



## Appendix 13D    Environmental Protection Plan

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## Abbreviations

ATV	all terrain vehicle
FOC	Fisheries and Oceans Canada
EPP	environmental protection plan
HDD	horizontal directional drill
MSDS	Material Safety Data Sheets
ROW	right-of-way
TDG	Transportation of Dangerous Goods
WHMIS	Work Hazardous Materials Information System

## 13D.1 Introduction

This Environmental Protection Plan (EPP) describes the measures to be implemented during construction. The measures outlined below are designed to mitigate most if not all foreseeable project impacts.

EnCana Ekwan will design and construct the Pipeline in accordance with the National Energy Board (NEB) *Onshore Pipeline Regulations* (1999). The measures provided in this document adhere to the recommendations and provincial guidelines for Alberta and British Columbia. They are consistent with EnCana Ekwan environmental initiatives and the *Canadian Pipeline Water Crossing Committee Watercourse Crossings* (1999). Where applicable, the plans have been modified to address regional and site-specific conditions.

Information contained in this EPP will:

- outline environmental protection measures related to project activities
- provide instructions for carrying out construction activities in such a way as to minimize environmental effects
- form part of the contract documents to be used as the primary reference for specific environmental protection instructions contained in pipeline contract documents
- be used as an educational tool, for the orientation and training of project personnel
- provide the basis for environmental inspection and monitoring during construction to ensure compliance with EnCana Ekwan's environmental initiatives and the specific regulatory commitments pertaining to the project

Within this EPP, environmental protection measures are written in construction specification format under specific activity headings and should be read in conjunction with the environmental alignment sheets (Appendix 13A), which identify specific locations where mitigation measures will be applied. The EPP provides specific resource protection measures as well as a number of management and contingency plans. Further site-specific protection plans are referenced in the EPP and provided within detailed plans and typical drawings (Appendix 13D.A). Following up on seasonal field studies for historical sites, wildlife, fisheries and vegetation in spring and summer 2003, this EPP will be rewritten to reflect site-specific mitigation measures based on species identified.

In the development of this EPP, it was assumed pipeline construction would occur during a winter construction period. If a change of schedule is required (due to weather or other issues) necessitating changes to these procedures, the changes will be reviewed with the relevant regulatory agencies and the EPP, and environmental alignment sheets will be revised as necessary to reflect the agreed upon changes.

## **13D.2 General Measures**

The general environmental protection measures provided below are followed by detailed specifications for each phase of pipeline construction. These general measures apply to the entire pipeline construction effort unless noted otherwise.

- the EPP shall form part of the EnCana Ekwan Pipeline contract documents. The environmental alignment sheets for the Pipeline (Appendix 13A) will form part of the construction drawings. Should a conflict arise between a construction contract document and these EPP requirements, the more stringent conditions will apply
- all necessary provincial and federal licenses and approvals will be obtained prior to the start of construction
- Contractors will abide by all environmental timing constraints for construction as applicable to provincial and federal licences and approvals, and as shown on the environmental alignment sheets (Appendix 13A) or as identified in this EPP
- key project personnel (including the Contractor) will review and discuss the watercourse crossing report (Appendix 13D.B), access management (Appendix 13D.C), the spill reporting guidelines (Appendix 13D.D), as well as the contingency plans (Section 13D.16) prior to commencement of clearing and construction
- all contractor and EnCana Ekwan inspection staff will be provided with all relevant results of pre-construction surveys to identify known locations of environmentally sensitive features (e.g., nests, rare plants and animals, dens, mineral licks, traditional land use sites and archaeological sites. Flagging or fencing or narrowing of the ROW width will be used to identify and protect particularly sensitive features in the field
- all construction debris (e.g., welding rods and oil cans) and other garbage will be continuously collected and disposed of at an approved facility in compliance with the waste management plan (Section 13D.15)
- all equipment will arrive on the ROW in a clean condition to minimize the risk of introducing noxious weeds, in compliance with the weed management measures discussed in Section 13D.4.3

## **13D.3 Notification of Concerned Parties**

1. Landowners (the Crown), First Nations and trappers will be notified by EnCana Ekwan of the intended construction schedule prior to the start of construction to prevent or reduce impacts to their operations or activities.
2. Prior to commencement, a meeting will be held in regional government offices with representatives from EnCana Ekwan's construction, engineering, environmental and field inspection teams, and all relevant and interested government regulatory personnel, to review project concerns and to detail required procedures.

3. Authorities having jurisdiction over road and foreign line crossings will be contacted prior to start of construction (in those areas) as required by the relevant crossing or road use agreement.
4. Appropriate federal and provincial resource agencies and interested municipal officials will be informed of project developments by way of regular liaison with key project personnel such as the Chief Inspector and Environmental Inspectors.
5. Appropriate signs will be posted along pipeline access trails and at road crossings in the vicinity of construction activities to warn general traffic of localized construction dangers.
6. Trappers whose permit areas will be intersected by the Pipeline will be notified of the construction schedule at least one month prior to the start of clearing. In those areas where a trapline intersects or is adjacent to the proposed ROW, the trappers will be asked to clearly flag or remove any traps in those areas for safety reasons.

#### **13D.4 Right-of-Way Preparation**

##### **13D.4.1 General Measures**

1. Prior to the start of construction, the ROW boundaries, including pre-approved temporary workspaces, will be clearly staked to prevent disturbance to unauthorized areas.
2. Where feasible, the locations of additional extra workspaces will be identified prior to construction, and all the necessary approvals required to use the extra workspaces will be acquired from the relevant regulators prior to the clearing and use of such sites. The preliminary locations of extra workspaces required for the storage of spoil, slash, merchantable timber or timber for rollback will be indicated on grade plans prior to start of construction.
3. Vehicle and equipment crossing structures (e.g., portable bridge, ice bridge) (Appendix 13D.A, Figures 8 and 9) across waterbodies will be installed at locations specified in Appendix 13D.B. Ice bridges will be constructed of clean snow plowed in from adjacent areas free of sediment and vegetation. Should insufficient snow depths be available for ice bridge construction, portable snowmaking equipment will be used to develop an adequate ice thickness at the crossing. Water required to support ice bridge construction will be withdrawn from approved sources at approved rates.
4. Where the pipeline alignment follows existing disturbed linear corridors (i.e., seismic lines, pipeline ROWs) in delineated permafrost areas, EnCana Ekwan will endeavour to locate the ditchline within the disturbed corridor where permafrost degradation and subsidence has likely already occurred. The travel (work) side of the ROW will be placed within the uncleared portion in order to minimize disturbance to potential ice-rich areas. Grading and root grubbing will not be permitted in permafrost areas unless absolutely necessary for safety reasons. Disturbance to

low-lying vegetation will be minimized. Brush and small non-merchantable timber will be walked down, and snow (from onsite or farmed in from approved off-site areas) and water spraying will be used to smooth the work side of the ROW for equipment travel.

#### **13D.4.2 Surveying and Clearing**

1. Sites noted on the environmental alignment sheets (Appendix 13A) and flagged or fenced by EnCana Ekwan to protect sensitive site-specific features (e.g., archaeological sites, rare plant sites, wildlife sites, nests and fish habitat), will be avoided. The size of avoidance zones will be pre-determined prior to clearing in those areas by the Environmental Inspector in consultation with the appropriate Resource Specialist.
2. Where grading is not required, nonmerchantable, small-diameter shrub stands encountered on the ROW or in required extra workspace will be cleared mechanically, leaving the root mat intact. Where feasible, timber will be close-cut to reduce the need to grub and grade the ROW for smoothing. Root grubbing (Appendix 13D.A, Figure 19) will be minimized wherever feasible along the entire ROW in order to maintain the root mat and improve surface stability.
3. During timber clearing, trees will be felled into the surveyed ROW. Leaning or felled trees that inadvertently fall into adjacent undisturbed vegetation will be salvaged, or bucked into manageable lengths and removed onto the ROW.
4. Merchantable timber deck sites will be located on approved extra workspace within existing cleared areas, or in nonmerchantable stands of timber or, if no other options are available, in merchantable timber stands. Where terrain conditions permit, timber deck sites will be located approximately 800–1000 m apart (i.e., skidding distances of 400–500 m) in timbered areas. The sites will be located near existing access roads, if feasible, to expedite removal of merchantable timber. Approval for deck sites will be detailed in the grade plan and obtained by the Environmental Inspector prior to construction.
5. In areas designated on the environmental alignment sheets (Appendix 13A), nonmerchantable timber and slash will be stockpiled for use as either rollback for access or erosion control. Exact locations and the amount of timber to be retained will be determined in the field by the Environmental Inspector, based on available timber and discussions with local regulators.
6. Some merchantable timber may be retained for use as rollback for access control, subject to further consultation between EnCana Ekwan and provincial forestry agencies.
7. All merchantable timber will be salvaged in accordance with local forest district requirements. Typical salvage will include all softwoods, balsam and aspen of merchantable size, and all other woods to specific dimension (for Oriented Strand Board plants). The basic salvage requirements are shown in Table 13D-1.

