

APPENDIX 6B
CONTINGENCY PLANS
TABLE OF CONTENTS

		Page
1.0	FLOOD AND EXCESSIVE FLOW CONTINGENCY PLAN	6B-1
2.0	FIRE CONTINGENCY PLAN	6B-1
3.0	WET SOILS CONTINGENCY PLAN	6B-2
4.0	SOIL HANDLING CONTINGENCY PLAN.....	6B-4
5.0	SOIL EROSION CONTINGENCY PLAN	6B-4
6.0	SOIL/SOD PULVERIZATION CONTINGENCY PLAN.....	6B-4
7.0	SILTATION OF WATERCOURSES CONTINGENCY PLAN.....	6B-4
8.0	SPILL CONTINGENCY PLAN	6B-5
8.1	Introduction	6B-5
8.2	General Measures	6B-5
8.3	Initial Response.....	6B-5
8.4	General Spill Containment Procedures	6B-6
8.4.1	<i>Transportation by Truck</i>	6B-6
8.4.2	<i>Spills Adjacent to or into a Watercourse or Wetland</i>	6B-6
8.4.3	<i>Spot Spills</i>	6B-7
9.0	BORING PROCEDURES AND INSTREAM DRILLING MUD RELEASE CONTINGENCY PLAN.....	6B-7
9.1	General Measures	6B-7
9.2	Monitoring.....	6B-8
9.3	Emergency Response.....	6B-8
9.4	Plans for Potential Continuance of Drilling	6B-9
10.0	PLANT SPECIES OF CONCERN DISCOVERY CONTINGENCY PLAN.....	6B-10
12.0	WILDLIFE SPECIES OF CONCERN DISCOVERY CONTINGENCY PLAN.....	6B-12
13.0	WILDLIFE ENCOUNTER CONTINGENCY PLAN	6B-13
14.0	HERITAGE RESOURCE DISCOVERY CONTINGENCY PLAN.....	6B-13

Detail 6B-1 **VASCULAR PLANT SPECIES OF CONCERN AND SENSITIVE PLANT COMMUNITY MITIGATION**

TABLES

Table 6B-1 CRITERIA FOR THE SUSPENSION OF ACTIVITIES DUE TO EXCESSIVELY WET SOIL CONDITIONS

Table 6B-2 WILDLIFE SPECIES OF CONCERN AND EXAMPLES OF ASSOCIATED HABITAT FEATURES THAT MAY REQUIRE SPECIAL PROTECTION OR MEASURES IF DISCOVERED

CONTINGENCY PLANS

EOG has a corporate emergency response program which includes procedures, inventory and maintenance of response equipment, and program development. The plan will be activated during construction in the event of an incident involving the EOG Pipeline Project. For construction-related spills, refer to Section 9.0 of this EA for procedures to contain and clean-up the spill. Additional contingency measures for damage to soils and siltation of watercourses, as well as strategies that may be required in the event of flood or excessive flows, fire, release of instream drilling mud, wildlife encounters, plant species of concern, wildlife species of concern and heritage resources, are provided in the following subsections.

1.0 FLOOD AND EXCESSIVE FLOW CONTINGENCY PLAN

Notify EOG's Environmental Inspector or Chief Inspector that contingency measures have been initiated as a result of flooding or excessive streamflow along the pipeline route, so that a record of the location, timing and reason for implementation of the contingency plan is maintained.

The weather conditions will be monitored by the Environmental Inspector on a daily basis. If a major storm is predicted or occurs, qualified personnel will inspect all watercourse crossings where construction is in progress or has been completed, to determine whether any corrective actions need to be implemented.

Trench Dewatering

If the ditch requires dewatering before the pipes are lowered in, water will be pumped into appropriate sediment filtering devices in a way that does not cause erosion or allow any unfiltered water to re-enter a watercourse or wetland community.

The following measures will be implemented where appropriate so that dewatering does not cause environmental effects:

- The pump intake will be elevated from the bottom of the trench to avoid pumping deposited sediment.
- All areas that are to receive discharged water will be approved by the Construction Inspector with the assistance of the Environmental Inspector.
- A containment area for trash pumps will be built using appropriate berms or liners to prevent contamination of soil.
- Discharge outlets for all pumping operations will be equipped with flow dissipaters where the outflow has the potential to cause erosion.
- The discharge area will be monitored so that conditions do not become too silted for adequate natural filtration of water.

