

# **Pipeline Conservation and Reclamation Approvals Under the *Environmental Protection and Enhancement Act***

## **Requirements and Guidance for Applications and Postconstruction Reclamation Assessment Reports**

**July 2025**

**Alberta Energy Regulator**

SED 004: Pipeline Conservation and Reclamation Approvals Under the *Environmental Protection and Enhancement Act*; Requirements and Guidance for Applications and Postconstruction Reclamation Assessment Reports

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## Abbreviations

ACO	Aboriginal Consultation Office
<i>ALSA</i>	<i>Alberta Land Stewardship Act</i>
BA code	business associate code
CanSIS	Canadian Soil Information Service
<i>CSSC</i>	<i>Canadian System of Soil Classification</i>
EC	electrical conductivity
EMF	environmental management frameworks
<i>EPEA</i>	<i>Environmental Protection and Enhancement Act</i>
EPP	environmental protection plan
FNC	First Nations consultation
LSD	legal subdivision
PCRA	postconstruction reclamation assessment
PDF	portable document format
SAR	sodium adsorption ratio
SED	specified enactment direction
UTM	universal transverse Mercator



# 1 Introduction

## 1.1 Purpose

This specified enactment direction (SED) addresses **conservation** and **reclamation** matters under section 137(2)(c) of the [Environmental Protection and Enhancement Act \(EPEA\)](#) and has two main purposes:

- To set out the information requirements and expectations for a pipeline application for an approval under *EPEA*, as required under Schedule 1 Division 3(c) of the [Activities Designation Regulation](#). Section 3 of the [Approvals and Registrations Procedure Regulation](#) outlines the application information requirements, and this SED provides additional detail in support of technically complete and consistent applications.
- To set out requirements and expectations for postconstruction reclamation assessment (PCRA) reports under an *EPEA* approval, in the interest of returning the land to a productive and environmentally stable state as soon as possible after construction.

This document supersedes and replaces the following Government of Alberta documents:

- [Guide for Pipelines Pursuant to the Environmental Protection and Enhancement Act and Regulations](#)
- [Information Requirements for Regulated Pipelines](#)

## 1.2 AER Requirements

Following AER requirements is mandatory for the responsible duty holder as specified in legislation (including applicant, licensee, operator, company, approval holder, or permit holder). The term “must” indicates a requirement. Each AER requirement that is unique to this document is numbered.

The terms “should,” “recommends,” and “expects” indicate a recommended practice, which is an approach likely to result in technically complete and consistent applications but may not be wholly suitable for all pipeline projects. Recommended practices are interspersed throughout the document.

Information on compliance and enforcement can be found on the AER website.

## 1.3 How to Use this Document

The requirements in sections 2 and 3 apply to new and amendment applications for proposed construction or proposed reclamation activities of applicable pipelines. The requirements in section 4 apply to pipelines with *EPEA* approvals that were issued after this SED was published and that require the submission of PCRA reports.

A glossary of terms appears in an appendix. Defined terms are **bolded** at first use.

## 1.4 Legislative Overview

### 1.4.1 *Alberta Land Stewardship Act*

The [Alberta Land Stewardship Act \(ALSA\)](#) provides the overarching framework for land-use planning in Alberta and defines various levels of plans: regional, subregional, and issue specific. Those plans are further supported by environmental management frameworks (EMFs) and other systems. Alberta's [Land-Use Framework](#) document and [land-use webpage](#) discuss these in further detail.

The AER may deny an application to conduct an activity occurring within the boundaries of a **regional plan** or **subregional plan**, including EMFs, if it is not satisfied that the proposed activity complies with that plan. The AER does not have authority to allow a variance to a regional or subregional plan or EMF requirement approved under *ALSA*. Applicants are responsible for ensuring the proposed activity is in accordance with the plans and must provide a summary in the application.

### 1.4.2 *Environmental Protection and Enhancement Act*

Section 1(ww) of *EPEA* defines a pipeline as a pipe for the transmission of any substance and installations in connection with that pipe with some exceptions described below. An approval is required for the construction or reclamation of a pipeline under the *Activities Designation Regulation*.

Part 2, Division 2, of *EPEA* has provisions to require specific information in *EPEA* approval applications, as outlined in the [Approvals and Registrations Procedure Regulation](#).

The AER is responsible for reviewing pipeline applications and regulatory submissions required under *EPEA* for activities under the jurisdiction of the AER, as specified in the *Responsible Energy Development Act*. The AER is not responsible for pipelines that are under the jurisdiction of Alberta Environment and Protected Areas or the Canada Energy Regulator.

For specified enactments, including *EPEA*, the AER's mandate includes the responsibility to consider the potential adverse impacts of energy resource activity on existing aboriginal and treaty rights recognized and affirmed under section 35 of the *Constitution Act, 1982*. The AER's role and responsibility is defined through the [Energy Ministerial Order 105/2014](#) and [Environment and Sustainable Resource Development Ministerial Order 53/2014](#). The Government of Alberta's Aboriginal Consultation Office (ACO) directs applicants to consult with First Nations and Métis settlements that may be impacted by the applicant's activities.

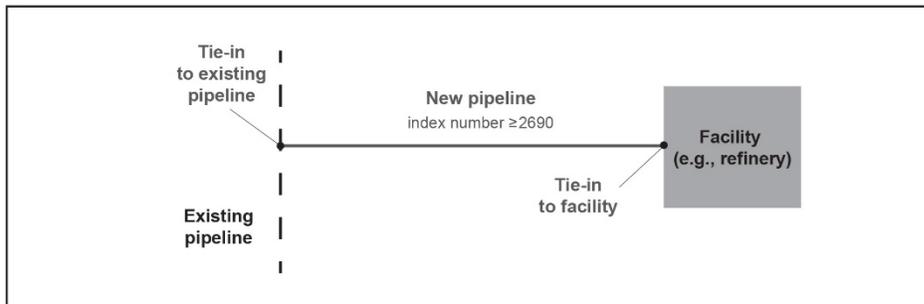
#### 1.4.2.1 *Activities Designation Regulation*

Under Schedule 1, Division 3(c) of the [Activities Designation Regulation](#), pipelines in the **White Area** with an **index number** (calculated by multiplying the outside diameter of the pipe in millimetres by the length of the line in kilometres) of 2690 or greater require an *EPEA* approval prior to construction. These pipelines are commonly known as **class I pipelines**.

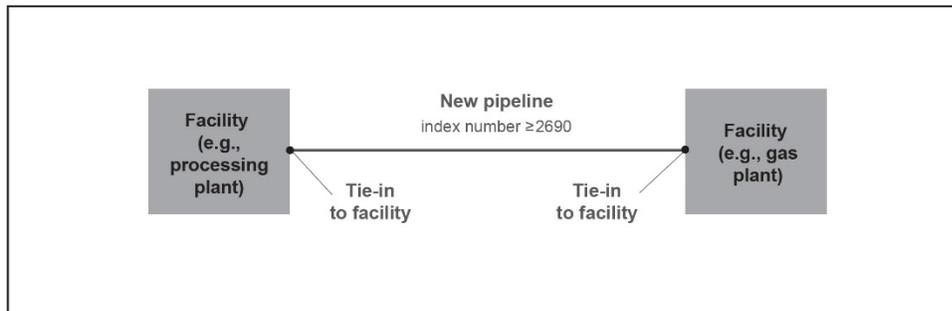
However, the definition of “pipeline” in the *Activities Designation Regulation* excludes several pipelines, including those with an index number of less than 2690 and those in the **Green Area**. These are commonly known as **class II pipelines**, which do not require an *EPEA* approval; however, such pipelines are still subject to the general provisions of *EPEA* (e.g., substance release, the pipeline must be reclaimed, a reclamation certificate is required, etc.). For a complete list of pipelines that do not require an *EPEA* approval, please refer to section 2(3)(i) of the [Activities Designation Regulation](#).

To help clarify, below are some common scenarios. If you are unsure whether a project would be classified as class I or II, please contact [EPEA.WA.Applications@aer.ca](mailto:EPEA.WA.Applications@aer.ca).

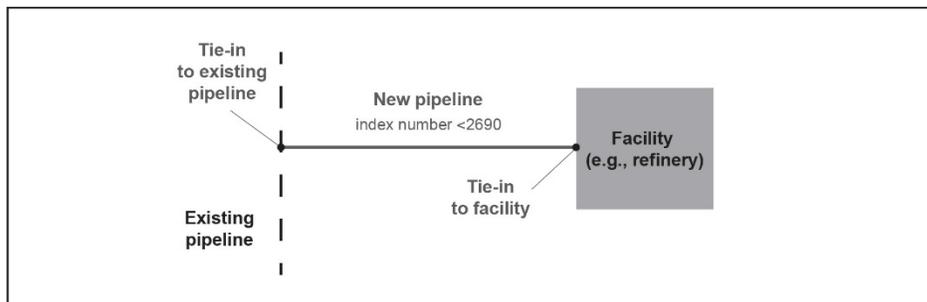
A single pipeline with an index number  $\geq 2690$ , as per section 3(i) of the *Activities Designation Regulation*, would require an *EPEA* approval (figure 1 and figure 2), whereas a single pipeline in the White Area with an index number  $< 2690$  would not (figure 3).