**Table 13D-1 Basic Salvage Requirements for Merchantable Timber**

Species	Minimum Butt Diameter (cm)	Minimum Top Diameter (cm)
Aspen	15	10
Pine	15	10
Spruce	20	10
Larch	20	10
Cottonwood	15	10
Birch	15	10
Balsam	20	10

8. In areas designated as permafrost sites, on newly cleared portions of the ROW (travel/work side), all non-merchantable small timber and brush will be walked down flat using a shoe-equipped bulldozer. The vegetation mat will be left intact with no root grubbing permitted in these areas.
9. Salvaged timber will be limbed and topped before decking, and decked with butt ends facing the same direction. Log decks will be oriented to best facilitate loading by picker trucks, and will be located adjacent to the travel (work) side of the ROW where feasible (Appendix 13D.A, Figure 22).
10. Timber salvage operations will be conducted in a manner that minimizes butt shatter, breakage and off-ROW disturbance.
11. Salvaged logs will not be skidded through defined waterbodies.
12. The Contractor will cooperate with the timber salvage operators to ensure that all decked timber can be removed from the ROW and transported to designated all-weather access points or mills prior to completion of construction. The Contractor will aid and support the timber salvage operators to provide access down the ROW for timber removal.
13. Where surface stabilization remains inadequate to support equipment travel, surface stabilization measures such as swamp mat deployment or log corduroy installation will be undertaken. Non-persistent surface stabilization methods (e.g., swamp mats) are preferred over methods such as log corduroy. Sources to be used for log corduroy (in order of preference) include:
  - nonmerchantable timber cleared from the ROW
  - merchantable deciduous timber cleared from the ROW
  - merchantable coniferous timber cleared from the ROW
  - nonmerchantable timber cleared from off ROW areas
  - merchantable timber cleared from off-ROW areas
14. Clearing from off ROW areas requires approval of the Environmental Inspectors, and provincial regulatory approval. These approvals will be obtained prior to starting any off-ROW clearing.

15. Slash not retained for rollback will be disposed of by burning. Burning will only be undertaken after obtaining the appropriate burning permits and will be scheduled to avoid high fire hazard periods. All burning will be conducted on stripped mineral soil or on burning skids in peat-rich areas and with consideration for wind conditions.

#### **13D.4.3 Weed Management Measures**

1. All equipment will be required to arrive on the ROW in a clean condition to minimize the risk of weed introduction. Any equipment that arrives in a dirty condition, as determined by the Environmental Inspector or authorized representative, will not be allowed on the ROW or facilities site until it has been cleaned.
2. The Contractor will construct a weed clean-off station that will be setup at a regulatory approved site. The site will be constructed by stripping surface materials (organics and 10–15 cm of surface mineral soils) and constructing containment berms out of mineral subsoil. The size of the area must be adequate to accommodate the maximum size of equipment expected. Cleaning pads will be constructed of filter fabric under skids. Filter fabric will be removed to an acceptable landfill when the cleaning area is dismantled.
3. A re-vegetation program will be initiated as soon as possible after construction, weather permitting, to ensure that desirable species are quickly established, thereby having a competitive edge over weed species. Any seed mixes used will be tested for noxious or restricted weed species. Seed certificates of analysis will be obtained and copies made available for inspection.

#### **13D.5 Grading and Soil Handling**

1. Subsoil will be used to construct bar ditch ramps where necessary. The Environmental Inspector may approve the use of surface organics for short-term ramps in specific circumstances during frozen ground conditions. All constructed ramps will be removed during cleanup to discourage vehicle travel along the ROW.
2. Grading and root grubbing will be minimized wherever feasible, especially on slopes and within one to two metres of the edge of the ROW in order to maintain ground stability and encourage rapid vegetation regrowth following construction.
3. Within 10 m of the banks of trenched waterbody crossings, root grubbing will be restricted to trenchline and approximately 6 m of worksite to facilitate vehicle access and bridge installations (For HDD crossings, grubbing will be restricted to vehicle access corridor only). The organic mat will be left undisturbed within the remainder of the buffer zone to minimize the potential for sediment introduction into the waterbody.
4. Grading of waterbody banks will be minimized wherever feasible and if necessary will be directed away from the active channel to minimize the possibility of sediment loading. If practical, log bundles or other materials such as ice or snow will be used to construct approach ramps to waterbody banks instead of grading.



5. Root grubbing in wetland terrain will be restricted to ditchline to avoid surface instability and the creation of bog holes.
6. Root grubbing will be restricted to ditchline on newly cleared ROW where permafrost has been identified. Snow and water spraying will be used in these areas to create a relatively smooth travel and work surface. In low snow conditions, water spraying and snow farming from off-ROW areas will be used to smooth the surface.
7. All grading will be undertaken only where necessary, with the understanding that original contours and drainage patterns will be re-established during cleanup, unless otherwise authorized by the Environmental Inspector. Where original contours cannot be re-established (e.g., due to slope loading or erosion concerns), an alternative contour will be established, which will not be susceptible to erosion.
8. The salvaging of surface organic materials will follow guidelines presented in the green area grubbing typical drawing (Appendix 13D.A, Figure 19). Stripped materials will be windrowed to one or both sides of the ROW (space allowing) for temporary storage, unless the Environmental Inspector approves alternate storage locations and appropriate mitigation.
9. In areas where grading is required, the surface organic and an appropriate amount of the mineral layer will be stripped for full-width and to colour change, as identified by the Environmental Inspectors. Typically, the upper 15–20 cm of surface material will be stripped depending on the depth of the organics.
10. The stripping and salvage of surface organic materials will not be required in deep organic soils (i.e., > 40 cm).

#### **13D.6 Stringing, Ditching, Pipe Installation and Backfilling**

1. Based on access to and from the ROW, it may be necessary to designate turn around areas for stringing trucks. Natural clearings will be designated for this purpose where feasible.
2. In areas designated as permafrost sites, the ditchline will be installed in the existing cleared cutline and not in newly cleared areas. Ditch spoil will be placed on top of a packed snow/ice layer to minimize any disturbance to the underlying organics during backfill.
3. The maximum speed limit on the ROW will be 50 km/h and may be lower under specific conditions such as areas of high erosion hazard, or areas where specific wildlife concerns have been identified.
4. Sufficiently sized gaps will be left in all windrows (i.e., organics, spoil or snow) or raised pipe (if the top of pipe is above 75 cm and is to remain in this raised position for a period greater than 48 h) at the crossings of all identified trails, access roads and obvious wildlife trails. Sizing of the gap will be based on grade spoil levels, surface contours and potential volume of cross-ROW movement (generally spacing intervals will be 400–1000 m). Spacing in the welded pipe will consist of a separation between overlapped ends or an open gap. At pipe gaps where open ditch is

encountered, earthen ditch plugs (i.e., soft plugs) will be installed if the ditch remains open for more than 48 hours.

