

## 5 CONTINGENCY PLANS

### 5.1 Introduction

Contingency plans describe procedures to be implemented if unforeseen events occur that could have environmental or socio-economic impacts during construction or operation of the project. Similar to the management plans, conceptual contingency plans have been developed to address community concerns and regulatory requirements. Before construction and drilling activities begin, the proponents will file detailed contingency plans with the regulators, who will then issue relevant permits.

Contingency plans included in this volume are conceptual in nature and describe:

- initial response actions that might be undertaken to control an event that would have negative environmental or socio-economic impacts
- mitigation that might be applied in a specific situation that would reduce or control negative environmental or socio-economic impacts
- a protocol for proper communication procedures if a contingency plan were implemented

Feedback received during community consultation workshops and current regulatory requirements were both considered when developing contingency plans for inclusion in the Environmental Impact Statement (EIS). If, during the Design and Construction Phase, the proponents learn of additional concerns, they will either modify an existing contingency plan or develop a new plan, as required.

### 5.2 Design and Construction Phase

Functional contingency plans for construction and drilling will be developed for the following circumstances:

- spills and uncontrolled releases
- loss of well control
- wildfires
- heritage resource discoveries
- rare or endangered wildlife, or rare plant discoveries
- warm or wet conditions
- erosion of soils by water
- siltation of watercourses
- mud releases from horizontal directional drilling for pipeline construction

Schedule delays because of suspending work at site-specific locations are a possible result of unforeseen events occurring during construction and drilling. To limit the length of potential construction delays, the proponents intend, with all applicable government regulators, to develop a decision-making process before construction and drilling begins. The key outcome of such a process would be the ability to make timely decisions in the field regarding suitable mitigation to be applied, thus limiting the time that construction will be suspended while waiting for feedback from government regulators.

It will be the responsibility of the proponents' representative at any given construction site or pipeline spread to implement a contingency plan, if the need arises during design and construction.

## **5.2.1 Spills and Uncontrolled Releases**

### **5.2.1.1 Introduction**

The following measures are to be implemented if a spill or an uncontrolled release of a substance occurs during construction and drilling.

### **5.2.1.2 Initial Response**

If a spill of a substance occurs, the first person on the scene will:

1. Do an initial assessment to identify imminent danger.
2. Identify the material spilled and verify the nature of the hazard using Material Safety Data Sheets, and implement applicable safety procedures.
3. Cut off the source of the spill, if possible, and if safe to do so.
4. Control danger to human life, for example, by removing ignition sources, if possible, without further assistance.
5. Immediately obtain the assistance of others and begin to contain and clean up the spill.
6. Notify a proponents' representative who will ensure that relevant regulators and affected residents are notified.

When notified of a spill, the proponents' representative will immediately ensure that:

- action is taken to control danger to human life and the environment
- an on-site safety supervisor is designated

- the proponents' management personnel are contacted and given details of the spill
- if a risk to the public exists, the applicable territorial or provincial disaster services and the local Royal Canadian Mounted Police (RCMP) are notified
- the necessary equipment and personnel are mobilized, and measures are implemented to contain the source of the spill and commence cleanup
- traffic is restricted in contaminated areas
- wildlife is restricted from entering the area affected by the spill, and fences are erected, if necessary

The proponents will make all suitable resources available to contain and clean up the spill.

Once the emergency contacts are made and initial efforts to contain and clean up the spill are underway, the proponents' representative will again notify the proponents' management personnel, who will notify the applicable government agencies.

### 5.2.1.3 Spill Containment Procedures

Response personnel will start containment measures immediately to limit the spread of the spill and to reduce danger to the public and impacts on areas of environmental concern, such as waterbodies, and to prevent damage to property. The following steps might also be taken:

1. If the spill source is a leaking fuel truck, pump the fuel tank dry into suitable containers or another tank.
2. Block potentially affected culverts to limit spill travel.
3. Excavate a shallow depression or construct a surface berm in the path of the spill to stop and contain the flow. If feasible without unduly delaying containment efforts, remove surface material and store it separately during excavations.
4. Apply sorbent materials to contain and recover small volumes of spilled product.
5. Collect all spilled product and transport it to a project-approved waste disposal facility, to the extent practical.