**Figure 1. Single pipeline in the White Area with an index number  $\geq 2690$  (class I pipeline)**



**Figure 2. Single pipeline in the White Area between two facilities with an index number  $\geq 2690$  (class I pipeline)**

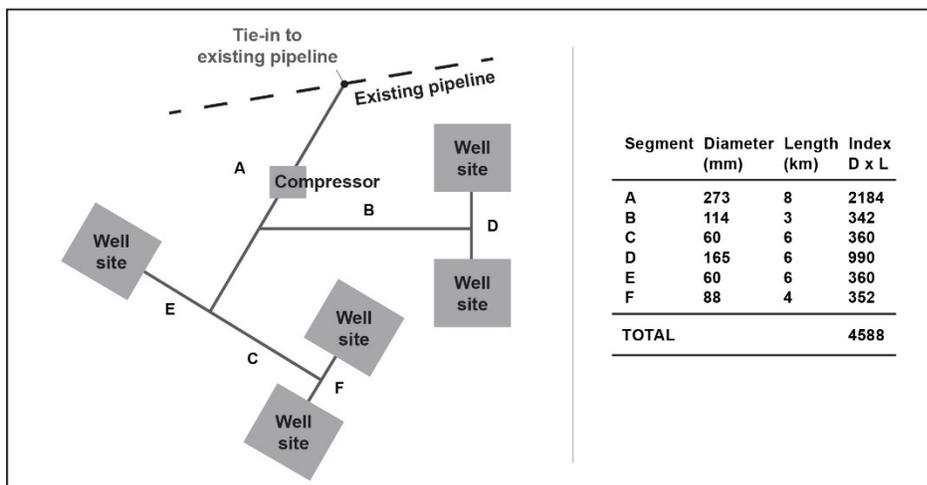


**Figure 3. Single pipeline in the White Area with an index number <2690 (class II pipeline)**

Multiple pipelines are considered one project if they tie into the same existing pipeline and

- are under the same *Directive 056* pipeline licence application, or
- will be built within the same construction season, or
- are under the same *Directive 056* pipeline licence application and will be built within the same construction season.

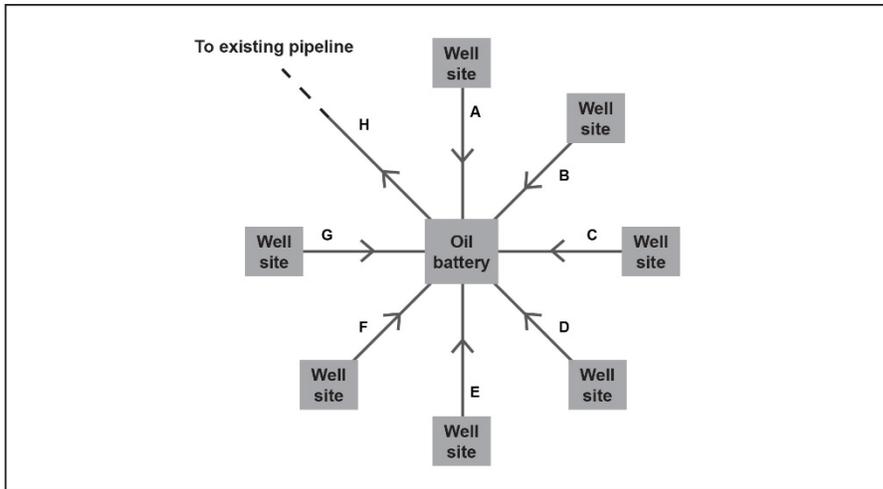
If, however, the pipeline segments are built over a period of time as separate projects (i.e., during different construction seasons and under a number of different *Directive 056* pipeline licence applications to the AER), each segment requires an *EPEA* approval only when the index number of the individual segment is  $\geq 2690$ . The 2690 index number is not applied retroactively to any of these segments when built independently. Add together the index numbers of the individual pipelines within one project, including any combination of segments A through F in the example below, and if the sum is  $\geq 2690$ , then an *EPEA* approval is required (figure 4).



**Figure 4. Multiple pipelines**

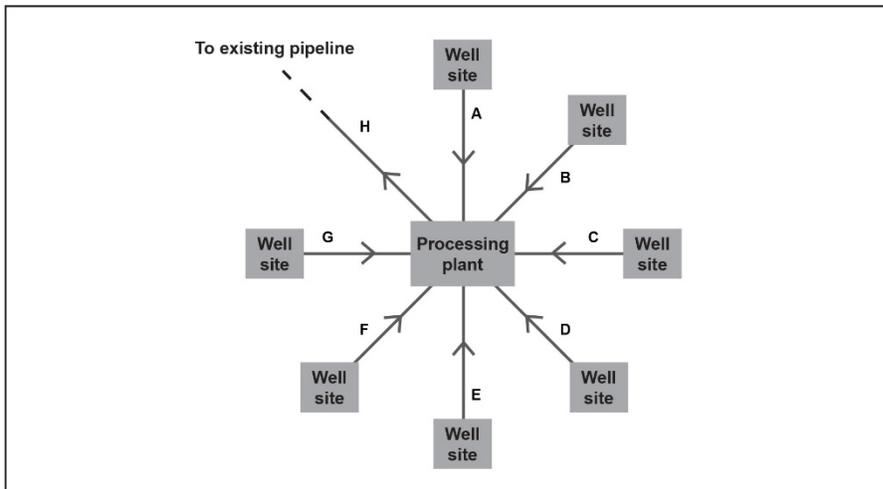
A battery or compressor site is part of a pipeline as defined in *EPEA* (figure 5). If all pipeline segments are built as part of one project (i.e., under the same *Directive 056* pipeline license application to the AER,

or within the same construction season, or under the same *Directive 056* pipeline license application and within the same construction season), and the cumulative total of the segment index numbers is  $\geq 2690$ , the entire project requires an *EPEA* approval (class I). If, however, the pipeline segments are built over a period of time as separate projects (i.e., during different construction seasons and under a number of different *Directive 056* pipeline license applications to the AER), each segment requires an *EPEA* approval only when the index number of the individual segment is  $\geq 2690$ . The 2690 index number is not applied retroactively to any of these segments when built independently.



**Figure 5. Multiple pipelines into an oil battery**

A processing plant is not part of a pipeline as defined in *EPEA* (figure 6). Each segment in itself must have an index number  $\geq 2690$  to require an *EPEA* approval, and the *EPEA* approval would only apply to that segment and not the entire project.



**Figure 6. Multiple pipelines into a processing plant**

If a pipeline traverses both the Green Area and White Area, only the lengths of the parts of the pipeline within the White Area are used in the calculation of the index number:

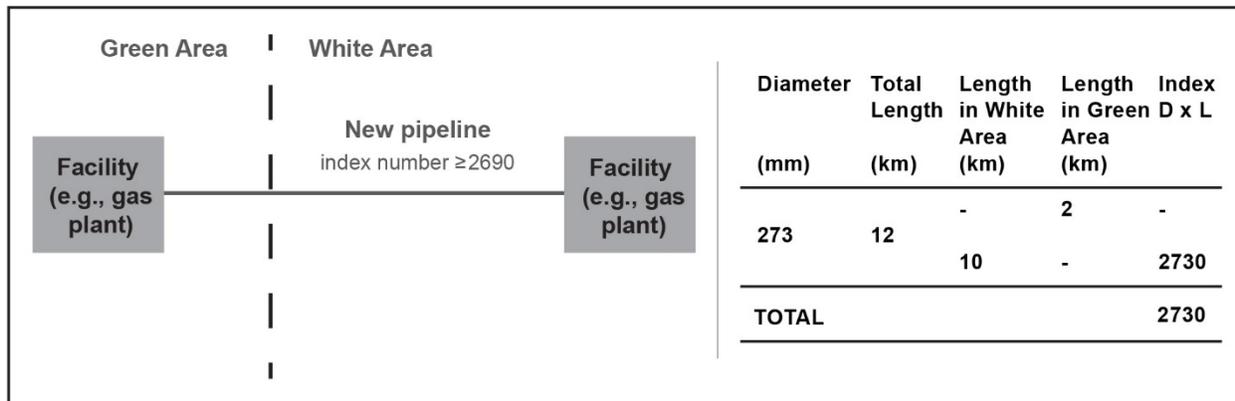


Figure 7. Single pipeline traversing both the White Area and Green Area with an index number  $\geq 2690$  (class I pipeline)