5. Active trappers' trails and existing roads intersected by the ROW will remain unobstructed throughout the construction period.
6. If ditch dewatering is required in high groundwater areas, water will be contained in sumps or pumped onto stable, well-vegetated areas (located in off-ROW areas) in a manner that does not cause erosion or allow any unfiltered water to re-enter a waterbody.
7. In order to minimize the amount of open ditch, trenching operations will be followed as closely as practical (i.e., within 48 hours) by lower-in and backfill operations. Extended periods of open trench are anticipated at road and foreign line crossings, at welding tie-in locations, at testing sections, and where select backfill or geotechnical measures such as ditch plugs and sub-drains may be required. In areas with extended periods of open trench that are adjacent to known wildlife trails, temporary fence will be erected around the excavation. The Environmental Inspector will have the authority to request temporary fencing by the Contractor for the protection of wildlife.
8. During backfilling, the trench will be roached with available spoil material to allow for settlement. Gaps in this roach will be left at obvious drainage channels to prevent alteration of natural surface drainage patterns.
9. Ditch plugs (e.g., bentonite, sand or foam plugs) will be installed on slopes to minimize the potential for the water movement along the ditch and subsequent erosion.
10. Subsurface drains will be installed where there is evidence of seepage or flowing springs on a slope once the trench has been excavated.
11. Requirements for the exact locations of ditch plugs and subsurface drains will be finalized by the project engineer and if required install \*\*\* in consultation with the Chief Inspector or other authorized Inspector and, where warranted, with the geotechnical engineer.

#### **13D.7 Hydrostatic Testing**

1. Water withdrawn for the use of hydrostatically testing the pipeline will be drawn from approved waterbodies or waterbodies and will not exceed maximum withdrawal rates specified by permits or authorization letters, or as otherwise directed by the Environmental Inspector or regulatory agencies.
2. Water sources will be identified and reviewed with provincial fisheries agencies and Fisheries and Oceans Canada (FOC) prior to freeze up in 2003. Appropriate fisheries surveys will be undertaken at these waterbodies in spring 2003 to support the development of appropriate protection measures.

3. Intake pipes on pumping equipment will be screened in accordance with the FOC Fish Screening Directive (1999). Intake structures shall be constructed in accordance with the following specifications:
  - screen material shall be either stainless steel, galvanized steel, aluminum, brass, bronze or monel metal
  - screen mesh size (the space between strands) shall not exceed 2.54 mm
  - screen area of one square metre shall be provided for each 0.03 m<sup>3</sup>/s of water entering the intake
  - screens shall be adequately supported with stiffeners or backup material to prevent excessive sagging
  - screens shall be protected from damage with a trash rack or similar device
  - screens shall be readily accessible for cleaning and inspection
4. Testing activities will follow applicable notification, sampling and reporting requirements outlined in the *Code of Practice for the Temporary Diversion of Water for Hydrostatic Testing of Pipelines* and the *Code of Practice for Discharge of Hydrostatic Test Water from Hydrostatic Testing of Petroleum Liquid and Natural Gas Pipelines* (Alberta Environmental Protection 1998), Approval for Short Term Use of Water (Application under the authority of the *Water Act* R.S.B.C. 1996, c. 361, s8, the Water Act Regulation).
5. Test water will only be discharged in accordance with regulatory authorization.
6. Water discharged onto land after testing will be dissipated over a vegetated area, temporary riprap or other stable surface material to minimize the potential for soil erosion as outlined in Section 13D.6(5).
7. Where pumping equipment used for testing is situated adjacent to waterbodies (i.e., within 100 m), the equipment will be contained in a bermed area lined with polyethylene sheeting and capable of containing any fluid leaks.
8. If methanol is used as a test medium, it will be recovered in appropriate approved facilities or containers (e.g., tanks or tank trucks) and returned to the hydrostatic testing fluid rental facility, or disposed of in accordance with regulatory requirements.
9. Debris collected during preliminary pig runs will be removed to an approved waste disposal site.

#### **13D.8 Cleanup and Re-vegetation**

1. Weather permitting, machine cleanup will occur as soon as practical following backfilling operations where continued construction access is no longer required.
2. All grade cuts will be restored to stable contours, approximating pre-construction conditions.

3. Cross ditches and associated diversion berms will be installed on moderate to steep slopes to divert surface water off the ROW in locations designated by the project geotechnical engineer in consultation with the Chief Inspector.
4. In conjunction with broadcast seeding on steep slopes, tracked equipment will be utilized to systematically pack and imprint the steep surface following material replacement. Track cleat imprints will be perpendicular to the fall line of the slope and spaced sufficiently to provide uniform coverage of the ground surface. Track cleat imprinting will not be done in locations where safety may be compromised.
5. At all waterbody crossings, any disturbed waterbody bank and approach slopes will be restored to stable contours with local material and will be re-vegetated with the appropriate seed mix immediately following machine cleanup. A cover crop, such as fall rye, may also be incorporated on those sites to provide surface stability during native species vegetation establishment.
6. As part of final cleanup, live plant and willow stake transplants (Appendix 13D.A, Figure 16) may be employed on disturbed banks at designated waterbody crossings. The Environmental Inspectors shall determine the necessity and extent of measures required in consultation with the relevant resource specialists.
7. All temporary bridge spans will be removed, and banks restabilized to pre-construction conditions.
8. Slash material salvaged for use as rollback for access control will be distributed evenly over the ROW as directed by the Environmental Inspectors (Appendix 13D.A, Figure 23). Rollback for access control will not be walked down. Refer to the access management document in Appendix 13D.C.
9. Slash material salvaged for use as rollback in permafrost areas will be distributed evenly over the identified permafrost areas (same as Rollback for Access Control, Appendix 13D.A, Figure 23). Rollback for permafrost measures will not be walked down.
10. Slash material salvaged for use as rollback for erosion control will be spread on steep slopes as directed by the Environmental Inspectors (Appendix 13D.A, Figure 24). Rollback for erosion control shall be flattened and walked down with a bulldozer or other heavy-tracked equipment.
11. Gaps will be left in rollback across intersecting seismic lines and obvious wildlife trails.
12. Log corduroy, if utilized, will be removed from locations with mineral soils and where disruption of drainage is likely. Adequate drainage will be provided in any log corduroy sections that are left in place. All log corduroy will be removed where requested by the regulatory representative.
13. Removed log corduroy materials shall be used as rollback for access control, where feasible, or disposed of by burning or chipping.

14. Where compaction has been identified, subsoil will be ripped to a depth of 30 cm, or to the satisfaction of the Environmental Inspectors, over the affected area.
15. The following seed mix was developed and has been approved by the appropriate provincial regulatory agencies for the project. Seeding will not take place in areas with deep organic soils. Areas of deep organics will be allowed to regenerate naturally. Reclamation procedures will follow the methods outlined in the *Native Plant Revegetation Guidelines for Alberta* (Native Plant Working Group 2000). The seed mix was developed and approved for use by Nil Block, District Range Officer, and Peter Smith, Field Operations Supervisor, BC Ministry of Forests, Fort Nelson, British Columbia (March 2002), and approved for use in the Alberta portion of the project by Carla Norris, Forest Officer, Rainbow Lake, Alberta (February 2003).

The Northern Rockies native seed mix consists of:

- 40% Slender wheatgrass
- 20% Fowl bluegrass
- 20% Cicer milk vetch (or hairy vetch)
- 15% Sheep fescue
- 5% Annual rye

This seed mix is required for the oil and gas industry in the Fort Nelson Forest District by the BC Ministry of Forests and supply is expected to be available.

Application criteria for this seed mix include:

- application rate is 20 kg/ha
  - seeding is required on areas of exposed mineral soil on flat or rolling ground, and all slopes and streambanks regardless of mineral soil exposure
  - application on top of snow over exposed mineral soil is acceptable
  - additional information or assistance can be obtained from Fort Nelson District Office of the BC Ministry of Forests, telephone: (250) 774-5511 and from the Rainbow Lake office of Alberta Sustainable Resource Development, telephone: (780) 926-5400
16. All seed mixes used will be sourced from within Alberta or British Columbia, and will be sampled for weed analysis. If there are shortages of specific species, EnCana Ekwan may approach local regulators about possible alternative species for the native seed mix. However, any specific species shortages may not be known until the fall of 2003.
  17. Appropriate fertilizers may be used at the time of seeding to promote revegetation. Fertilizers will not be applied adjacent to waterbody banks.