#### 5.2.1.4 Spills Adjacent to or into a Waterbody

Spill control measures will be implemented as required. If a spill occurs adjacent to, or into a waterbody, response personnel might take the following steps:

1. Construct berms or trenches to contain the spilled product before it enters into a waterbody, where practical.
2. Deploy booms, skimmers and sorbents, if feasible, to contain and recover the spilled material, if spilled material enters a waterbody.
3. Recover free product to the extent practical.
4. Clean up contaminated areas, including downstream shorelines, in consultation with spill response specialists and the applicable government agencies.
5. Notify all applicable regulators and potentially affected residents immediately that a spill has occurred adjacent to or into a waterbody.

#### 5.2.1.5 Spot Spills

A spot spill is a spill that involves a small quantity of controlled product over a small, isolated surface area. In the event of spot spills, response personnel might take the following steps:

1. Ensure that the proponents' representative, in consultation with the environmental staff, determines suitable methods to remove or reclaim contaminated soils.
2. Ensure that response personnel will reduce impacts from small spills by taking immediate action. Clean up all spot spills immediately following suitable materials handling procedures and report them to the proponents' representative.
3. Ensure that response personnel flag locations where spot spills have occurred and that the proponents' representative records them for future attention during post-construction monitoring.

#### 5.2.1.6 Reclamation

Site reclamation might include the following, as applicable:

- In situ reclamation will only be conducted if approved by the proponents' representative and applicable government agencies.

- Following laboratory analysis of contaminants, if required, remediation and final cleanup will be conducted in consultation with the proponents' representative.
- Documentation for the spill will include a sketch with dimensions showing the spill location and a report describing the type of spill, cause of the spill and the cleanup and reclamation procedures undertaken.
- Lightly contaminated soil areas amenable to biodegradation might be fertilized and then worked to a depth below the contamination. These steps will be repeated as required.
- Used sorbent material will be disposed of at an approved hazardous waste treatment facility.
- For oil spills, attempts will be made to restructure the soil by adding fibre and incorporating it into the surface soil, where practical. Acceptable fibrous materials include local peat and wood shavings.
- Fertilizer might be applied to the site at a rate and formulation suitable for site conditions. A representative of the proponents, e.g., environmental inspector, should be consulted.
- The spill area will be reworked during nonfrozen conditions, where practical and necessary.

The proponents will notify applicable government agencies, as soon as feasible, that contingency measures have been implemented.

## **5.2.2 Wildfires**

The proponents will be responsible for ensuring that required fire-fighting equipment is located at the job site and is in good working condition.

If a wildfire occurs near the project site, the construction contractor will be responsible for the initial response to the wildfire, until the applicable government agency arrives to take control of the situation.

### **5.2.2.1 Government Contacts**

Upon learning that a wildfire is burning near project activities, the proponents' representative will contact the applicable territorial or provincial government agencies. The proponents' representative will relay to the government agencies as much detail as known about the:

- location of the fire

- an estimate of its areal extent
- current weather conditions near the fire

### 5.2.2.2 Fire Suppression

Fire suppression measures will begin immediately after a wildfire is detected near the project site, and might include the following:

- The location and size of the fire and the wind direction will be immediately reported to the fire boss, as designated by the contractor.
- The fire boss will report wildfires and relevant information to the proponents' representative.
- The fire boss will go to the fire site as soon as practical and take charge of directing fire suppression measures.
- The fire boss will use firefighting equipment and crews to cut firebreaks or extinguish the fire directly, if practical. All necessary and accessible equipment and personnel will be made available to control the wildfire.
- Movable material, particularly explosive or flammable materials and vehicles, if potentially endangered by fire, will be promptly and safely moved to a safe location.
- The fire boss will use additional crews and equipment as needed and will request the assistance of the applicable government agency, if contractor resources are inadequate to contain the fire.
- Fire suppression measures will continue until the fire is extinguished or until the applicable government agencies notify otherwise, if they are involved in firefighting.
- The fire boss will ensure that all burning embers are extinguished and will monitor the burn area for smouldering material. Infrared scanning equipment will be required to detect hot spots.