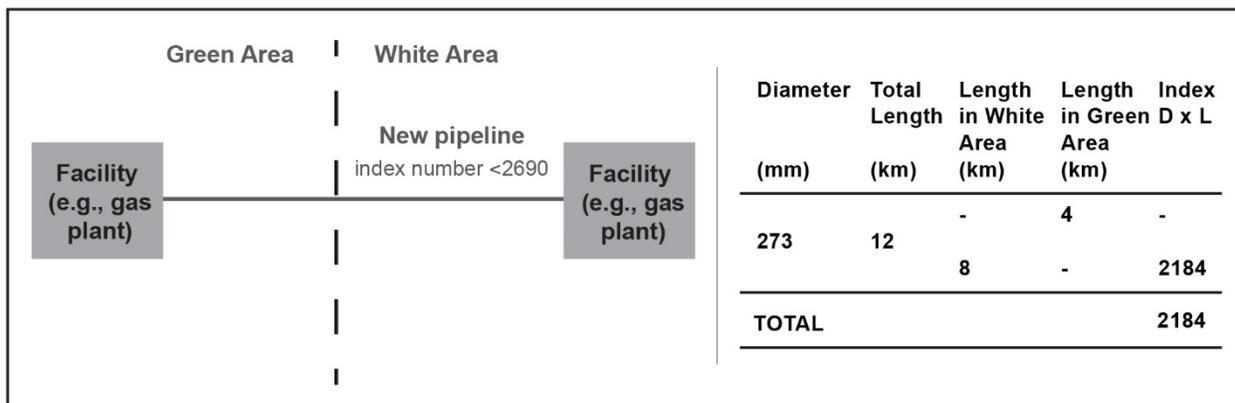


Figure 8. Single pipeline traversing both the White Area and Green Area with an index number  $< 2690$  (class II pipeline)

1.4.2.2 Approvals and Registrations Procedure Regulation

Section 3(1) of the *Approvals and Registrations Procedure Regulation* stipulates the information that must accompany an application. Table 1 is a concordance of the *Approvals and Registrations Procedure Regulation* and this SED.

Table 1. Concordance of *Approvals and Registrations Procedure Regulation* and requirements in this document

Approvals and Registrations Procedure Regulation	Section of this SED
(a) the name and address of the applicant	3.1
(b) the location, capacity and size of the activity to which the application relates	3.1

Approvals and Registrations Procedure Regulation	Section of this SED
(c) the nature of the activity, the change to the activity or the amendment, addition or deletion, as the case may be	3.1
(d) where the applicant requires an approval from the Alberta Energy Regulator or the Natural Resources Conservation Board in relation to the activity, the date of the written decision in respect of the application	3.1
(e) an indication of whether an environmental impact assessment report has been required	3.1
(f) copies of existing approvals or registrations that were issued to the applicant in respect of the activity under <i>EPEA</i> or a predecessor of <i>EPEA</i>	3.1
(g) the proposed or actual dates for construction commencement, construction completion and commencement of operation	3.1
(h) a list of substances, the sources of the substances and the amount of each substance that will be released into the environment as a result of the activity, the change to the activity or the amendment, addition or deletion, as the case may be, the method by which the substances will be released and the steps taken to reduce the amount of the substances released	3.3
(i) —	Not applicable for new <i>EPEA</i> approvals for pipelines
(j) —	Not applicable for new <i>EPEA</i> approvals for pipelines
(k) the justification for the release of substances into the environment as a result of the activity, the change to the activity or the amendment, addition or deletion, as the case may be	3.3
(l) the measures that will be implemented to minimize the amount of waste produced, including a list of the wastes that will or may be produced, the quantities and the method of final disposition of them	3.3
(m) any impact, including surface disturbance, that may or will result from the activity, the change to the activity or the amendment, addition or deletion, as the case may be	3.2, 3.3
(n) confirmation that any emergency response plans that are required to be filed with the local authority of the municipality in which the activity is or is to be carried on or with Alberta Public Safety Services have been so filed	See <i>Directive 071: Emergency Preparedness and Response</i>
(o) confirmation that there are contingency plans in place to deal with any unforeseen sudden or gradual releases of substances to the environment	3.4
(p) the conservation and reclamation plan for the activity	3.4

Approvals and Registrations Procedure Regulation	Section of this SED
(q) a description of the public consultation undertaken or proposed by the applicant	No additional information is provided in this SED.
(r) information required under any other regulation under the Act to be submitted as part of or in support of the application	3.1
(s) any other information required by the Director, including information that is addressed in a standard, code of practice or guideline in respect of the activity that is published or adopted by the Department	Additional information may be required after the application has been submitted. See the AER's webpage on the <a href="#">EPEA application review process</a> for more information.

## 2 Preapplication Meeting

The AER recommends that applicants request preapplication discussions with AER staff. A preapplication meeting request should be sent to [EPEA.WA.Applications@aer.ca](mailto:EPEA.WA.Applications@aer.ca), and the AER will identify the personnel to attend. With the meeting request, the applicant also should submit the project description information outlined in section 3.1 and its subsections (or as much of it as is reasonable at the time) and any specific questions for the AER.

During the preapplication meeting, applicants should be prepared to answer any questions from the AER on the information submitted and to present an estimated timeline on any Indigenous consultation required by the ACO. If consultation is required, an adequacy decision report from the ACO is required before the AER can decide on an application (see section 3.5 for additional information).

Where applicants believe that a proposed pipeline may require further consideration under the environmental assessment process, the AER recommends that they request a preapplication meeting as early as possible in the project development process.

Examples of agenda items that might be discussed in a preapplication meeting include the following:

- overall scope of project
- level of soils information required to develop acceptable soil conservation procedures
- planned field surveys, including any proposed alternative approaches
- seek AER input on any challenges (e.g., known environmental sensitivities, alternative assessment, potential for delayed or incomplete field surveys, issues around land titles and occupancy rights, etc.)
- discuss what is considered a deficiency within an application
- other agency consultation or approval requirements (e.g., ACO, Environment and Protected Areas, Historic Resources Management Branch, Fisheries and Oceans Canada, Alberta Public Safety Services, etc.)

### 3 Pipeline EPEA Approval Applications

This section describes the information that is either required or expected for the AER to review and decide on new applications or amendment applications to construct or reclaim class I pipelines. In this section, the term “consultations” includes any consultation directed by the ACO.

As per section 67 of *EPEA*, changes to approved activities also must be approved. New activities or disturbance not documented in the initial application must be described and included in an amendment application (e.g., pipeline alignment and timeline changes for construction and reporting).

- 1) If the activity is within the boundary of an approved regional plan as set out under *ALSA*, the application must assess the following in a manner that allows the AER to assess an application under the applicable regional plan:
  - a) whether that activity would also be within the boundaries of a designated conservation area, a provincial park, a provincial recreation area, or a public land area for recreation and tourism;
  - b) whether that activity is consistent with the land uses established in the applicable regional plan or with any of the outcomes, objectives, and strategies in that same regional plan;
  - c) how that activity is consistent and complies with any regional trigger or limit established under the management frameworks detailed under the applicable regional plan or any notices issued in response to an exceedance of a regional trigger or limit.
- 2) The application must also include any relevant information that allows the AER to assess an application under
  - a) applicable regional initiatives or plans, and
  - b) any government-approved regional initiatives or plans that pertain to the area with requirements that relate to environment and resource management for the activity, such as integrated resource plans, water management plans, municipal development plans, and subregional plans.

#### 3.1 Project Description

- 3) Applications must include a project description that contains the following information at a minimum:
  - a) project applicant name and business associate (BA) code
    - The project applicant name is the name that should appear on an approval.
    - A BA code represents an operator, company, consultant, etc. that accesses OneStop. BA codes consist of four alphanumeric characters.
  - b) project applicant contact information
    - The name and address of the contact person representing the lead company and working interest partners
  - c) project name (as it should appear on the approval)

- d) whether the application is new or an amendment
  - e) submission date
  - f) nature of the project
    - purpose of the project
    - capacity and size of the activity to which the application relates
    - products the pipeline will transport
  - g) project location & schedule
    - LSD / UTM of route terminal locations
    - the start and end locations of the pipelines
    - schedule for the construction and reclamation phases of the project
  - h) detailed project description
    - pipeline index numbers (show calculations)
    - width of right-of-way, width of ditch, depth of ditch, number of pipelines to be constructed in right-of way
    - installations associated with the pipeline (e.g., compressor stations, regulator stations, meter stations, pump stations, tank farms, pigging facilities, emergency shutdown system, geothermal booster and heat transfer stations, etc.)
    - ancillary facilities such as camps, access roads, and powerlines
  - i) list of previous approvals under *EPEA*
    - whether an environmental impact assessment report has been required
    - for amendment applications, a list of previous approvals under *EPEA*, including date, approval number, and website link (if available)
  - j) list of other approvals required for the proposed activity or codes of practice that will be followed
    - The applicant is responsible for obtaining all approvals, permits, or licences (or following codes of practice) that are required by the AER. Provide a list and estimated application/notification dates.
- 4) At the request of the AER, a more detailed project description providing context for the potential project effects under section 3.3 must also be provided.