### **13D.9 Pipeline Operations**

1. Routine pipeline surveillance activities will include monitoring for erosion problems, reclamation success and weed infestations.
2. Appropriate control measures will be undertaken, based on the nature of the outbreak, to control noxious and restricted weed growth on the ROW.
3. All non-emergency remedial work on the pipelines (e.g., coating repairs, cut-outs) will be scheduled wherever practical. Non-emergency pipeline works involving instream construction at waterbodies will be scheduled outside of the fisheries window period, wherever practical, and subject to approval from federal and provincial agencies.
4. Vegetation management on the ROW will be minimized wherever feasible and limited to an eight m wide strip overtop of ditchline in most areas. The exception to this may be some additional vegetation management around block valve sites for fire safety reasons.
5. There will be no new permanent access to or along the ROW to support the Pipeline. All support will be conducted using helicopters or perhaps ATVs during the winter season.

### **13D.10 Access Management**

EnCana Ekwan has prepared an Access Management Plan to minimize the impact of the Pipeline on regional resources in general, and more specifically, in areas adjacent to waterbodies, important wildlife areas, and where there has been limited traditional access developed. The Access Management Plan is provided in Appendix 13D.C.

### **13D.11 Wildlife Protection Measures**

General wildlife protection measures are outlined below. Site-specific plans for wildlife protection are further detailed in the access management document (Appendix 13D.C).

1. The feeding, harassment or destruction of any wildlife by project personnel on or about the ROW or Pipeline facilities will be prohibited.
2. Any incidents with nuisance wildlife are to be reported to an Environmental Inspector. The Environmental Inspector will notify the local Provincial Conservation Officer, and, if warranted, the local police detachment.
3. The location and details of any vehicle collisions with large wildlife (i.e., ungulates, bears, canids) are to be reported to the Environmental Inspector. The Environmental Inspectors will notify the local Provincial Conservation Officer, and, if warranted, the local police detachment.
4. All identified beaver dams to be removed to facilitate construction will be reviewed with relevant trapline holders at least one month prior to start of construction.

Trapline holders will be given the opportunity to trap out the affected beaver colonies prior to construction, if they express an interest to do so.

5. Any interference with previously unidentified beaver dams, ponds or lodges; muskrat push-ups or other aquatic furbearer habitats; raptor nests; mineral licks; or bear dens is to be reported to the Environmental Inspector. An Environmental Inspector will then notify the provincial and federal wildlife authorities and affected trapline holders, and in consultation with those agencies and individuals, will develop agreed upon mitigation measures.
6. Construction and operational personnel will not be permitted to have firearms.
7. The speed limit on the ROW will be a maximum of 50 km/h and may be lower under specific conditions such as areas where specific wildlife concerns have been identified.
8. Recreational use of ATVs by construction and operational personnel will be prohibited along the ROW.
9. Sites noted on the Environmental Alignment Sheets (Appendix 13A), and flagged or fenced to protect sensitive site-specific features, such as wildlife dens or trees used by wildlife, will be avoided.
10. To facilitate free movement of wildlife, trenching operations will be followed as closely as practical by backfill operations.
11. Unauthorized vehicle travel along the ROW during construction will be discouraged using signs and gates where appropriate.
12. Gaps of appropriate size will be left in all windrows (i.e., organics, spoil or snow) or raised pipe at the crossings of all identified trails, access roads and obvious wildlife trails as outlined in Section 13D.6(3).
13. Where available, the use of existing access is preferred over developing new access. No new permanent access will be developed to support the Pipeline.
14. All Contractor and Pipeline personnel will comply with any access management requirements defined by regulatory authorities and will work with other area operators to control access as necessary.

### **13D.12 Fisheries and Waterbody Protection**

Waterbody crossing mitigation plans and erosion protection plans are included in the detailed Watercourse Crossing Report (Appendix 13D.B). General fisheries and waterbody protection measures are outlined below.

1. The Contractor will inspect all equipment for fluid leaks prior to entering or crossing over any waterbody area. All equipment that enters or passes over the waterbody area shall be clean and free from leaks to ensure that deleterious material is not deposited.

2. Logs will not be skidded across any waterbody unless an approved temporary vehicle crossing structure such as a temporary bridge span or swamp mat is in place. Trees and slash inadvertently introduced into any waterbody will be removed immediately.
3. Fisheries habitat potential will be evaluated in the vicinity of any proposed waterbody crossings in May 2003 and final crossing plans will incorporate appropriate mitigation to eliminate or reduce potential harmful alteration, disruption and destruction of fish habitat to levels consistent with provincial and federal fisheries regulations.
4. A preliminary crossing plan has been developed for all defined waterbody crossings encountered by the Ekwan Pipeline (see Watercourse Crossing Report - Appendix 13D.B). Table 13D-2 summarizes the crossing plans for each waterbody.

**Table 13D-2 Crossing Plans for Waterbodies Encountered by the Pipeline**

KP	Stream Name	Vehicle Crossing Method	Proposed Pipeline Crossing Method	Alternate Crossing Method
20.9	Kyklo Creek	Snow and ice fill bridge	Directional drill	Isolated trenched crossing if free water present; Trenched crossing without isolation if frozen to substrates <sup>2</sup>
35.4	Unnamed tributary to Kotcho River	Snow and ice fill bridge	Isolated trenched crossing if free water present <sup>1</sup>	Trenched crossing without isolation if frozen to substrates
46.6	Townsoitoi Creek	Snow and ice fill bridge	Directional drill	Isolated trenched crossing if free water present; Trenched crossing without isolation if frozen to substrates <sup>2</sup>
47.7	Unnamed tributary to Townsoitoi Creek	Snow and ice fill bridge	Isolated trenched crossing if free water present <sup>1</sup>	Trenched crossing without isolation if frozen to substrates
48.9	Unnamed tributary to Townsoitoi Creek	Snow and ice fill bridge	Isolated trenched crossing if free water present <sup>1</sup>	Trenched crossing without isolation if frozen to substrates
54.1	Hay River	Temporary bridge – double span	Directional drill	Isolated trenched crossing if free water present; Trenched crossing without isolation if frozen to substrates <sup>2</sup>



**Table 13D-2 Crossing Plans for Waterbodies Encountered by the Pipeline (cont'd)**

KP	Stream Name	Vehicle Crossing Method	Proposed Pipeline Crossing Method	Alternate Crossing Method
55.7	Unnamed tributary to Hay River	Snow and ice fill bridge	Isolated trenched crossing if free water present <sup>1</sup>	Trenched crossing without isolation if frozen to substrates
78.3	Little Hay River	Snow and ice fill bridge	Directional drill	Isolated trenched crossing if free water present; Trenched crossing without isolation if frozen to substrates <sup>2</sup>

**Notes:** 1 Isolated open cut crossings will incorporate either a dam and pump bypass or a dam and flume bypass.

2 Only to be used in event of failed HDD.

5. Prior to initiating work on the crossings, the Chief Inspector and Environmental Inspectors will review the details of site preparation, sediment and erosion control, specific crossing methods, trench water management, soil and trench spoil storage areas, and any other relevant issues with the Contractor. The following general protection measures will be adhered to for each crossing type:

### Horizontal Directional Drill Crossing

1. Where a horizontal directional drill technique is used at a waterbody, a minimum setback of 125 m shall be maintained between the drill entry or exit location and the center of the waterbody channel (Appendix 13D.A, Figure 6).
2. Containment berms will be installed immediately downslope from the drill entry and anticipated exit points to contain drilling muds seeping from the entry and exit points. The HDD Contractor will keep a hydrovac truck or pumps readily available to contain and remove excess drilling mud from these areas as necessary.
3. Drilling mud tanks or sumps of appropriate size will be installed to prevent muds from entering the waterbody. Approval for sumps will be obtained from the appropriate regulatory authorities in advance of the start of construction on the waterbody.
4. Drilling mud composition will be as per directional drilling contingency plan requirements (see the Watercourse Crossing Report in this EPP).
5. During the pilot hole drilling and hole opening phases, monitoring for the loss of drilling fluid will be conducted as per directional drilling contingency plan requirements. In the event of an accidental release of drilling mud during a horizontal directional drilling operation, contingency measures will be implemented as detailed in the Watercourse Crossing Report, Appendix 13D.B). Key Contractor and inspection personnel will be made aware of this contingency plan in advance of any

drilling activities, and will ensure that all emergency response equipment and material detailed in the plan is in place prior to the commencement of any drilling activity.