The proponents will notify applicable government agencies, as soon as feasible, that contingency measures have been implemented.

### 5.2.3 Heritage Resource Discovery

If archaeological, heritage or palaeontological resources are discovered during the Design and Construction Phase, the site will be assessed and suitable mitigation measures will be determined. The proponents will notify the applicable government agencies, as required.

The site will be assessed based on the following information:

- input from the Prince of Wales Northern Heritage Centre (PWNHC) or Alberta Community Development (ACD)
- input from the environmental monitor
- the significance of the site
- the depth of the site
- the location of the site relative to the area being developed
- the feasibility of alternate pipeline or access road routes, or site relocation to avoid the resource

The following steps will be taken if possible heritage resources are discovered:

1. Immediately suspend work near any newly discovered archaeological, palaeontological or historic site.
2. Notify the proponents' representative, who will notify the PWNHC or ACD.
3. The proponents' heritage resource consultants will visit the site, if necessary. They will develop a suitable mitigation plan in consultation with the proponents' environmental staff and the PWNHC or ACD.
4. PWNHC or ACD will grant permission for construction at the site to resume.

#### **5.2.4 Rare or Endangered Wildlife or Rare Plant Discovery**

The *Species at Risk Act* defines wildlife species considered by the project to be rare and endangered. Rare plant species and uncommon vegetation communities are as identified by the proponents' botanical specialists.

If rare or endangered wildlife, a site-specific wildlife habitat feature, a rare plant, uncommon vegetation community or traditional collecting site are discovered during construction, the discovery will be assessed and suitable mitigation measures will be determined. The site will be assessed based on the following information:

- the location of the newly discovered feature relative to the proposed area of development
- the timing of construction versus the critical timing constraints for the wildlife species

- the potential for construction activities to be altered, to reduce or avoid disturbance
- the relative rarity of the plant or community
- the local abundance of the plant or community
- the growth habit and propagation strategy of the plant or community
- the habitat preferences of the animal, plant or community

Work at that location will be suspended until a representative of the proponents is notified, and they in turn notify:

- applicable government agencies
- the proponents' wildlife assessment consultant or botanical specialist
- environmental monitor

The proponents' wildlife assessment consultant or botanical specialist will visit the site if necessary. They will develop a suitable mitigation plan in consultation with the proponents' environmental staff. Potential mitigation measures that might be applied are provided in Figure 4-1 for wildlife and Figure 4-4 for vegetation, in Section 4, Environmental Protection Plan.

The proponents will notify applicable government agencies, as required.

### **5.2.5 Warm or Wet Conditions**

To restrict terrain disturbance and soil structure damage through rutting or compaction resulting from wet soil conditions, construction alternatives will be employed, as necessary, if:

- excessively wet conditions occur during nonfrozen periods
- soils thaw substantially during frozen periods

If warranted, contingency measures will be implemented in the area experiencing warm or wet conditions, based on an assessment of the following indicators:

- surface soil is deeply rutted and adverse mixing with the subsoil might occur
- soils are so compacted that revegetation might be unsuccessful
- mud causes wheel slip
- mud builds excessively on tires and cleats
- puddles form

- mud is distributed down the access roads when vehicles leave pipeline rights-of-way or other construction areas

#### **5.2.5.1 Nonfrozen Conditions**

The contingency measures that might be implemented individually, or in combination, as required by site-specific conditions in the affected area include actions such as:

- restrict construction traffic, where feasible, to low-ground-pressure equipment
- work only in nonproblem areas, such as well drained soils, until conditions improve
- install geotextiles, swamp mats or corduroy in problem areas
- remove the loose surface materials from areas that will be subject to vehicle and equipment travel, as directed by the proponents' representative
- suspend construction until soils dry out
- regrade areas that were subject to rutting, if rutting has occurred
- rip compacted soils, if soil compaction has occurred

#### **5.2.5.2 Frozen Conditions**

The following contingency measures might be implemented individually, or in combination, as required by site-specific conditions during late fall, spring or if unseasonably warm conditions are experienced during winter:

- restrict construction traffic, where feasible, to low ground pressure equipment
- work only in nonproblem areas, such as frozen or well drained soils, until conditions improve
- postpone construction until evening or early morning when the ground is frozen
- install geotextiles, swamp mats or corduroy in problem areas
- use frost-inducement measures
- suspend construction until soils refreeze
- regrade areas that were subjected to rutting, if rutting has occurred

- rip compacted soils if soil compaction has occurred

Other suitable techniques to control construction activities during warm conditions, which are not listed here, might be developed and implemented in the field.

The proponents will develop remediation plans to repair tundra if unanticipated damage occurs because of project activities. Representatives of the proponents including reclamation specialists will develop these plans.

Proponents will notify applicable government agencies, as required.

### 5.2.6 Erosion of Soils by Water

Erosion control measures will be implemented, as required, to control water erosion of soils. If erosion is evident, or the potential for erosion is high, the following measures might be implemented progressively, or individually, as required:

- remove the remaining loose surface material and store it away from the area to be regraded
- install temporary berms of subsoil, logs, timbers or sandbags during construction
- implement one, or a combination of, the following mitigation measures:
  - armour the upslope face of berms with geotextile, logs or sandbags
  - import small diameter slash, then roll back and walk down with tracked equipment
  - apply erosion control matting, mulch or tackifier to hold the soil
  - install sediment traps at the discharge points of cross ditches and berms
  - install page wire, silt fencing, or both, to trap or direct surface water flow
- re-establish vegetation as soon as ground and weather conditions permit

Proponents will notify applicable government agencies, as required.

### 5.2.7 Siltation of Watercourses

Sediment control measures as outlined in Section 4, Environmental Protection Plan, and will be implemented as standard environmental protection measures. If an extreme precipitation or stream flow event or other circumstance occurs that

renders the existing sediment control measures inadequate, the following measures might be implemented individually or progressively, as required:

- prohibit the operation of construction equipment close to the banks of watercourses where there is a risk of bank sloughing, bridge failure or flooding of the work area
- excavate cross ditches to divert runoff away from the watercourse
- construct berms of subsoil, timber, sandbags or rock on approach slopes, banks, or both, to divert surface water flow off pipeline rights-of-way and onto well-vegetated lands, where practical. The proponents' representative will determine the location and material to be used for the erosion control structures.
- place sandbags strategically to help stabilize and add height to banks, to prevent flooding of nearby areas, especially where vegetation has been removed
- install page wire, silt fencing, or both, to trap and divert surface water flow from pipeline rights-of-way onto well-vegetated lands

Proponents will notify applicable government agencies, as soon as feasible, that contingency measures have been implemented.