### 3.1.1 Maps

- 5) The application must include a map, or a large-scale overview map accompanied by detailed alignment maps, of the **project site** at an appropriate scale, with the following layers:
  - a) legal land grid
  - b) a scale bar
  - c) Green Area (forested; includes most of northern Alberta as well as mountain and foothills areas along the western boundary) and White Area (settled; includes populated central, southern, and Peace River areas; roughly 75% private land) boundaries which exist in the mapped areas
  - d) land-use boundaries (e.g., municipal boundaries, parks, recreation areas, etc.)
  - e) land ownership (i.e., Crown, private)
  - f) First Nation reserve lands and Métis settlements
  - g) Alberta Merged Wetland Inventory Class layer or equivalent (e.g., ABMI Alberta Wetland Inventory Data); field-based, project-specific wetland data is preferable when available
  - h) mapped watercourses, including from both
    - i) the Government of Alberta' GeoDiscover Base Stream and Flow Representation Layer and
    - ii) the Government of Alberta's GeoDiscover Base Waterbody Polygon Arc Layer
  - i) any unmapped watercourses and waterbodies identified through field assessment and validation, including descriptions of the habitats present and fisheries potential
  - j) wildlife sensitivity and critical habitat layers (available via the Landscape Analysis Tool and the planning tool in OneStop) that provide information on the locations of sensitive wildlife populations.
- 6) All project site maps must
  - a) identify the different activity types (e.g., right-of-way, **temporary workspace**, installations associated with the pipeline, ancillary facilities, borrow pits, etc.) and
  - b) include a table detailing area, in hectares, per type of activity.
- 7) The application must include a spatial map or file in portable document format (PDF) that contains the geographic data of the project site, differentiated according to type of activity (e.g., right-of-way, temporary workspace, installations associated with the pipeline, ancillary facilities, borrow pits, etc.).

Spatial map or file types such as shapefiles (.shp) or keyhole markup language (.kml/.kmz) files may also be provided by the applicant but are optional.

### 3.1.2 Route Justification

- 8) The application must describe and justify the selection of the proposed route, including a discussion of the following topics and any other selection criteria used:
- a) safety (e.g., setbacks, exposure, etc.)
  - b) technical (e.g., geotechnical, engineering, etc.)
  - c) environmental (e.g., existing land use such as common corridors, interactions with the special circumstances in table 5, wetlands, water body setbacks, etc.)
  - d) concerns raised during consultations carried out by the applicant

### 3.2 Predisturbance Assessment Information

- 9) The application must identify the essential physical, chemical, and biological characteristics of the environment (**biophysical elements**) that interact with the proposed activities (e.g., clearing, grading, topsoil stripping and storage, subsoil excavating and storage, trenching, stringing, lowering in, backfilling, pressure testing, commissioning, mechanical cleanup, final cleanup, reclamation, etc.).

See section 3.3 for additional information.

- 10) The application must include predisturbance assessments of the biophysical elements identified in requirement 9 within the **project impact area**, supported by field surveys to support effective mitigation planning (i.e., development of the project-specific environmental protection plan).

Predisturbance assessments provide detailed information of the project impact area, in particular the baseline conditions of the biophysical elements and the potential project effects.

Field surveys should be conducted according to published standards, including those listed below as applicable. Further, the application should describe any advanced technologies (e.g., drones, artificial intelligence, etc.) used to produce predisturbance information.

- [\*Sensitive Species Inventory Guidelines\*](#)
- [\*Alberta Native Plant Council Guidelines for Rare Vascular Plant Surveys in Alberta – 2012 Update\*](#)
- [\*Conservation Assessments in Native Grasslands\*](#)
- [\*Standard for Sampling of Small Streams in Alberta \(Public Version\)\*](#)
- [\*Aquatic Ecosystems Field Sampling Protocols\*](#)
- [\*Alberta Wetland Identification and Delineation Directive\*](#)

- 11) If field surveys are not conducted, or if available published standards were not followed, the application must provide justification and describe how the baseline conditions of the biophysical elements and the potential project effects were identified satisfactorily to support effective mitigation planning.

Any requirements for assessments and recommendations by qualified professionals or persons under the applicable *Water Act* codes of practice will satisfy the needs of predisturbance assessments for watercourses in this SED. See the Government of Alberta website for more information at Water > Water Legislation and Resources > [Water Act Codes of Practice](#). Similarly, authenticating professional signoff is required on regulatory documents submitted under the *Alberta Wetland Policy*. See the Government of Alberta website for more information at Water Conservation and Wetlands > Wetlands > [Alberta Wetland Policy Implementation](#).

- 12) The predisturbance assessments in requirement 10 for landscape, soil, and vegetation evaluations must be conducted or supervised by a professional member as defined in the Association of Professional Engineers and Geoscientists of Alberta's [Professional Responsibilities in Completion and Assurance of Reclamation and Remediation Work in Alberta](#).
- 13) The application must include the following predisturbance assessment information:
  - a) definition of the project impact area for each biophysical element
  - b) areas or features within the project impact areas requiring special consideration, including the following:
    - i) areas designated as having regional, provincial, or national importance (e.g., ecological reserves, wilderness areas, provincial parks, natural areas, heritage rangelands, special areas, [areas included in the listing of historic resources under the Historical Resources Act](#), subregional plan areas, Eastern slopes southern portion (see figure 1 in [Informational Letter II 93-9: Oil and Gas Developments Eastern Slopes \(Southern Portion\)](#)), Crown reservations, etc.)
    - ii) wetlands as delineated following the [Alberta Wetland Identification and Delineation Directive](#)
    - iii) class of water bodies, as per section 7 of the [Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body](#) or that is designated by a class symbol on a map that is listed in Schedule 6
    - iv) the presence of federally and provincially listed vegetation, fish, and wildlife species at risk, or their habitat, such as the following:
      - published range maps
      - critical habitat
      - any historical presence as indicated in the Fish and Wildlife Management Information System and the Alberta Conservation Information Management System
    - v) components of wildlife habitat considered to be key wildlife features

- vi) components of fish habitat considered to be key features (e.g., spawning and nursery/rearing areas, connectivity, overwintering, etc.)
- vii) timing windows/restrictions and setbacks for vegetation, fish, fish habitat key features, wildlife, and key wildlife features, as identified in resources such as the following:
  - [Water Act Codes of Practice: Pipelines/Telecommunications Lines Crossing a Water Body/Water Course Crossings Management Area Maps](#)
  - [General Nesting Periods of Migratory Birds](#)
  - [Recommended Land Use Guidelines: Key Wildlife and Biodiversity Zones](#)
  - [Recommended Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta](#)
  - [Master Schedule of Standards and Conditions](#)
- c) soil evaluation reports and maps (see section 3.2.1)
- d) a clubroot management plan if the proposed routes traverse a county with a clubroot infestation as identified on the most recent [Cumulative clubroot infestations in Alberta map](#)

Clubroot management plans should be developed using provincial and other best practices for clubroot management, such as [Alberta Clubroot Management Plan](#) and [Clubroot in Alberta](#).

- 14) If a clubroot management plan is required, the applicant must also
  - a) conduct clubroot sampling and confirm in the predisturbance assessment that clubroot sampling was completed, or
  - b) in the predisturbance assessment, provide details on the clubroot cleaning process that will be implemented during all project activities.
- 15) If the applicant conducts any clubroot sampling, the applicant must
  - a) retain full details of the clubroot sampling results for the duration of the approval and
  - b) make the full details of the clubroot sampling results available to the AER upon request.
- 16) The applicant must
  - a) retain full details of the predisturbance assessments for the duration of the approval and
  - b) make the full details of the predisturbance assessments available to the AER upon request.

### 3.2.1 Soil Evaluations

- 17) Soil evaluations must be conducted on a proposed project site before submitting an application, to provide predisturbance information about landforms and soils to support soil conservation planning.