### **Trenched Crossings**

1. With the exception of HDD crossings (i.e., Kyklo Creek, Townsoit Creek, Hay River, Little Hay River), all other waterbodies that are flowing at the time of construction will be crossed utilizing an isolated trenched crossing procedure. Isolation techniques will employ a dam and bypass pump, appropriately sized flumes, or a combination of both techniques to effectively isolate the trenchline and maintain downstream flow (Appendix 13D.A, Figures 3 and 4).
2. A minimum of 10 m of undisturbed vegetation will be left between the high water mark of the waterbody and any designated extra workspace. Where feasible, extra workspace will be located in existing natural openings to reduce clearing requirements.
3. Any necessary grading of waterbody banks will be minimized wherever feasible and where necessary, will be directed away from the active channel to minimize any potential for waterbody sediment loading.
4. On approach to waterbodies, erosion control measures such as silt fencing, straw bales and temporary diversion berms will be installed and maintained as directed by an Environmental Inspector.
5. During the crossing of a fish-bearing waterbody, the isolated area will be searched for stranded fish prior to the start of ditching. All fish captured will be released downstream from the work site.
6. Instream structures that provide cover for fish (i.e., large woody debris and boulders) will be removed from the anticipated area of disturbance before construction commences and replaced after construction is complete.
7. Ditch spoil excavated from the channel will be stockpiled in extra workspace above the high water mark of the waterbody behind berms to prevent saturated material from re-entering the active channel.
8. All intake pipes on pumping equipment utilized for water withdrawal in fish-bearing waters will be screened in accordance with the FOC *Fish Screening Directive* (1999) as outlined in Section 13D.7(3).
9. All generator sets used for bypass pumps will be situated above the high water mark of the waterbody and placed within a bermed area lined with polyethylene sheeting capable of containing any fluid leaks.
10. If trench dewatering is required from the isolated work area, water will be contained in sumps or pumped onto stable, well-vegetated areas (located in off-ROW areas) in a manner that does not cause erosion and that prevents any unfiltered water from re-entering any waterbody.

11. Pump water discharge locations for channel flow will be monitored to ensure that no erosion, flooding or siltation of waterbodies occurs.
12. Once the main channel is backfilled, salvaged surface substrate material will be replaced over the excavated area and the stream channel will be recontoured.
13. Replanting of riparian areas may be undertaken to promote waterbody bank and approach slope stability, and preserve fish habitat capabilities. The approach slopes will be seeded immediately following construction with an approved cover crop that will aid in the re-vegetation of suitable and stable plant species.

#### **13D.13 Rare Plant Protection**

1. Rare plant surveys will be undertaken along the Pipeline route in June and July or August, 2003. Results of the surveys will be reported to the NEB immediately following the field work, along with the proposed mitigation measures for protecting these resources.
2. Depending on the status of the species and site conditions, mitigation measures will range from avoidance through or moving centerline with ROW minor alignment modifications to narrowing of the ROW width in specific areas. The proposed mitigation framework is presented in Table 13D-3.
3. All identified rare plants or communities will be flagged, fenced or both prior to start of construction to minimize any disturbance. Mitigation of these sites will be outlined to Contractor personnel in advance of construction to ensure there is a full understanding of the procedures involved.
4. Disturbance to riparian areas at all waterbody crossings will be minimized as much as feasible. At waterbodies that will be crossed using a horizontal directional drill, a minimum setback of 125 m shall be maintained between the drill entry or exit location and the center of the waterbody channel.
5. All project equipment arriving onsite will be clean and free of weeds and vegetation. Equipment will be inspected by an Environmental Inspector or other authorized inspector. If it is determined by the inspection that the equipment needs additional cleaning, the Contractor will transport the equipment to an approved location and clean it as necessary.

**Table 13D-3 Rare Plant Mitigation Options**

Globally or Nationally Listed Species	S1 or S2 Provincially Rare Species (goal <5% loss)	Protected Populations or S3 Provincially Rare Species <sup>1</sup>	Populations of Rare Plant Species that Cannot Be Avoided
Avoid habitat and population by: <ul style="list-style-type: none"> <li>• minor re-alignment or narrowing of ROW</li> <li>• drilling or boring beneath habitat</li> </ul>	Minimize disturbance by: <ul style="list-style-type: none"> <li>• narrowing of ROW</li> <li>• using geotextiles and snow to ramp and protect species of concern on ROW.</li> <li>• ensuring minimum of 25 cm of cover</li> <li>• constructing in winter</li> <li>• adjusting or eliminating reclamation mixes to minimize competition</li> </ul>	Avoidance not required. <ul style="list-style-type: none"> <li>• salvage of seed bank through stripping procedures, on-site collection of seed, or on-site transplants may be considered, based on species habitat requirements and site conditions</li> </ul>	Conduct further rare plant surveys and re-assess: <ol style="list-style-type: none"> <li>1. develop accurate habitat descriptions</li> <li>2. identify regionally appropriate habitat from air photos, and target rare plant surveys</li> <li>3. re-assess population sizes and rarity with ANHIC and BCCDC</li> </ol> <ul style="list-style-type: none"> <li>• salvage of seed bank through stripping procedures, on-site collection of seed, or on-site transplants may be considered, based on species habitat requirements and site conditions</li> </ul>

**Notes:** 1 Mitigation options also can be used for plants with traditional uses

**Source:** adapted from Bush 2001

### 13D.14 Erosion Protection

A watercourse crossing report (Appendix 13D.B) has been developed to address erosion control measures adjacent to waterbodies. The following general measures will apply to the Pipeline, including works along the ROW, approaches to waterbodies, access roads and staging areas.

1. Erosion control measures such as silt fencing, temporary diversion berms, timber, sandbags, rock or straw bales will be installed and maintained as determined appropriate by an Environmental Inspector.
2. Where persistent rutting could occur in localized wet areas, shoo-flies may be required around these areas and used for day-to-day traffic flow. Ditching and pipe-laying equipment will access these wet areas on portable swamp mats. To minimize the disturbance, no stripping will be conducted in these areas.
3. The contingency measures listed below will be implemented individually or in combination as required, based on site-specific ROW conditions and project schedule.

For poorly frozen ground conditions:

- restrict construction traffic where feasible to equipment with wide pad tracks or balloon tires that provide low ground pressure
- work only in non-problem areas, such as well-drained, dry sites or in shaded and frozen areas, until conditions improve
- install log corduroy (Section 13D.4.2(12)), swamp mats or geotextiles in problem areas. Preference will be given to minimal disturbance methods of surface stabilization such as swamp mats, which can be removed following construction
- employ frost inducement measures such as snow packing, ice flooding or plowing to increase the load bearing capacity of the ground. Employ frost inducement measures in the evening/early morning to take advantage of freezing temperatures
- run graders at night along the disturbed areas to aid in smoothing rutted areas and help frost penetration
- suspend construction activities in affected areas until soils freeze

#### **13D.15 Historical Resource Protection**

1. Sites documented on the environmental alignment sheets (Appendix 13A) that are flagged or fenced to protect sensitive site-specific features such as previously identified archaeological, heritage or traditional use sites, will be avoided.
2. Where a previously unidentified archaeological or heritage site is encountered during construction, work at that location may not resume until the Environmental Inspectors have been notified and the appropriate provincial cultural and historical resources division has been informed.
3. No further work will be undertaken in the immediate vicinity of the site until a qualified archaeologist examines the site, and permission to proceed is granted.
4. Mitigative measures that will be considered include:
  - narrowing down the ROW and protection of the site using fencing or flagging
  - installing geotextile, wooden mats and log corduroy to temporarily ramp over the site
  - realigning of the ROW to avoid the site
  - assigning a qualified archaeologist or paleontologist to monitor trench operations
  - excavating the site, under the supervision of a qualified archaeologist or paleontologist, to salvage, preserve and record resource materials according to provincial heritage resource guidelines

### **13D.16 Permafrost Protection**

1. Sites documented or flagged to protect permafrost will not be disturbed if at all possible (see Volume 1, Section 5.5 for information on permafrost locations). Newly cleared portions of ROW in delineated permafrost sites will not undergo grading or grubbing. Ditchline will be placed within the existing cleared cutline. Smaller non-merchantable timber and brush will be walked down in newly cleared permafrost areas and root grubbing will not be permitted. In order to smooth these areas for construction equipment, snow packing and water spraying will be used. In areas with little snow, water spraying and snow farming (from other areas) will be used where smoothing is needed. Where feasible, all non-construction traffic will be routed around the permafrost areas on approved shoe-flies. Ditch spoil will be placed on a packed snow/ice layer to minimize possible disturbance to underlying organics during backfill.
2. Following construction, a layer of rollback will be spread across the surface. The brush layer will help to insulate the soils. The undisturbed root mat will allow faster re-vegetation and shading.