### **5.2.8 Horizontal Directional Drilling Mud Release**

A release of drilling mud into a watercourse could adversely affect the environment. Contractors and the proponents will be diligent during all aspects of horizontal directional drilling for pipeline construction to:

- restrict the potential for an instream release of drilling mud
- ensure that environmental impacts are reduced, if an event does occur

#### **5.2.8.1 General Measures**

The following general measures will be considered during horizontal directional drilling:

- implement a site-specific directional drill plan
- install surface casing from the entry point to a depth of impermeable material, if coarse or permeable material is encountered near the surface
- limit the drilling mud composition to a benign material, e.g., bentonite, fresh water and, if warranted, other inert additives, such as freeze point depressants

- construct subsoil berms or sumps downslope from the entry point and proposed exit point with capacities adequate to capture the expected volumes of drilling mud that could be released during pullback and other drilling operations
- install surface casing at the exit point, after completing the pilot hole, if coarse-textured near-surface deposits, such as gravel, could interfere with drilling mud circulation
- develop a drilling mud cleanup plan before drilling. The drilling contractor will prepare the plan in consultation with the proponents' inspection staff. If the release area is off the right-of-way, acquire the necessary approvals to access the release area and pump off the mud.
- ensure that supervisory personnel are aware of the contingency plan and cleanup plan before drilling activity begins
- ensure an effective monitoring program is in place before directional drilling begins, to allow releases of drilling mud to be identified

#### **5.2.8.2 Initial Response Equipment**

The following conditions apply to emergency response equipment:

- Maintain suitable equipment in sufficient quantities during directional drilling, to contain any inadvertent drilling mud release.
- Maintain the proper water quality sampling equipment on site during directional drilling, to ensure that accurate water quality samples are taken.
- Ensure that the water quality sampling program is in place before directional drilling begins. This program should consider at least the following:
  - an upstream control sample site and suitable downstream sample sites
  - sampling frequency
  - sampling procedures
- Ensure that a sufficient number of sets of radios with spare batteries are on site and available for use during monitoring.

The program will be amended if warranted by conditions.

#### **5.2.8.3 Initial Response**

The loss of drilling mud into seams of coarse material, fissures, or a combination of both, might occur during drilling operations. As drilling fluid does not always flow to the surface, a loss does not necessarily indicate that the drilling mud has

been released onto nearshore areas or into a watercourse. However, a release of drilling mud into a watercourse can adversely affect fish and fish habitat.

As directed by the contractor, the following initial response measures will be considered:

- Suspend drilling operations if excessive loss of drilling mud is noted, and conduct a detailed examination of the drill path and surrounding area for evidence of a release to the surface.
- Notify the proponents' representative immediately, if a drilling mud release is observed.
- Allow the mud release to dry and dissipate naturally, if the quantity of mud released is not large enough to allow practical collection.
- The proponents' representative will notify the engineering and environmental staff immediately, if the drilling mud release enters a watercourse. The proponents will immediately notify the applicable government agencies and potentially affected residents.
- Contain and prevent additional drilling mud from entering the watercourse from nearshore areas by installing a berm of subsoil, sandbags or other material approved by the proponents' representative.

#### 5.2.8.4 Monitoring

Supervisory personnel will be on site at all times during the drilling, reaming and pullback operations, to ensure that emergency response measures can be implemented immediately and effectively. The proponents will also assign inspection personnel to the site during key phases of directional drilling, e.g., drilling the pilot hole.

The following monitoring will be conducted:

- Monitor and record the quantity of fluid returned to the mud tank or pit and the quantity of make-up drilling fluid required in the mixing tanks during drilling of the pilot hole and reaming.
- Monitor both onshore and instream parts of the drill path and surrounding area for signs of drilling mud release. The size of the area to be monitored will be determined by evaluating:
  - geological conditions, including the amount of fracturing, type and depth of substrate

- drilling conditions, including the depth of the drill path, and the distance between the watercourse and the entry and exit points
- Monitor continuously during drilling operations. As directed by the proponents' representative, monitoring will continue after drilling shutdown, if mud pressure has been lost during drilling activities. Personnel equipped with radios will be positioned at the best locations for observing signs of a drilling mud release to the surface or watercourse.
- Ensure that contact is maintained at all times between monitoring and drilling personnel.
- Establish monitoring stations at suitable locations and obtain water samples for visual inspection at suitable time intervals. The sampling frequency will be increased if monitoring drilling mud indicates that a release might have occurred.
- Visually monitor and sample water quality by auguring and maintaining an open hole in the ice on watercourses with ice cover, where on-site conditions allow. Monitors will be supplied with practical safety gear for traversing ice, including ropes, ladders, inflatable boats and flotation coveralls. Ice conditions will continue to be evaluated throughout the monitoring program. If ice cover is not safe, the proponents will notify the applicable government fisheries biologists.

