey, testing, and excavation projects in the Midwest, Great Plains, Southeast and Rocky Mountains. Mr. Slessman is well versed in all federal and state cultural resources laws and regulations, including NAGPRA and Section 106 of the National Historic Preservation Act. Mr. Slessman is a Registered Professional Archaeologist (RPA) and is permitted as a Principal Investigator for the BLM and for State permits in North Dakota, South Dakota, Minnesota, Montana, Wyoming, Colorado, Utah, Iowa, and Nebraska. He has strong relationships with SHPO and THPO in these same states and is an expert in Tribal Consultation laws and process. As the Principal Investigator and Office Director for the Bismarck, North Dakota SWCA office, Mr. Slessman provides direct oversight and quality assurance/quality control for all cultural resources projects and deliverable