### **13D.17 Waste Management Plan**

The following measures are to be followed to reduce the potential of an accidental release of contaminating products being generated or utilized during pipeline construction. These measures will apply to all EnCana Ekwan employees and Contractors transporting materials during the construction of the Pipeline through all sections of the ROW, all staging areas, construction yards, pipe storage areas and public or private roadways.

All Pipeline personnel will abide by federal, provincial, company and project-specific requirements for the storage, handling, transport, disposal and spill reporting (Appendix 13D.D) of products and waste materials that are potentially hazardous to the environment. Awareness of these requirements will be integrated as appropriate into various levels of an environmental education program (Section 13D.17.2).

The Contractor is responsible for ensuring compliance with all permits, applicable codes, regulations and industrial standards for waste management. The Environmental Inspectors or other authorized inspector will audit the construction waste management policies and procedures used to handle and dispose of all wastes associated with construction. In the event of a spill, the spill contingency plan (Section 13D.16.3) will be implemented.

#### **13D.17.1 Guiding Principles**

EnCana Ekwan is committed to performing its activities in an environmentally responsible manner. The following general guidelines are to be implemented:

1. All reasonable preventative measures to avoid the release of wastes or hazardous materials into the environment will be taken.

2. All waste and hazardous material spills will be reported to the Environmental Inspectors and in accordance with regulations to the appropriate regulatory authorities (see Section 13D.16.3).
3. All waste and hazardous material spills will be cleaned up as soon as possible and thoroughly.
4. Where a choice of products exists to perform the same function, the least hazardous product for the application will be selected.
5. Wherever reasonable to do so, wastes will be recycled.
6. Hazardous and waste materials will, to the extent feasible, be disposed of or moved to a secure staging area on a daily basis. The waste management regulations and guidelines applicable to the project include at a minimum those listed in Table 13D-4.

**Table 13D-4 Applicable Waste Management Regulations, Guidelines and Code of Practice**

Jurisdiction	Regulations, Guidelines and Codes of Practice
Federal	Onshore Pipeline Regulations, Section 60, 61, and 62 Workplace Hazardous Materials Information System (WHMIS) Transportation of Dangerous Goods Act (Canada) Transportation of Dangerous Goods Regulations (Canada)
Alberta	Environmental Protection and Enhancement Act (Alberta) Energy Resources Conservation Act (Alberta) Pipeline Act and Regulations (Alberta) Occupational Health and Safety Act (Alberta) Public Health Act (Alberta) Transportation of Dangerous Goods Control Act (Alberta) Fire Code (Alberta) AEUB Guide 55 – Storage Requirements for the Upstream Petroleum Industry AEUB Guide 58 – Oilfield Waste Management Requirements
British Columbia	BC Waste Management Act Special Waste Regulation Spill Reporting Regulation BC Oil and Gas Waste Regulation Forest Practices Code (British Columbia) Rules and Regulations Governing Oil and Gas Pipelines (British Columbia) Transport of Dangerous Goods Act (BC)

### 13D.17.2 Description and Effects of Wastes and Hazardous Materials

Waste and hazardous materials have been divided into three categories for discussion of storage, handling, and disposal procedures.

#### 13D.17.2.1 Solid, Nonhazardous Wastes

Solid, nonhazardous wastes are garbage and debris generated through the activities of personnel during pipeline construction.

Although non-toxic in nature and unlikely to result in any harmful effects, these materials are generally considered as a nuisance and can be further be divided into domestic type and building and industrial type wastes. Domestic type wastes include garbage (e.g., food and consumable product wrappings); building and industrial type wastes include spent welding rods, grinder pads, wood, wire, survey stakes and flagging tape, used geotextile and polyethylene.

#### **13D.17.2.2 Industrial Wastes**

Industrial wastes are wastes and products generated during pipeline construction. These waste materials may contain small quantities of residual substances (e.g. used lube oil, antifreeze), which, if released into the environment, may cause localized contamination of soil, vegetation, surface water or groundwater. Included are materials such as pipe coating materials; used lube filters; spent grease cartridges; containers and cans (oil, antifreeze); drilling mud (depending on additives); and contaminated soil, vegetation or absorbents which may contain hydraulic fluid, gasoline, diesel fuel or lube oil.

#### **13D.17.2.3 Liquid Products and Wastes**

Liquid wastes pose the greatest threat to the environment due to their ability to flow uncontrolled and seep into porous material if not properly contained at all times. Some liquid wastes such as lubricating oil, methanol and antifreeze contain components that are toxic to plants and animals. In addition, many of these materials are readily flammable or explosive. Antifreeze (ethylene glycol) has a sweet smell and may attract wildlife. Should these products enter the environment, localized contamination would require either removal of contaminated soil and vegetation or in situ remediation. Materials that are likely to be found on the construction site include fuels (e.g., gasoline, diesel, propane); lubricants (e.g., engine oil, transmission or drive train oil, hydraulic oil, gear oil, lubricating grease); coolants (e.g., ethylene glycol, propylene glycol); methanol; sewage; paints and solvents and film processing chemicals.

#### **13D.17.3 Handling, Storage, Use and Disposal**

All Contractors and employees of EnCana Ekwan will be required to comply with applicable regulations for the containment, handling and disposal of wastes and potentially hazardous materials.

The following minimum requirements will apply:

1. The Contractor's equipment will be clean and maintained in good operating condition.
2. Personnel who will be handling potentially hazardous materials will possess valid Workplace Hazardous Materials Information System (WHMIS) training.
3. All hazardous materials stored on the project site will be labeled according to WHMIS regulations.



4. All fuel truck drivers will have current Transportation of Dangerous Goods (TDG) certification.
5. The servicing and fueling of equipment will be prohibited within 100 m of waterbodies.
6. Waste materials will be contained, transported and disposed of in accordance with provincial and federal legislation and any applicable company procedures.
7. Fuel and service vehicles will carry:
  - fire extinguishers
  - shovels and fire blankets
  - polyethylene sheet lining, or equivalent, for placing under vehicles to be serviced
  - a minimum of 10 kg of commercial sorbent material as well as sorbent pads and sorbent booms suitable for spill containment cleanup on open water
8. Prior to the initiation of construction activities, the Contractor will ensure that all spill response equipment and materials are readily available.
9. Construction staging areas will be selected and designated to:
  - avoid waterbodies and runoff channels, sensitive vegetation, highly permeable soils, steep slopes and water supply wells
  - prevent vehicle incidents by providing unobstructed access (for delivery vehicles, emergency vehicles)
  - provide safe storage areas, including secondary containment, for all liquid hazardous materials and wastes
  - provide unobstructed access to and egress from emergency response materials and equipment
10. Wastes and bulk products will be stored in designated areas except for quantities generated or required for the daily construction activities. Fuel, oil or hazardous materials required to be stored onsite will not be located within 100 m of a waterbody.
11. Bulk storage tanks will be contained in a bermed area lined with an impervious polyethylene liner. Containment berms will be large enough to contain 125 percent of the largest tank within the containment area. Any rainwater that accumulates within the containment structure may be removed if authorized by an Environmental Inspector. If there is visible hydrocarbon sheen, the water will be collected for proper storage and disposal.
12. The Contractor will visually inspect above ground tanks on a regular basis as well as when the tank is refilled. Inspection records will be maintained for each tank and will be regularly audited by EnCana Ekwan's representative. Should a leak be detected, remedial action will be taken as soon as possible.