The predisturbance information is used to determine the following:

- **topsoil** availability, quality, and depth
- subsoil quality and depth
- storage requirements for topsoil, subsoil, and **spoil**, as well as adequate separation between piles
- right-of-way width requirements
- procedures and equipment requirements to remove and replace materials
- **problem soils** and necessary stripping/handling, storage, replacement, or soils handling procedures
- reclamation and revegetation procedures

#### 3.2.1.1 Location and Number of Inspection Sites

Preliminary soil **map units** and possible inspection sites can be delineated before fieldwork begins using desktop methods. The appropriate level of soil evaluation depends on the presence of potential problem soils and the variability of the soils on a proposed project site.

18) Level 1 soil evaluations are required where potential problem soils are *not* present.

19) For level 1 soil evaluations,

- a) the evaluations must have one inspection site per soil map unit or, if a particular soil map unit is >1 km, must have least one inspection site per 1 km, and
- b) visual field inspections must be conducted (see section 3.2.1.4).

20) Level 2 soil evaluations are required where potential problem soils are present.

21) For level 2 soil evaluations,

- a) the evaluations must have one inspection site per soil map unit or, if a particular soil map unit is >1 km, must have as many sites as necessary to characterize the segment with at least 2–5 inspection sites per 1 km,
- b) visual field inspections must be conducted (see section 3.2.1.4), and
- c) field samples must be collected for analysis to verify the extent and magnitude of problem soils with chemical or biological risks (see section 3.2.1.5). Field samples may be collected for analysis to verify the extent and magnitude of problem soils with physical risks.

If sufficient existing soil data are available to meet the requirements of level 1 or level 2 surveys, whichever is pertinent to the project (i.e., from parallel right-of-way), additional field inspections may not be required.

Combinations of levels 1 and 2 may be necessary to describe the soils along a right-of-way. For example, existing information may indicate the presence of Solonetzic soils on one-third of a 30 kilometre (km)

pipeline right-of-way. A level 2 evaluation may be required for the 10 km with Solonetzic soil, while a level 1 evaluation may be sufficient for the remaining 20 km.

#### 3.2.1.2 Soil Mapping

When generating a pipeline soils map, or including soil data on environmental alignment sheets, it is important to consider that soil map units and possible inspection sites can be delineated before fieldwork begins using desktop methods. A single soil salvage procedure can optimize soil conservation over a variety of soil conditions within an 800 metre (m) pipeline right-of-way segment, and it is generally not necessary to delineate segments shorter than 800 m. Segments shorter than 800 m that may require delineation and separate salvage procedures include the following:

- sloughs or wet areas, including seasonally wet areas
- stream crossings
- road or highway crossings
- extreme variations in topography
- non-uniform areas of problem soils
- changes in land use
- changes in parent materials

#### 3.2.1.3 Inspection Methods

22) Soil inspections must be completed using physical survey methods such as soil pit, hand auger, or mechanical coring device.

23) Deep soil inspection locations must be completed to a minimum depth of 50 cm.

24) If deep soil inspection locations cannot be completed to a minimum depth of 50 cm, the application must provide justification as to why.

25) Where confirmation of lower subsoil quality is required, soil inspections must be completed to trench depth.

26) For topsoil classification and depth assessments, shallow confirmation sites must be completed to a depth of 30 cm.

If possible, inspections should be done in dry and unfrozen soil conditions.

#### 3.2.1.4 Visual Field Inspections

27) Landforms and soils must be described and classified according to the [\*Canadian System of Soil Classification\*](#) (CSSC), and soils must be classified to the subgroup level.

28) Characteristics used to describe landforms and soils must be provided and are noted in table 2 and table 3.

**Table 2. Visual landform and vegetation characteristics**

<b>Characteristic</b>	<b>Relationship to pipeline</b>
Parent material	<ul style="list-style-type: none"> <li>Indicates potential for compaction, erosion, and water holding capacity for revegetation</li> </ul>
Surface features	<ul style="list-style-type: none"> <li>Indicates areas such as sloughs and marshes</li> <li>Indicates areas of adverse topography</li> <li>Indicates variability of topsoil depths that may require changes in surface stripping procedures (e.g., knob and kettle topography)</li> </ul>
Topography	<ul style="list-style-type: none"> <li>Indicates potential for erosion</li> <li>Determines grading requirements</li> <li>Determines special equipment requirements</li> <li>Determines special slope modification practices (e.g., drainage berms)</li> </ul>
Surface and subsurface drainage	<ul style="list-style-type: none"> <li>Indicates seep areas and slope discharge areas</li> <li>Aids assessment of slope stability and whether soil drainage conditions will permit easy movement of vehicles along the right-of-way</li> </ul>
Land use	<ul style="list-style-type: none"> <li>Affects soil conservation and reclamation procedures</li> </ul>
Vegetation	<ul style="list-style-type: none"> <li>Indicator of present land capability</li> </ul>
Surface salts	<ul style="list-style-type: none"> <li>Indicator of problem soils and drainage problems</li> </ul>

**Table 3. Visual soil characteristics**

<b>Characteristic</b>	<b>Relationship to pipelines</b>
Depth of the major <b>horizons</b> (A, B, and C to trench depth) and horizon designation according to CSSC	<ul style="list-style-type: none"> <li>Indicates depth of soil to be stripped and depth at which problem materials may occur</li> <li>Assists in determining procedures and equipment for soil handling</li> <li>Indicates storage space and location requirements</li> <li>Indicates right-of-way width requirements</li> </ul>
Colour	<ul style="list-style-type: none"> <li>Where colours are contrasting, differentiates between topsoil and subsoil horizons during surface stripping</li> </ul>
Texture and structure	<ul style="list-style-type: none"> <li>Determines compaction potential, ease of handling, and erodibility of major soil horizons</li> <li>Used to differentiate between topsoil and subsoil horizons where colours are not contrasting</li> </ul>
Presence of salts and carbonates	<ul style="list-style-type: none"> <li>Indicators of problem soils</li> <li>Indicates reclamation suitability of A and B horizons</li> <li>Indicates whether separate storage and extra right-of-way width should be considered</li> <li>Indicates revegetation species compatibility</li> </ul>

Characteristic	Relationship to pipelines
Stones, Bedrock, and Coarse Fragment Content	<ul style="list-style-type: none"> <li>• Indicators of problem soils</li> <li>• May influence soil handling procedures and reclamation practices</li> <li>• May dictate use of certain types of construction equipment</li> </ul>

### 3.2.1.5 Analysis of Field Samples

29) Table 4 lists analyses that must be performed on soil samples.

**Table 4. Soil analyses**

Analysis	Relationship to pipelines
pH	<ul style="list-style-type: none"> <li>• Indicates potential revegetation problems</li> <li>• Indicates fertility requirements in some cases</li> <li>• Indicates if salinity analyses may be required</li> </ul>
Salinity Analysis:	<ul style="list-style-type: none"> <li>• Confirms nature and severity of the problem</li> <li>• Confirms appropriate amendments and rates</li> <li>• Confirms appropriate methods and species for revegetation</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Soluble cations</b> (Na<sup>+</sup>, Ca<sup>+2</sup>, Mg<sup>+2</sup>, K<sup>+</sup>)</li> <li>• <b>Saturation percentage</b> (sat %)</li> <li>• <b>Sodium adsorption ratio</b> (SAR)</li> <li>• <b>Electrical conductivity</b> (EC)</li> </ul>	

30) The analyses listed in table 4 must be conducted in accordance with the book [Soil Sampling and Methods of Analysis](#).

31) Analysis of complete representative soil profiles must be conducted for each soil type.

32) Where the **suitability of upper subsoils** may be reduced following soil replacement, laboratory analysis to trench depth is required to confirm the suitability of the lower subsoil.

33) Analyses also are required to determine quality of any subsoil materials that could be incorporated into the surface salvage material, including

- a) areas where the A horizon is less than 10 centimetres (cm) in depth, or
- b) where the A horizon is to be overstripped or not stripped at all.

### 3.2.1.6 Report

34) The application must include a soil evaluation report, which must include all of the following:

- a) an outline of the methods used, including soil inspection density, sampling density, sampling techniques, and laboratory analyses carried out
- b) a representative description of each soil type encountered along the right-of-way, including the following:
  - i) a description of landforms indicated in table 2

- ii) a soil profile description using the [\*Canadian System of Soil Classification\*](#) format, and the information indicated in table 3
  - iii) laboratory analysis results
  - iv) comments on depth of topsoil; degree of colour change; presence of salinity, sodicity, or other problems (e.g., gravel lenses, compacted soils, etc.); and comments on any special stripping or construction procedures required
- c) in an appendix attached to the soil evaluation report, a description of all profiles inspected and sampled

Additional requirements for the submission of soil evaluation information on environmental alignment sheets are discussed in section 3.4.1.