If the potential for siltation of a watercourse due to contractor activity is predicted, the contingency plans for Soil Erosion and for Siltation of Watercourses will be implemented.

2.0 FIRE CONTINGENCY PLAN

Appropriate provincial and municipal authorities as well as other applicable provincial government agencies will be notified as soon as practical by the Chief Inspector or Environmental Inspector, that contingency measures have been implemented.

Fire Suppression Measures

The following standard measures will be adhered to during construction of the EOG Pipeline Project.

1. All activity project coordinators and Contractors' vehicles will carry fire-fighting equipment in accordance with provincial regulations. In addition, all motorized equipment must carry a fully charged fire extinguisher.
2. Prior to commencement of construction, the Contractor will designate one of his staff as Fire Boss. The Fire Boss will be familiar with fire-fighting techniques and equipment within the limits of available resources.

In the Event of a Wild Fire

The following mitigative measures will be implemented in the event of a wild fire.

1. Commence fire suppression measures immediately upon detection of fire provided that fire conditions allow personnel to safely proceed.
2. Report location of fire, as well as size of fire and wind direction, to the Fire Boss.
3. The Fire Boss will report wild fires and relevant information to EOG's Environment, Health and Safety staff and Chief Inspector. Applicable provincial authorities will be notified.
4. The Fire Boss will deploy fire-fighting equipment and crew to clear or plow fire breaks or extinguish the fire directly if possible. The Fire boss will notify the local fire department if contractor resources are inadequate. All equipment and personnel adequately fit and trained shall 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. Movable material, particularly explosive or flammable materials, vehicles etc., will be promptly moved to a safe location whenever there is a possibility of being endangered by fire.
7. The Fire Boss will ensure that all burning embers are extinguished and will monitor burn area for smouldering material.

3.0 WET SOILS CONTINGENCY PLAN

EOG will assign Environmental Inspectors with sufficient training and soils-related experience to be able to identify soils that are too wet for a particular activity and when the soils are sufficiently dry to allow the activity to resume. The decision to continue or suspend particular pipeline construction activities on lands with excessively wet soils will be made by the Chief Inspector in consultation with the Environmental Inspector. A record of the location, timing and reason for implementation of the Wet Soils Contingency Plan will be maintained by the Environmental Inspector. In the event that activities are suspended during pipeline construction, and the landowner will be notified as soon as practical by the Environmental Inspector or the Chief Inspector.

Soils are considered to be excessively wet when the planned activity could cause damage to soils either due to rutting by traffic through the topsoil layer into the subsoil; soil structure damage during soil handling; or compaction and associated pulverization of topsoil structure damage due to heavy traffic.

Contingency measures will be implemented, if warranted, once one of the following indicators occurs:

- rutting of topsoil or root zone material to the extent that admixing may occur;
- excessive wheelslip;
- excessive build-up of mud on tires and cleats;
- formation of puddles; or
- tracking of mud as vehicles leave the right-of-way.

In order to minimize terrain disturbance and soil structure damage through rutting or compaction due to wet soil conditions, construction alternatives will be employed, as necessary, in the event of thawed soils during frozen conditions or an excessively wet surface during nonfrozen conditions. The contingency measures listed below will be implemented individually or in combination, as necessary, based on site-specific conditions.

Wet Soil Contingency Measures

1. Restrict construction traffic, where feasible, to equipment with low-ground pressure tires or wide pad tracks.
2. Work only in nonproblem areas, such as well-drained soil or well-sodded lands, until conditions improve.
3. Consider stripping an additional width of topsoil in problem areas.
4. Suspend construction until soils dry out.

If the indicators of excessively wet/thawed soil conditions previously noted above are not evident, soils will be considered dry enough to resume activity.