13. Hazardous materials will be appropriately labeled in accordance with the TDG and WHMIS regulations for worker protection during handling and incident response. Materials Safety Data Sheets (MSDS) will be available for each product stored at a particular construction yard or staging area. MSDS will be provided an Environmental Inspector.
14. Hazardous waste and material storage areas will be clearly identified and secured.
15. Containers and tanks will be closed when not in use. Drain valves will be locked to prevent accidental or unauthorized releases.
16. Procedures for safe loading and unloading of bulk products will be as follows:
  - service vehicles must be equipped with automatic shut-off valves
  - the vehicle will be grounded if the product is flammable
  - the operator will observe loading and unloading operations at all times
  - when completed, the operator will examine all outlets for leakage and take corrective action if warranted
17. Each construction crew will be equipped with adequate garbage receptacles for solid non-hazardous wastes and debris. These materials will be collected daily or as they are generated and disposed of at approved locations.
18. Receptacles for industrial wastes generated during pipeline construction will be provided in order to keep them segregated from non-hazardous waste. Used oil and oil filters will be placed in sealed containers and delivered for disposal by a qualified service Contractor. Copies of waste manifests will be provided to the Environmental Inspectors.
19. Portable domestic sewage facilities and vacuum truck services will be provided where feasible on each spread.

## **13D.18 Contingency Plans**

### **13D.18.1 Fire Contingency Plan**

#### **13D.18.1.1 Introduction**

The fire contingency plan was developed in accordance with the *Forest and Prairie Protection Act and Regulations* in Alberta; the *Forest Practices Code of British Columbia*; and the *Forest Fire Prevention and Suppression Regulations* in British Columbia. EnCana Ekwan, the Contractor, and any subcontractor on the project will implement the fire contingency plan. The Contractor will be responsible for ensuring that all necessary fire-fighting equipment is located at the job site and that all available resources will be deployed to extinguish a fire.

### 13D.18.1.2 Emergency Contact Numbers

**Table 13D-5 Emergency Contact Numbers for Fire Contingency Plan**

24 Hour Fire Dispatch Coordinator (Alberta)	403-427-FIRE
24 Hour Fire Dispatch Coordinator (British Columbia)	1-800-663-5555
Highland Helicopters (Fort Nelson, British Columbia)	250-774-6106
Canadian Helicopters (Fort Nelson, British Columbia)	250-774-6171
Highland Helicopters (Fort St. John, British Columbia)	250-787-7912
Canadian Helicopters (Fort St. John, British Columbia)	250-787-0431
Delta Helicopters (Rainbow Lake, Alberta)	780-956-3988

### 13D.18.1.3 Fire Suppression

1. Fire suppression measures will commence immediately upon detection of fire.
2. The location and size of the fire, and wind direction will be immediately reported to the Fire Boss (i.e., onsite foreman).
3. The Fire Boss will report any fires and relevant information to the Chief Inspector and Environmental Inspectors, who will then notify the Lands and Forest Service in Alberta, and the BC Forest Service in British Columbia.
4. The Fire Boss will deploy fire-fighting equipment and crew to plow or clear fire breaks or extinguish the fire directly if possible. All equipment and personnel will be made available to control the fire.
5. The Fire Boss will inspect the fire site as soon as possible and take charge of directing suppression measures.
6. Moveable material, particularly explosives or flammable materials, vehicles, and other moveable materials will be promptly moved to a safe location whenever there is a possibility of being endangered by fire.
7. The Fire Boss will deploy additional crew and machinery as needed and will request assistance of Lands and Forest Service in Alberta, and the BC Forest Service in British Columbia if the contractor resources are inadequate. Refer to the Emergency Contact Numbers (see Table 13D-5).
8. Fire suppression measures will continue until the fire is extinguished or until otherwise notified by the agencies in subsection 7, above (if involved in the fire fighting).
9. The Fire Boss will ensure that all burning embers are extinguished and will monitor the burn area for smoldering material. Infrared scanning equipment may be required to detect hot spots.

### 13D.18.2 Horizontal Directional Drill Contingency Plan

EnCana Ekwan has prepared a contingency plan for horizontal directional drills. The plan is contained in this EPP.

### **13D.18.3 Spill Contingency Plan**

Spill reporting tables listing requirements in Alberta and British Columbia and Contact information for the relevant agencies can be found in Appendix 13D.D of this document.

#### **13D.18.3.1 General Guidelines**

Guidelines for the safe handling, storage, use and disposal of potentially hazardous materials are provided in Section 13D.17.3.

1. All equipment-servicing activities with the potential for accidental spills (e.g., oil changes, hydraulic repair) will be completed over an impervious tarp.
2. The servicing and fueling of mobile equipment and storage of fuel, oil or other hazardous material will be prohibited within 100 m of waterbodies.
3. Where immobile equipment is required to operate within 100 m of a waterbody, the following measures will be employed:
  - equipment is to be stationed in an impervious containment area
  - all containers, hoses and nozzles are to be maintained free of leaks
  - operators are to be stationed at both ends of the hose during fueling, unless the nozzle ends are visible and readily accessible by one operator
4. Spill response materials and equipment be readily available for spill response. Fuel and service vehicles will carry a minimum of 10 kg of commercial sorbent material as well as sorbent pads and sorbent booms suitable for spill containment and cleanup on open water.
5. In the event of an accidental release of drilling muds during the horizontal directional drilling operation of a waterbody, the directional drilling mud release contingency plan (Section 13D.18.2) will be implemented.

#### **13D.18.3.2 Initial Response**

1. In the event of a spill of hazardous material, the first person on the scene will:
  - if possible without further assistance, control danger to human life (i.e. remove ignition sources)
  - identify the material spilled and implement appropriate safety procedures, based on the nature of the hazard
  - cut off the source of the spill if possible
  - immediately obtain the assistance of others and begin to contain and clean up the spill
  - notify the Chief Inspector or Environmental Inspector

2. When notified of a spill, the Environmental Inspectors or Chief Inspector (whoever is on the scene first) will immediately ensure that:
  - action is taken to control danger to human life
  - an onsite Safety Supervisor is designated
  - the appropriate provincial services, local police and RCMP have been notified if a risk to the public exists
  - the necessary equipment and personnel are mobilized and measures are being implemented to stop the source of the spill and commence cleanup
3. The Contractor will make all necessary resources available to contain and clean up the spill.
4. Once the emergency contacts are made and the initial efforts to contain and clean up the spill are underway, the Environmental Inspectors will notify EnCana Ekwan's environmental staff and the appropriate government agencies.

#### **13D.18.3.3 General Spill Containment Procedures**

1. Containment measures will be immediately initiated to limit the spread of the spill and to minimize impacts on waterbodies or other areas of environmental concern and to prevent damage to property.
2. If the spill source is from a leaking fuel truck, the tanker will be pumped dry and the contents will be transferred into another tanker or other appropriate and secure containers.
3. Culverts will be blocked to limit spill travel.
4. A shallow depression will be excavated or surface berm constructed in the path of the spill to stop and contain flow. If feasible without delaying containment efforts, topsoil will be salvaged and stored separately during excavations.
5. All free product will be collected with a vacuum truck and transported to an approved waste treatment facility.
6. Sorbent materials will be applied to contain and recover spilled material.
7. Heavily contaminated soil and vegetation as well as sorbent material will be collected and disposed of at an approved waste treatment and disposal facility.
8. Traffic will be minimized on contaminated areas.
9. The spill will be documented by preparing a sketch with dimensions showing the spill location and a report describing the type of spill, cause of spill, and the cleanup and reclamation procedures undertaken.
10. Wildlife will be restricted from entering the affected area, if necessary, by fencing.
11. Final cleanup and reclamation will be conducted following appropriate laboratory analysis of contaminants.

#### **13D.18.3.4 Spills Adjacent To or Into a Waterbody**

1. Berms or trenches will be constructed to contain spilled product and prevent entry into a waterbody.
2. If spilled material enters a waterbody, booms, skimmers and sorbents will be deployed, if feasible, to contain and recover the spilled material.
3. Free product will be recovered by vacuum trucks or, where access is not possible, ignited to reduce quantities and potential for migration.
4. Contaminated areas, including downstream shorelines, will be cleaned up in consultation with spill response specialists and the appropriate government agencies.