### 3.3 Potential Project Effects

#### 3.3.1 Description

- 35) The application must include a comprehensive table describing the potential project effects, from all steps of the pipeline construction process (e.g., clearing, grading, topsoil stripping and storage, subsoil excavating and storage, trenching, stringing, lowering in, backfilling, pressure testing, commissioning, mechanical cleanup, final cleanup, reclamation, etc.) identified through predisturbance assessments.
- 36) Potential project effects in the table from requirement 35 must be organized according to the essential physical, chemical, and biological characteristics of the biophysical elements that interact with the proposed construction and reclamation activities.
- 37) Any special circumstances listed in table 5, or informed through consultations carried out by the applicant as it relates to biophysical elements, must be described in the potential project effects table from requirement 35, if applicable to the proposed activities.

**Table 5. Biophysical element special circumstances**

Biophysical elements	Special circumstances
Atmosphere	<ul style="list-style-type: none"> <li>• Outstanding stakeholder concerns regarding nuisance (e.g., dust, noise)</li> </ul>
Terrain	<ul style="list-style-type: none"> <li>• Steep slopes (e.g., any slope that poses a significant challenge or hazard to the safety, quality, or efficiency of the pipeline installation construction, operation, or reclamation, and that requires special planning, design, or mitigation measures to address the site-specific conditions)</li> </ul>
Soils	<ul style="list-style-type: none"> <li>• Interactions with problem soils</li> <li>• Interactions with clubroot</li> <li>• High admixing potential (e.g., winter soil salvage, unstable trench)</li> </ul>

Biophysical elements	Special circumstances
Vegetation & wetlands	<ul style="list-style-type: none"> <li>• Interactions with native grassland</li> <li>• Interactions with rare plant species</li> <li>• Interactions with critical habitat</li> <li>• Interactions with provincially or federally listed species</li> <li>• Recommended timing restrictions and setbacks are not followed</li> </ul>
Wildlife	<ul style="list-style-type: none"> <li>• Interactions with critical habitat</li> <li>• Interactions with provincially or federally listed species</li> <li>• Interactions with key wildlife features</li> <li>• Timing restrictions and setbacks are not followed</li> </ul>
Fish and fish habitat	<ul style="list-style-type: none"> <li>• Interactions with critical habitat</li> <li>• Interactions with provincially or federally listed species</li> <li>• <i>Water Act</i> codes of practice are not followed</li> </ul>

Table 6 is an example of a table of potential project effects to biophysical elements, provided for illustrative purposes.

**Table 6. Example of potential project effects to biophysical elements**

Biophysical element	Potential project effects	Description, including special circumstances (see table 5)
Atmosphere	<ul style="list-style-type: none"> <li>• Change in air quality (e.g., dust)</li> <li>• Change in noise during construction and reclamation</li> </ul>	<ul style="list-style-type: none"> <li>• Dust resulting from grading, excavation, construction traffic on access roads</li> <li>• Unresolved concerns from consultations carried out by the applicant regarding noise/nuisance to livestock</li> </ul>
Terrain	<ul style="list-style-type: none"> <li>• Changes in terrain during construction</li> </ul>	<ul style="list-style-type: none"> <li>• Blasting of bedrock</li> <li>• Cuts in slopes</li> <li>• Slope instability (e.g., slumping, mud slides, contact with high groundwater table, etc.)</li> </ul>
Soil	<ul style="list-style-type: none"> <li>• Change to soil quantity (e.g., wind, water erosion, etc.)</li> <li>• Change to soil quality (e.g., admixing, compaction, clubroot interactions, contamination, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Wind erosion on windward side of slopes, soil stockpiles</li> <li>• Interactions with clubroot</li> <li>• Soil compaction</li> <li>• Admixing</li> <li>• Fuel spills</li> </ul>
Vegetation and wetlands	<ul style="list-style-type: none"> <li>• Change in vegetation communities (e.g., temporary loss of trees and shrubs, community composition of native grassland)</li> <li>• Change in vegetation species (e.g., loss of rare plants, increase in invasive species, etc.)</li> <li>• Changes to wetlands</li> </ul>	<ul style="list-style-type: none"> <li>• Interacts with limber pine</li> <li>• Loss of native grassland species</li> <li>• Change in wetland function (e.g., loss of wetland area, change of wetland type, change in water movement, etc.)</li> </ul>

<b>Biophysical element</b>	<b>Potential project effects</b>	<b>Description, including special circumstances (see table 5)</b>
Wildlife	<ul style="list-style-type: none"> <li>• Changes to wildlife movement</li> <li>• Changes to wildlife habitat availability</li> <li>• Changes to wildlife abundance</li> </ul>	<ul style="list-style-type: none"> <li>• Activities will occur during the timing restrictions of a key wildlife biodiversity zone</li> <li>• Activities will be within the recommended setback of key wildlife features</li> <li>• Activities will occur within subregional plan area</li> </ul>
Fish and fish habitat	<ul style="list-style-type: none"> <li>• Change to fish habitat quality</li> <li>• Change to fish health</li> </ul>	<ul style="list-style-type: none"> <li>• Interaction with Athabasca rainbow trout critical habitat</li> <li>• Restricted activity period for Athabasca rainbow trout cannot be followed</li> <li>• Water quality (erosion and sedimentation, accidental releases, etc.) during construction</li> <li>• Physical alteration during in-stream construction</li> <li>• Riparian alteration during clearing and construction</li> </ul>

### 3.3.2 Mitigation

38) The application must include mitigation measures for each of the potential project effects identified in the potential project effects table from requirement 35.

39) The applicant must implement each mitigation specified below that is applicable to their project:

#### **Wildlife**

- a) Conduct wildlife sweeps prior to disturbance, in accordance with the [Wildlife Sweep Protocols: Sensitive Species Inventory Guidelines](#).

#### **Timber Clearing and Salvage**

- b) Conduct timber clearing and salvage procedures in a manner that minimizes
- i) surface soil loss and degradation;
  - ii) the disturbance of adjacent, undisturbed forest cover; and
  - iii) the loss of merchantable timber on Crown lands in the White Area or on White Area Freehold land where the landowner, occupant, or rightsholder does not express a preference.

#### **Soil Conservation**

- c) Wherever topsoil degradation/loss may occur from approved activities, topsoil must be stripped according to the appropriate soil handling procedures (e.g., two-lift, three-lift, overstrip, etc.) as identified or supervised by a professional member as defined in [Professional Responsibilities in Completion and Assurance of Reclamation and Remediation Work in Alberta](#).

- d) Use appropriate soil handling procedures to prevent impacts to soil quality due to problem soils.
- e) Suspend soil handling when conditions (e.g., wet, frozen, wind, etc.) exist that could result in the degradation or loss of topsoil or upper subsoil.
- f) Soil salvage must only be conducted when conditions are most protective of the soils at hand.
- g) Salvage topsoil and stockpile separately from upper subsoil and spoil, as applicable (depending on the soil handling procedures used).
- h) Soil salvage stockpile locations must be recorded accurately so that they can be located in the future.
- i) Subsoil materials to be stripped with the A horizon must be of sufficient quality that the physical and chemical properties of the replaced topsoil will not be adversely affected.
- j) Stockpile subsoil on areas where topsoil has been removed or on a material that will prevent mixing, loss, or degradation of the topsoil.
- k) Stockpile spoil on areas where topsoil has been removed or on a material that will prevent mixing, loss, or degradation of the topsoil.
- l) Using all necessary erosion control methods, protect stockpiled topsoil from loss or degradation.
- m) Using all necessary erosion control methods, protect stockpiled upper subsoil from loss or degradation.

### **Waste Management**

- n) Do not release waste from the approved project site or activities except in accordance with applicable direction (e.g., [\*Directive 050: Drilling Waste Management\*](#)) or as authorized by an *EPEA* approval.
- o) Do not bury any waste within or adjacent to the pipeline alignment.
- p) A plan for waste management in the project-specific environmental protection plan must be included in the application (see section 3.4).

### **Wetlands**

- q) Stockpile topsoil and wetland soils separately.

### **Reclamation**

- r) Contour the approved project site so that it is comparable with predisturbance conditions (e.g., slopes, run-off/drainage, watercourse crossings, etc.) and the adjacent, undisturbed landscape.
- s) Any constructed pipeline water crossings having high erosion potential must be properly armoured and stabilized or otherwise protected from erosion.
- t) All riparian and wetland areas must be stabilized and revegetated on the approved project site.

- u) Replace all salvaged soil materials from the approved project site. Within the pipeline alignment, place spoil in the trench. Where applicable, spread upper subsoil evenly over contoured spoil and spread topsoil evenly over contoured upper subsoil or spoil.
- v) Alleviate compaction in all replaced upper subsoil and spoil before topsoil replacement.
- w) Alleviate any compaction in replaced topsoil.
- x) Maintain a weed control program as per the Alberta [\*Weed Control Act\*](#) until new vegetation on the pipeline alignment is re-established and is self-sustaining, or is under active management by the landowner or occupant.