TABLE 6B-1 CRITERIA FOR THE SUSPENSION OF ACTIVITIES DUE TO EXCESSIVELY WET SOIL CONDITIONS

Land Use	Topsoil Salvage Status	Construction Activity	Suspend Activity for Environmental Issue?
Cultivated and Poorly-sodded Hay, Pasture, Native Prairie and Bush-Pasture	No salvage conducted	Soils handling (topsoil stripping/ replacement)	Yes
	No salvage conducted	Pipe stringing	Yes
	Trench and spoil area stripped	Pipe stringing	No, if stringing truck traffic is restricted to the stripped area
	Trench and spoil area stripped	Pipe stringing	No
	No salvage conducted	Welding	Yes
	Trench and spoil area stripped	Welding	Yes
	Trench and spoil area stripped	Welding	No
	Trench and spoil area stripped	Trenching	No
	Trench and spoil area stripped	Lowering-in	Yes
	Trench and spoil area stripped	Lowering-in	No
	Trench and spoil area stripped	Backfilling	No if backfilling with back hoes or clean up bucket Yes if dozers are used.
	Trench and spoil area stripped	Backfilling	No
	Trench and spoil area stripped	Testing	Yes
	Trench and spoil area stripped	Testing	No
	Topsoil replaced	Testing	Yes
Topsoil replaced	Clean-up	Yes - heavy traffic not permitted; No - quad traffic likely acceptable	
Well-sodded Lands; Hay, Pasture, Native Prairie	No salvage conducted	Soils handling (topsoil stripping/ replacement)	Yes
	No salvage conducted	Pipe stringing	Yes
	Trench width stripping conducted	Pipe stringing	No, if stringing truck traffic is restricted to the stripped area
	Trench width stripped	Pipe stringing	No
	No salvage conducted	Welding	No - activity to be closely monitored and suspended if warranted
	Trench width stripping conducted	Welding	No - activity to be closely monitored and suspended if warranted
	Trench width stripped	Welding	No
	Trench width stripping conducted	Trenching	No
	Trench width stripping conducted	Lowering-in	No - activity to be closely monitored and suspended if warranted
	Trench width stripped	Lowering-in	No
	Trench width stripping conducted	Backfilling	Yes
	Trench width stripped	Backfilling	Yes
	Trench width stripping conducted	Testing	No
	Trench width stripped	Testing	No
	Topsoil replaced	Testing	Yes
Topsoil replaced	Clean-up	Yes - heavy traffic not permitted; No - quad traffic likely acceptable	

4.0 SOIL HANDLING CONTINGENCY PLAN

While soils handling criteria presented in Section 6.0 of Appendix 6B of this EA addresses the key soils handling questions that could occur during pipeline construction, the following minor problems may arise during construction which may result in loss of soil capability if not addressed. Mitigative measures are provided to lessen the potential impacts associated with construction.

Condition/Concern	Mitigative Options
<i>Uneven boundary between topsoil and subsoil</i>	1. Utilize equipment capable of fine depth adjustments when salvaging topsoil.
<i>Uneven surface on native prairie, hay or pasture</i>	2. Use equipment with fine depth control to backfill spoil in contact with sod layer.
	3. Consider use of prairie protector on clean-up bucket or grader blade.
	4. Minimize scalping of sod layer.

5.0 SOIL EROSION CONTINGENCY PLAN

EOG's Environmental Inspector will recommend to the Chief Inspector that contingency measures be initiated during construction of the pipeline component of the EOG Pipeline Project. A record of the location, timing and reason for implementation of the contingency plan will be maintained by the Environmental Inspector. In the event that soils are impacted to an extent that reclamation may be impeded, the Environmental Inspector or Chief Inspector will notify the appropriate authority (*i.e.* Manitoba Conservation or landowner) as soon as practical (see Details in Appendix 6A of this EA).

Contractor equipment and personnel will be made available to control the erosion. During the construction phase of the pipelines, the Chief Inspector, in consultation with the Environmental Inspector, will determine appropriate procedures to be implemented to control soil erosion and other soil handling problems encountered.

6.0 SOIL/SOD PULVERIZATION CONTINGENCY PLAN

Criteria for Implementation

Pulverization may occur on unstripped well-sodded lands, particularly on sandy soil and on cultivated lands with clay soils. The Soil/Sod Pulverization Contingency Plan will be implemented where sod integrity or topsoil on cultivated lands has been disturbed to the extent that the sod will not infill naturally in a reasonable time frame, or there is an unacceptably high risk of soil erosion. The following contingency measures will be implemented where there is no compaction in the subsoil and no need to fully strip topsoil from the area. Locations along the pipeline route where these measures apply will be determined by the Environmental Inspector in consultation with the landowner.