#### **13D.18.3.5 Reclamation of Spill Areas**

1. The Environmental Inspectors, in consultation with the Chief Inspector and EnCana Ekwan's environmental staff, and appropriate government agencies will determine appropriate methods to remove or restore contaminated soils. Heavily contaminated soil and vegetation will be disposed of at an approved facility.
2. Since impacts from small spot spills can generally be minimized if immediate action is taken, all small spot spills will be cleaned up immediately and then be reported to the Environmental Inspectors.

### **13D.19 Environmental Compliance**

The construction, operation and maintenance of the Pipeline in an environmentally responsible manner is paramount to EnCana Ekwan. To accomplish this objective, the following initiatives will be implemented: environmental protection planning; environmental inspection; environmental audits; issue resolution and post-construction monitoring.

#### **13D.19.1 Environmental Protection Planning**

To achieve the overall objective of minimizing environmental impact, site-specific environmental mitigation measures have been developed that are presented in this EPP and have been mapped on the environmental alignment sheets (Appendix 13A). The EPP and accompanying environmental alignment sheets are a compilation of all the background environmental work and information arising from stakeholder consultation to date. In addition to the EPP and environmental alignment sheets, applicable supporting documentation will be accessible in the construction field offices. EnCana Ekwan will revise the EPP and environmental alignment sheets for construction, as appropriate, to include future permit approval conditions, the results of additional studies and relevant information gained during ongoing stakeholder consultation.

EnCana Ekwan will obtain all required federal and provincial permits prior to construction and will provide documentation to applicable regulatory agencies upon request.

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### **13D.19.2 Environmental Inspection**

EnCana Ekwan will provide environmental quality assurance during construction through onsite environmental inspection. The involvement in the project of full-time, qualified, well-trained Environmental Inspectors is a key component of the Company environmental compliance strategy.

EnCana Ekwan will retain two qualified Environmental Inspectors for the Pipeline, at least one of which will be present onsite during all environmentally sensitive components of construction. The Environmental Inspectors will report to the Chief Inspector and be recognized as an integral part of the inspection team. Environmental Inspectors will have shutdown authority for environmental reasons. Environmental Inspectors will also be responsible for making recommendations to the Chief Inspector with regard to environmental shutdown.

Environmental Inspectors primary responsibilities include:

1. Ensuring that all environmental commitments, undertakings and terms and conditions of authorizations are implemented and that work proceeds in compliance with all environmental regulations and EnCana Ekwan's environmental initiatives in the most effective manner possible.
2. The tracking of environmental issues, including non-compliance with regulatory commitments. With respect to regulatory non-compliances and environmental issues, the Environmental Inspectors will be responsible for the immediate action to correct any deficiencies and to ensure compliance.
3. The authority to suspend operations where unacceptable situations with serious environmental implications arise (e.g., where fish or fish habitat may be at risk, where plant species of special status, nests or dens are encountered, or where there is significant siltation of a waterbody or erosion of soils).
4. Liaison and interaction, as required with regulatory agencies involved in the project and other interested stakeholders, throughout the construction period on environmental issues.

#### **13D.19.2.1 Environmental Inspectors Qualifications**

The Environmental Inspectors will have a minimum of five years experience in pipeline environmental inspection, preferably in terrain conditions similar to those within which the Pipeline is located. The Environmental Inspectors will have an understanding of pipeline construction techniques and will take a preventative approach rather than a reactive approach to environmental issues. In addition, preference will be given to candidates with a post-secondary education in the natural sciences or other pertinent training. The Environmental Inspectors must have a demonstrated positive attitude toward environmental protection and a track record of successful environmental issue resolution. In addition, Environmental Inspectors will be supported by appropriate resource specialists who have

expertise in the particular issues associated with the project (i.e., Registered Professional Forester, fisheries biologist, botanist, wildlife biologist, reclamation specialist) and who will be available onsite or via consultation, when warranted.

### **13D.19.3 Construction Environmental Audit Program**

EnCana Ekwan will conduct an environmental audit during construction to ensure that the construction meets or exceeds all of the standards for environmental compliance for the Pipeline.

The Environmental Auditor will perform the following tasks:

- review construction environmental protection programs for all applicable pipeline construction activities
- audit environmental protection measures to be used during construction
- ensure adequacy of the construction waste management policies and procedures used to handle and dispose of all wastes associated with construction
- audit the inspection program that addresses environmental issues related to construction

A senior auditor, who may be an EnCana employee, with a thorough knowledge of environmental protection will complete the audit. The Environmental Auditor will be independent of the site staff responsible for environmental compliance and will report directly to EnCana Ekwan's Project Manager.

### **13D.19.4 Issue Resolution**

1. EnCana Ekwan will strive to carry out the project in an environmentally responsible manner through the assessment of environmental issues, the planning and implementation of mitigative measures as well as contingency plans to address those issues, and the establishment of compliance initiatives such as environmental inspection.
2. As mentioned previously, the Environmental Inspectors will have the authority to suspend operations where unacceptable situations with serious environmental implications arise. Environmental Inspectors will provide recommendations to the Chief Inspector with regard to environmental shut down.
3. In the event that unforeseen environmental issues arise during construction for which no mitigative measures have been approved, EnCana Ekwan's Project Manager and the Environmental Inspectors shall formulate a plan of action in consultation with the appropriate government agencies and resource specialists. The plan of action will include measures to both assess and mitigate the potential impact.



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### **13D.19.4.1 Issue Tracking and Reporting**

#### **13D.19.4.1.1 Environmental As-built Report**

Following completion of construction, an environmental as-built report will be prepared making use of daily reports, photos and records of governmental or regulatory liaison. The environmental as-built report will contain:

- a project description including what portion of the work was conducted, the construction kick-off and completion dates, and the names of the activity inspectors and other key construction supervisory personnel with whom the Environmental Inspectors had regular dealings
- the general procedures, equipment used and mitigation measures implemented for each activity for which environmental inspection was required
- the procedures that were implemented in the case of any unforeseen environmental issues that arose, as well as a discussion of the decision making process involved in arriving at those procedures
- a description of problems encountered (e.g., uncooperative operators, equipment breakdown) which may have been detrimental to the efforts to implement mitigative measures and a discussion of any measures taken to alleviate or counteract those problems
- a detailed record of any instances where recommendations (e.g., use of a specific type of seeding equipment) could not be implemented, along with the circumstances and location of the event as well as the decision-making rationale
- a record of governmental or regulatory agencies and stakeholder liaison
- a photo record
- selected environmental alignment sheets with hand-written notes pertinent to the environmental as-built report such as areas where extra temporary workspace was taken, sites where a spot spill occurred, where erosion control measures were installed, and the location of heritage resources or rare and endangered wildlife or plants discovered during construction
- a list of environmental issues and their respective status (i.e., resolved and unresolved)
- the steps EnCana Ekwan proposes to take to resolve any unresolved issues

#### **13D.19.4.1.2 Post-construction Environmental Report**

EnCana Ekwan will complete an aerial and where required, ground-based reconnaissance of the ROW at the end of the first growing season after construction (i.e., September). This reconnaissance will focus mainly on a review of:

- the condition of access management measures (i.e., rollback areas),
- revegetation progress and weed outbreaks,
- erosion features on the ROW
- ditch and ROW subsidence, particularly in delineated permafrost areas
- the condition of specialty reclamation measures (i.e., bank reconstruction and transplants at stream crossings)

The final objectives of the post-construction reconnaissance will be influenced by information documented during construction regarding outstanding environmental issues (i.e., see Environmental As-Built Report) as well as information acquired through pipeline inspection patrols, stakeholder input and site inspections.

Findings of the post construction surveillance work will be summarized in a follow-up post-construction environmental report. More specifically, this report will describe:

- the status of any unresolved environmental issues identified in the Environmental As-Built report
- a summary of general ROW condition and site-specific issues of concern
- requirements for remedial work during the following winter (e.g., ditchline work to eliminate subsidence, additional erosion control measures, additional bank stabilization, etc.)
- requirements for any additional follow-up monitoring during the following summer to provide closure on outstanding issues

### **13D.20 References**

Alberta Environmental Protection. 1998. Code of Practice for the Discharge of Hydrostatic Test Water from Hydrostatic Testing of Petroleum Liquid and Natural Gas Pipelines. Water Act Regulation No. 205. Edmonton, AB.

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