The AER expects the applicant to identify and use the most appropriate standards available. The application should include references to all standards used in the development of the application. Examples of standards that may be applicable are listed below:

- [\*Alberta Clubroot Management Plan\*](#)
- [\*Salt Contamination Assessment and Remediation Guidelines\*](#)
- [\*Decontamination Protocol for Work in or Near Water\*](#)
- [\*Master Schedule of Standards and Conditions\*](#)
- [\*Principles for Minimizing Surface Disturbance in Native Grassland\*](#)
- [\*Recovery Strategies for Disturbance in Native Grasslands\*](#)
- [\*Manual 007: Principles for Minimizing Surface Disturbance in Native Prairie and Parkland Areas\*](#)
- [\*Best Management Practices for Pipeline Construction in Native Prairie Environments\*](#)
- [\*Guidelines for Alternative Soil Handling Procedures During Pipeline Construction\*](#)

Concerns identified through consultations carried out by the applicant regarding current standards for conservation, reclamation, and monitoring should also be considered and discussed.

- 40) If standards that are applicable to the proposed activities are not followed, then a rationale must be provided in the application.

### 3.3.3 Residual Project Effects

Applicants should assume that, at a minimum, if the special circumstances listed in table 5 are applicable, then there will be residual effects (i.e., those remaining after accounting for mitigation) associated with that circumstance.

- 41) The application must include a comprehensive table describing the residual project effects, including a rationale if residual effects associated with the special circumstances in table 5 are not assumed.

### 3.4 Environmental Protection Plan

- 42) The application must include a project-specific environmental protection plan (EPP), which must consist of the following components:
- a) environmental alignment sheets (see section 3.4.1)
  - b) a description of mitigation measures for each of the potential project effects identified in the potential project effects table from requirement 35 (see requirement 38)
  - c) a description of the process to verify that the mitigations are effective (see section 3.4.2)
  - d) **contingency plans** (see section 3.4.3)
  - e) a commitment to prepare a table or alignment sheets, during the construction phase of the project, that identifies potential inspection sites (e.g., locations where residual effects were assumed, locations where contingency measures were implemented, sites of concern, etc.) to be included in postconstruction reclamation assessments (see section 4)

The procedures specified in the applicant's EPP are enforced under an *EPEA* approval, if issued. The approval holder is responsible for ensuring that any contractors are fully conversant with the terms and conditions of the *EPEA* approval, including the EPP.

#### 3.4.1 Environmental Alignment Sheets

- 43) The EPP must include environmental alignment sheets covering the entire project site.
- 44) The boundaries of soil map units of uniform or repeating soil and land features, indicating similar soil conservation procedures, must be delineated once soils have been inspected and characterized.
- 45) The base map of all environmental alignment sheets must be satellite imagery or aerial photographs.
- 46) At a minimum, the following information must be plotted on each environmental alignment sheet:
- a) final delineated soil map units, including a legend to describe the soil map units delineated, to serve as a link between the map and the soil evaluation report
  - b) soil information and soil conservation procedures
  - c) soil salvage depths and methods
  - d) watercourses, water bodies, and wetland mapping
  - e) ecosites, if applicable
  - f) key wildlife features, wildlife sensitivity layers, and critical habitat
  - g) rare plant locations
  - h) levels of clubroot mitigation
  - i) land use
  - j) the specific locations where mitigations to avoid or reduce potential project effects will be applied

- 47) If data from multiple sources or years of data collection (e.g., historical and current soil surveys) are used, each data source must be clearly indicated on maps (e.g., colour coding).
- 48) Areas requiring special procedures must be designated as separate soil map units on environmental alignment sheets.

### 3.4.2 Verification of the Effectiveness of Mitigation Measures

Approval holders are responsible for ensuring that mitigation measures are effective.

- 49) To verify the effectiveness of the mitigation measures implemented during construction or reclamation, mitigation measures must be monitored and evaluated to ensure that the mitigations are effectively avoiding or reducing the potential project effects.

Further, the application should describe any advanced technologies (e.g., drones, artificial intelligence, etc.) used for monitoring or evaluating mitigations.

- 50) The EPP must include a description of the approach to verify the effectiveness of mitigation measures, which must include at least the following:

- a) the mitigations that are being monitored
- b) the methods for monitoring them
- c) the monitoring schedule
- d) the approach for determining effectiveness/ineffectiveness of the mitigations

### 3.4.3 Actions to Correct Ineffective Mitigation Measures

Approval holders are responsible for adapting mitigation measures, or implementing contingencies, before they fail.

- 51) The EPP must include contingency plans for the following events:

- a) releases (e.g., fuel, fluids used to install trenchless sections of the pipelines, etc.) including the remediation of contaminated soils
- b) erosion and sedimentation resulting from wind, wet soils, flooding, etc.
- c) soil conservation (i.e., unstable trench, shallow bedrock)
- d) unexpected discoveries (i.e., previously unidentified environmental features such as vegetation, wildlife, etc.)

- 52) The EPP must describe how the applicant will execute contingency plans upon the failure of a mitigation.

The application should also describe how consultations carried out by the applicant informed contingency plans included in the application.

### 3.5 Submission and Review of an Application

53) Applicants must email their applications to [EPEA.WA.Applications@aer.ca](mailto:EPEA.WA.Applications@aer.ca).

For information on the review, decision, and appeal processes, visit our website, [aer.ca](http://aer.ca) > Regulating Development > Project Application > Application Legislation > [Environmental Protection and Enhancement Act](#).

As per the [Joint Operating Procedures for First Nations Consultation on Energy Resource Activities and the Joint Operating Procedures for Métis Settlements Consultation on Energy Resource Activities](#), the First Nations consultation (FNC) application supplement is a document that must form part of any application submitted to the AER under the specified enactments, except applications for those activities listed in appendix C of [The Government of Alberta's Guidelines on Consultation with First Nations on Land and Natural Resource Management](#) and [The Government of Alberta's Guidelines on Consultation with Metis Settlements on Land and Natural Resource Management](#).

If at the time the application is made the applicant has either a decision by the ACO that no consultation is required or a report by the ACO that consultation has been adequate, the applicant should include the FNC application supplement with the emailed application.

The file name of the supplement document should contain “FNC Application Supplement” and the date (e.g., FNC-Application-Supplement-YYYY-MM-DD). If the preconsultation assessment or the ACO report is being submitted with the FNC application supplement, then it should be combined with the supplement to form one document.

## 4 Postconstruction Reclamation Assessment Reports

Typical terms and conditions attached to *EPEA* approvals issued by the AER include the completion of postconstruction reclamation assessments (PCRAs) of the landscape, soils, and vegetation on the project site. The purpose of a PCRA is to verify the completion of reclamation according to the terms and conditions of the *EPEA* approval, assess the success of reclamation activities, identify deficiencies and corrective actions, address stakeholder concerns, and ensure that the site is on a trajectory to achieve **equivalent land capability**. In this section, “consultations” includes any consultation directed by the ACO.

54) The approval holder must use **appropriate reclamation criteria** and **record of observation** data sheets during PCRAs to assess the reclamation trajectory of the project site.

### 4.1 Submissions

55) The approval holder must submit a PCRA report to the AER within two growing seasons and two overwintering periods following backfill of the pipeline trench (two-year PCRA report). If conditions are not suitable to replace topsoil following backfill (e.g., frozen, wet, etc.), then an extension request with rationale must be submitted for AER review and approval.

- 56) If the two-year PCRA report does not meet the appropriate reclamation criteria, the approval holder must submit another PCRA report to the AER within five years from backfill of the pipeline trench (five-year PCRA report) to address the deficiencies, issues, and concerns identified in the two-year PCRA report.
- 57) Inspection locations that met the appropriate reclamation criteria in the two-year PCRA report do not need to be re-inspected for the five-year PCRA, but the data must be included in the five-year PCRA report.
- 58) If the five-year PCRA report does not meet the appropriate reclamation criteria, the approval holder must provide one of the following to the AER for review and approval:
- a) justification for criteria deviations
  - b) a request for extension to complete the final PCRA
- 59) The approval holder must submit PCRA reports electronically to [EPEA.Reports@aer.ca](mailto:EPEA.Reports@aer.ca) on or before the due date specified in the *EPEA* approval.

## 4.2 Content

- 60) A PCRA report must include all of the following information:

### **Project Background**

- a) Identify the project (including the *EPEA* approval number), environmental setting, construction dates, backfill dates, and the dates when reclamation was completed.
- b) List the inspection sites from the construction phase of the project (see section 3.4).
- c) Discuss any concerns raised through consultations carried out by the approval holder and how the concerns were addressed.