#### 5.2.8.5 Cleanup

Conduct water quality sampling as directed by the proponents' representative.

##### **Instream**

Instream and nearshore containment and cleanup activities might include:

- diverting stream flow around the mud release where practical
- installing silt fencing around the exit point, if practical
- removing mud from the watercourse by pumping, or shovelling, or using a backhoe, where practical
- disposing of mud according to applicable government regulations

The following options might be considered for diverting stream flow from the mud release area:

- installing aquadams on the upstream side of the release point on larger watercourses

- constructing a dam and pump set-up on smaller watercourses
- installing a flume to divert water beyond the release area
- installing coffer dams made of sandbags or sheet metal
- attempting to contain the release point within an area isolated with aquadams or sheet metal, or a combination of both

The following operations might be considered for removing mud:

- use trash pumps to ensure that the pump-off area does not drain directly into the watercourse or construct a holding area
- leave mud in place, if current stream flow levels inhibit removal operations or removal will result in unacceptable terrain or instream damage. Do this in consultation with the applicable government agencies.

### **Onshore**

Onshore containment and cleanup activities might include:

- containing the mud release immediately, to limit the area affected and prevent the mud from entering the watercourse
- disposing of mud according to applicable government regulations

For onshore mud release, the following options will be considered:

- construct berms immediately or excavate a sump for containment, if the area is accessible by heavy equipment
- construct weirs and a containment area, where required, with available materials, if the area is not accessible by heavy equipment

The proponents' inspection staff will prepare a report that summarizes the events leading up to the release and measures taken following the release to reduce environmental impacts. The report will be submitted to the applicable government agencies upon request.

#### **5.2.8.6 Resuming Directional Drilling**

Drilling will only resume if the potential for adverse impacts on the environment is low. This will be decided by the proponents' project management and inspection staff, and the drilling contractor, and be approved by the applicable government agencies.

The following measures will be considered to prevent further release of drilling mud into the watercourse:

- reduce drilling mud pressures, if practical
- plug fissures with sealers or plugging agents. Sealing agents, such as bentonite pellets, will be pumped into the drill hole and left undisturbed for a suitable period, after which drilling will be resumed. If the sealing agents are unsuccessful, drilling will be suspended and the plan reviewed and revised.
- employ downhole cementing to seal off a large part of the existing drill hole to a point where a new drill path, usually at a lower elevation, can be attempted. If this measure is unsuccessful, drilling will be suspended and the plan reviewed and revised.
- employ the same protection measures implemented on the initial drill, if the decision is made to move the drill and attempt to drill from a new location. Before commencing the redrill, review the proposed drill path and revise it accordingly.

If it is determined by the proponents that a second attempt at a horizontal directional drill is not practical, abandon attempts to install the pipeline using this technique and use an approved alternate crossing technique, e.g., open cut, to install the pipeline.

Proponents will notify applicable government agencies, as soon as feasible, that contingency measures have been implemented.

### **5.3 Operations Phase**

Contingency plans developed for the Design and Construction Phase of the project will be incorporated into the planning documents required for the Operations Phase of the project as required. Each individual operator will develop, as per regulatory requirements, documents that describe operations and maintenance plans, emergency response plans and other such documents before the Operations Phase starts. The new documents will be consistent with current existing corporate plans and policies of the individual companies.

Contingency plans developed for the Design and Construction Phase that should be considered during the Operations Phase of the project include those for:

- spills and uncontrolled releases
- wildfires
- warm or wet conditions