1. Lightly cultivate the affected areas in two directions with a spike cultivator or a scarifier mounted on a grader.
2. Ensure that the area of cultivation is approximately 1 m wider than the disturbed area.
3. Harrow the area to prepare a seed bed.
4. Drill or broadcast seed the area as appropriate and lightly harrow the area again to cover all seed and compact the seed bed.
5. Straw crimp, if necessary, on erosion prone soils.

7.0 SILTATION OF WATERCOURSES CONTINGENCY PLAN

EOG 's Environmental Inspector will notify the Chief Inspector that contingency measures related to watercourse siltation issues have been initiated and will maintain a record of the location, timing and reason for implementation of the contingency plan.

Should an extreme precipitation event threaten, or other circumstances occur which may render the existing sediment control measures inadequate, the procedures outlined below will be implemented progressively or individually as warranted.

1. Prohibit the operation of construction equipment close to the banks of watercourses where there is a risk of bank sloughing, failure of the vehicle crossing or flooding of the work area.
2. Install additional silt fencing to prevent silt-laden water from entering watercourse.
3. Excavate cross ditches to divert runoff away from watercourses.

8.0 SPILL CONTINGENCY PLAN

The Chief Inspector and Environmental Inspector will immediately notify the applicable provincial and federal government agencies of the spill as required by law when a reportable event occurs during the construction of any component of the EOG Pipeline Project. If this is not possible, notification will be made as soon as practical.

In Manitoba, a reportable spill event is defined by the *Dangerous Goods Handling and Transportation Act* (Environmental Accident Reporting Regulation), as:

- The release has caused, is causing or may cause an impairment of or damage to the environment, human health or safety, or property;
- The amount exceeds the quantities to emission levels set out for the substance (see MSDS);
- The release is into a watercourse or into the groundwater or surface water in any quantity; and/or
- The release is 100 L or more (*Dangerous Goods Handling and Transportation Act* (Environmental Accident Reporting Regulation), immediate reporting quantity for flammable liquids (class 3).

Contaminated sites will be assessed, remediation designed and disposal sites identified in accordance with documents from the CCME as applicable.

8.1 Introduction

Guidelines for the safe handling, storage, use and disposal of potentially hazardous materials as well as spill prevention measures and guidelines for the refuelling and servicing of equipment as per CAPP's Environmental Operating Practices for the Upstream Petroleum Industry – Alberta Operations, Canadian Association of Petroleum Producers (CAPP 1999).

8.2 General Measures

The following are standard measures to be adhered to during construction of the EOG Pipeline Project:

1. Appropriate spill equipment will be maintained at all worksites. The risk potential for site-specific spills will be used to determine the appropriate type of response equipment to be stored onsite and suitable location for storage.
2. Specific instructions regarding applicable contacts and appropriate response actions to be taken in the event of a spill will be posted at the field construction office.

8.3 Initial Response

The following actions will be taken upon detection of a spill.

1. In the event of a spill of hazardous material, the first person on the scene will follow the actions presented in the Spill Scene Checklist.
2. When notified of a spill, the Chief Inspector / Environmental Inspector will immediately ensure that:
 - action is taken to control danger to human life
 - an onsite safety Manager is designated;
 - the appropriate provincial disaster services, local police and/or RCMP have been notified;
 - the necessary equipment and personnel are mobilized, and measures are being implemented to stop the source of the spill, if safe to do so, and commence clean-up; and
 - applicable provincial and federal agencies are immediately notified of the spill.
3. The Contractor will make all 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 Chief Inspector / Environmental Inspector will notify EOG's Project Engineer.

8.4 General Spill Containment Procedures

The successful containment of a spill on land or water depends on a variety of factors including: ground cover and topography, hydrogeology, solubility of the material, viscosity of the liquid, water currents, soil permeability and climatic conditions.

The following general guidelines will be followed for containment of most hazardous materials.