### **Methods/Scope**

- d) Provide the dates when the field assessment was conducted and any challenges encountered.
- e) Discuss the methodology for the various components of the landscape, vegetation, and soils assessed, which must be in alignment with the appropriate reclamation criteria for the appropriate land use. If deviations are proposed, justification must be provided.
- f) Provide the inspection density, which can vary from what is required in the appropriate reclamation criteria but must at least meet the density conducted during the baseline soil survey assessment, in addition to identified areas of concern. If deviations are proposed, justification must be provided.
- g) Provide descriptions of any advanced technologies (e.g., drones, artificial intelligence, etc.) used to complete the assessment.

## Results/Observations

h) Provide populated record of observation data sheets. At a minimum, the following data sheets should be used:

- Access Soil Assessment worksheet (L1-Soil (Access))
- Access Vegetation Assessment worksheet for the appropriate land uses (i.e., Cultiv (Access), TamePas (Access), NG-%Cover (Access), or For (Access))

Landscape observations can be captured in the comment boxes within the aforementioned worksheets. Linear record of observation data sheets may also be used but are not required.

i) Discuss constraints encountered that may have impacted reclamation success (e.g., drought conditions, third-party impacts, etc.).

j) Include an overview map showing the entire project area.

k) Include base maps with all of the following:

- i) legal land grid
- ii) land ownership (i.e., Crown, private)
- iii) land-use boundaries (e.g., municipal boundaries, parks, recreation areas, etc.)
- iv) imagery showing assessment locations
- v) the numbered location of deficiencies
- vi) areas of sensitivity or concern (e.g., problem soils, wetlands, third-party impacts)

l) Include photos with descriptions.

m) Include a summary table of deficiencies (see table 7) that includes the following items:

- i) deficiency number (to correlate with maps)
- ii) tract
- iii) LSD
- iv) UTM coordinates
- v) land use
- vi) deficiencies, including extent (extent must be clearly communicated in length/width/depth or % coverage within a defined area), and, if the deficiency was not foreseeable, a discussion of the root cause of the deficiency
- vii) corrective actions, including timing
- viii) follow-up status (e.g., resolved, ongoing)

- ix) observations/comments, including comments received through consultations carried out by the approval holder
- x) photo numbers

**Table 7. Example summary table of deficiencies for initial PCRA and reclamation site assessment reports**

Deficiency number	Tract	LSD	UTM coordinates	Land use	Reclamation criteria Pass/Fail	Deficiency	Corrective action and date	Status	Comments / outstanding concerns	Comments	Photo number
1	KP 1+100 – 1+200	01- 02- 44-01 W4M	11 U 695845 E 5849199 N	Pasture	Fail	Ditch subsidence: ~10 m long by 1 m wide and 10 cm deep	Recontour: Sept 2024	Ongoing			1
2	KP 5+545 – 5+600	01- 02- 44-01 W4M	11 U 695845 E 5849199 N	Cultivated	Fail	Coarse fragments higher on right-of- way	Pick rocks: completed June 2023	Resolved	Landowner is satisfied		2
3	KP 6+100 – 6+200	01- 02- 44-01 W4M	11 U 695845 E 5849199 N	Cultivated	Pass	Ditch subsidence: ~5 m long and 1 m wide and 5 cm deep	Monitor for resolution through farming practices: Sept 2022	Resolved		Revisited site in 2023 and subsidence has resolved	3

Note: For illustrative purposes only

## Appendix 1 Glossary

<b>appropriate reclamation criteria</b>	<p>The Government of Alberta has produced several documents containing reclamation criteria for different land types. Follow the criteria that match the land type in question:</p> <ul style="list-style-type: none"><li>• <a href="#"><u>2010 Reclamation Criteria for Wellsites and Associated Facilities for Cultivated Lands</u></a></li><li>• <a href="#"><u>2010 Reclamation Criteria for Wellsites and Associated Facilities for Forested Lands</u></a></li><li>• <a href="#"><u>2010 Reclamation Criteria for Wellsites and Associated Facilities for Native Grasslands</u></a></li><li>• <a href="#"><u>Reclamation Criteria for Wellsites and Associated Facilities for Peatlands</u></a></li></ul>
<b>biophysical elements</b>	<p>The natural components of the environment, such as air, water, soil, vegetation, wildlife, and fish.</p>
<b>class I pipelines</b>	<p>A pipeline meeting the definition of “pipeline” as defined in section 2(3)(i) of the <a href="#"><u>Activities Designation Regulation</u></a>. These pipelines have an <b>index number</b> (outside diameter in millimetres multiplied by length in kilometres) of 2690 or greater and require an approval under <i>EPEA</i> prior to any surface disturbance.</p>
<b>class II pipelines</b>	<p>A pipeline not meeting the definition of “pipeline” as defined in section 2(3)(i) of the <a href="#"><u>Activities Designation Regulation</u></a>. These pipelines do not require an approval under <i>EPEA</i>.</p>
<b>conservation</b>	<p>See section 1(l) in <i>EPEA</i>.</p>
<b>contingency plans</b>	<p>Processes to respond to unexpected events or emergencies. They outline specific actions and procedures to be followed in case of incidents to minimize environmental impacts.</p>
<b>electrical conductivity</b>	<p>As defined by <a href="#"><u>Digging into Canadian Soils</u></a>.</p>
<b>equivalent land capability</b>	<p>As defined in section 1(e) in the <a href="#"><u>Conservation and Reclamation Regulation</u></a>.</p>
<b>Green Area</b>	<p>As defined in the section 1(g) of the <a href="#"><u>Conservation and Reclamation Regulation</u></a>.</p>

<b>index number (pipeline)</b>	Calculated by multiplying the outside diameter of the pipe in millimetres by the length of the line within the <b>White Area</b> , in kilometres.
<b>map unit</b>	As defined by the <a href="#">Canadian Soil Information Service (CanSIS)</a> .
<b>problem soils</b>	See <a href="#">Guidelines for Alternative Soil Handling Procedures During Pipeline Construction</a> , section 3.9.
<b>project impact area</b>	Where <b>biophysical elements</b> are predicted to be potentially affected by the activities proposed in an application for approval under <i>EPEA</i> . Should account for recommended setback distances and species inventory guidelines. The project impact area considers both direct and indirect effects: direct effects are those within the project disturbance area, and indirect effects are those outside the project disturbance area.
<b>project site</b>	Identified based on the proposed activities and encompasses the physical area where the project will be constructed and reclaimed.
<b>reclamation</b>	See section 1(ddd) in <i>EPEA</i> .
<b>record of observation</b>	Datasheets for recording soil and vegetation information, measurements, and observations, <a href="#">managed by the Government of Alberta</a> , including the <a href="#">2010 Reclamation Criteria for Wellsites and Associated Facilities– Combined Assessment Tool and RoO worksheet</a> .
<b>regional plans</b>	See section 2(1)(v) of the <a href="#">Alberta Land Stewardship Act</a> .
<b>saturation percentage</b>	See <a href="#">Salt Contamination Assessment &amp; Remediation Guidelines</a> .
<b>sodium adsorption ratio (SAR)</b>	See <a href="#">Salt Contamination Assessment &amp; Remediation Guidelines</a> .
<b>soluble cations</b>	The positively-charged soil constituents that are soluble in water.
<b>spoil</b>	Any material below the topsoil and upper subsoil layers removed during excavation of the trench.
<b>subregional plans</b>	See section 10 of the <a href="#">Alberta Land Stewardship Act</a> .

<b>suitability</b>	See the criteria for evaluating the suitability of undisturbed and reconstructed soils in the <a href="#">Soil Quality Criteria Relative to Disturbance and Reclamation</a> .
<b>temporary workspace</b>	The land adjacent to the right-of-way used during the construction or maintenance phases of pipeline projects that allows additional space for working (e.g., travel, stringing, repairs, etc.) offset from the ditch or pipeline.
<b>topsoil</b>	The uppermost layer of soil that is <ul style="list-style-type: none"> <li>• normally referred to as the plough layer in agricultural soils,</li> <li>• is typically darker in colour than the upper subsoil layer, and</li> <li>• consists of the A horizons as defined in <a href="#">The Canadian System of Soil Classification</a>.</li> </ul>
<b>upper subsoil</b>	In problem soils, the layer of soil directly below the topsoil layer that <ul style="list-style-type: none"> <li>• contains roots or the root zone,</li> <li>• is typically lighter in colour than the topsoil layer,</li> <li>• consists of the B horizons as defined in <a href="#">The Canadian System of Soil Classification</a>, and</li> <li>• extends no more than 50 centimetres below the topsoil layer.</li> </ul>
<b>White Area</b>	As defined in section 1(v) of the <a href="#">Conservation and Reclamation Regulation</a> .