1. The first person on the scene will follow the actions listed in the Spill Scene Checklist.
2. Assess the safety hazards of the situation.
3. Remove sources of ignition, if safe to do so.
4. Identify the product, stop source and physically contain spill as soon as safe to do so.
5. Avoid use of water or fire extinguishing chemicals on nonpetroleum product spills since many chemicals react violently with water and chemical extinguishing agents may release toxic fumes. In addition, chemicals may be soluble in water and dispersal makes containment and clean-up more difficult.
6. Minimize traffic on contaminated soils.
7. Use natural depressions or berms constructed with materials and equipment in proximity to the site to physically contain a spill on land. Deployment of booms will be necessary on water.
8. Clean-up will not be attempted without advice from EOG's Environment, Health and Safety staff.

8.4.1 Transportation by Truck

The general guidelines listed below will be followed for the containment of materials spilled from a truck.

1. Contain spilled petroleum product.
2. Pump tanker dry (into appropriate containers or another tanker).
3. Remove tanker from site.
4. Pick up spilled product.
5. Clean-up contaminated area.
6. Dispose of sorbent pads, heavily contaminated soil and vegetation at an approved facility. On lightly contaminated soil areas where remediation is feasible, add amendments, repeat as required, sample soil and seed as appropriate. Repeat as required.

8.4.2 Spills Adjacent to or into a Watercourse or Wetland

The general guidelines listed below will be followed for spills adjacent to or into a watercourse or wetland.

1. Construct berms and/or trenches to contain spilled product prior to entry into a watercourse or wetland.
2. Deploy booms, skimmers, sorbents, etc., if feasible, to contain and recover spilled material from a watercourse or wetland.

3. Pick up spilled product.
4. Clean-up contaminated area including downstream shorelines.
5. Dispose of heavily contaminated soil and vegetation at an approved facility. On lightly contaminated soil areas where *in situ* restoration is feasible, fertilize and then cultivate beyond depth of contamination. Repeat as required.

8.4.3 Spot Spills

Impacts from small spot spills can generally be minimized if appropriate actions are implemented. All small spills of fuels or noxious materials must be reported immediately to the Environmental Inspector.

1. Suspend construction activity and travel in the immediate vicinity of a spot spill until permission to resume activity has been granted by the Environmental Inspector.
2. The Environmental Inspector, in consultation with EOG's Environment, Health and Safety staff, will determine appropriate methods to remove or restore contaminated soils. Soil and vegetation heavily contaminated with petroleum products will be incinerated or disposed of at an approved facility.
3. Locations where spot spills occur are to be flagged or otherwise marked to ensure that post-construction monitoring of the site can be undertaken.
4. Lightly contaminated soil areas where restoration is feasible will be fertilized and then cultivated to a depth below the depth of contamination, then repeated as required.

9.0 BORING PROCEDURES AND INSTREAM DRILLING MUD RELEASE CONTINGENCY PLAN

An accidental release of drilling mud into a watercourse could adversely affect the environment. The following contingency plan has been developed to ensure that appropriate measures are in place to minimize the risk of adverse impacts during watercourse boring operations.

Both the Contractor and EOG must be diligent during all aspects of directional drilling to ensure that the potential for an instream drilling mud release is minimized; or if it does occur, that environmental impacts are minimized.

Should the Contractor have an instream drilling mud release contingency plan in place, both plans will be reviewed by EOG with the Contractor to ensure that the most stringent conditions of both plans apply.

9.1 General Measures

1. Ensure that supervisory personnel are aware of this contingency plan prior to commencement of drilling activity.
2. Arrange for access beyond the boundaries of the pipeline project's surface rights agreement along the drill path to monitor, contain and clean up potential frac-out releases.
3. Install surface casing at the entry point to a depth that extends beyond the coarsest material, if warranted.
4. Ensure that drilling mud composition is limited to bentonite mud drilling systems, fresh water and, if warranted, other inert additives. No toxic additives will be allowed. Provide MSDS to EOG upon request.
5. Install surface casing at the exit point if coarse textured near surface deposits could interfere with drilling mud circulation.
6. Develop a clean-up plan, prior to drilling. The plan will be prepared by the drilling contractor in consultation with EOG inspection staff. Acquire the appropriate approvals to access the release area if off right-of-way and for mud pump-off.
7. Reclaim entry and exit sumps that contained drilling mud immediately after completion of drilling and remediate to meet applicable Waste Management Guidelines.

9.2 Monitoring

1. Supervisory personnel will be onsite at all times during drilling, reaming and pullback operations to ensure that emergency response measures will be implemented immediately and effectively. EOG will also assign inspection personnel to the site during all phases of drilling of the watercourse.
2. Monitor and record the amount of fluid return to the mud tank/pit and the amount of make up drilling fluid required in the mixing tanks during drilling of the pilot hole and hole opening (reaming). Maintain a detailed log of all drilling activities in order to correlate drilling status with potential frac-out events.
3. Monitor both onshore and instream portions of the drill path and surrounding area (*i.e.*, within 400 m minimum) for signs of drilling mud release. The size of the area to be monitored will be determined by evaluating geotechnical conditions (*i.e.*, amount of fracturing, type and depth of substrate) and drilling conditions (*i.e.*, depth of drill path, distance between watercourse and entry and exit points).
Monitoring will be on a continuous basis during drilling operations and will continue for at least 12 hours after shut-down. Personnel equipped with walkie-talkies shall be positioned at the most advantageous locations to observe any sign of a release of drilling mud to the surface or in the watercourse.
4. Ensure that contact is maintained at all times between monitoring and drilling personnel.

9.3 Emergency Response

The loss of drilling mud into seams of coarse material, fissures, etc. routinely occurs during drilling operations. Since drilling fluid does not always flow to the surface, a loss does not necessarily indicate that the drilling mud has been released onto near shore areas or into the watercourse. Nevertheless, a release of drilling mud into a watercourse can adversely affect fish and fish habitat.

1. Suspend drilling operations immediately 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.
2. Immediately notify the Chief Inspector and the Environmental Inspector if a drilling mud release is observed.
3. If the amount of mud released is not great enough to allow practical collection, the mud release will be allowed to dry and dissipate naturally.
4. If the drilling mud release enters a watercourse, the Chief Inspector will immediately notify EOG's Engineering staff, the Saskatchewan Environmental Response Centre and the Manitoba Environmental Response Centre. The Environmental Inspector will immediately notify the provincial fisheries biologist. EOG will notify affected landowners, tenants and/or the appropriate land authority. Any drilling mud release that enters waters or that may cause or is causing an adverse effect is reportable to Manitoba Conservation.
5. Contain and further prevent drilling mud from entering the watercourse from near shore areas by installing a berm of subsoil, sandbags or other material approved by the Environmental Inspector.
6. Conduct water quality sampling as directed by the Environmental Inspector. Instream and near-shore containment/cleanup objectives include the following:

Instream:

- 1) Divert streamflow around the mud release to the extent practical.
- 2) Install silt fencing around the exit point(s), if feasible.
- 3) Remove mud from the watercourse by pumping, shovels or with a hoe.
- 4) Dispose of mud in accordance with provincial requirements.

Onshore:

- 1) Contain the mud release immediately to limit the area affected and prevent the mud from entering the watercourse.
- 2) Dispose of mud.

Consider the following options for removal of mud from instream.

- 1) Use trash pumps or hydrovac truck. If trash pumps are used, ensure that the pump-off area does not drain directly into watercourse or construct a holding area. If a hydrovac truck is used, ensure that all activities comply with the guidelines.
- 2) In consultation with provincial fisheries biologist, leave mud in place if current streamflow levels inhibit removal operations or removal will result in unacceptable terrain or instream damage.

For onshore mud release, consider the following options for immediate containment.

- 1) If accessible by heavy equipment, immediately construct berms or excavate a sump for containment.
- 2) If not accessible by heavy equipment, construct bale and filter cloth weirs and a containment area where appropriate.

Before allowing filtered water to enter the watercourse, ensure that the TSS level is within 10 mg/L of the background TSS levels.

EOG inspection staff will prepare a report summarizing the events leading up to the release as well as measures taken following the release to minimize impacts on the environment.

9.4 Plans for Potential Continuance of Drilling

Drilling will only be allowed to resume if the potential for significant adverse impacts on the environment is low, as determined by the EOG project management, inspection staff, the Fisheries Resource Specialist, drilling or geotechnical consultant (if warranted) and the drilling contractor.

- 1) Implement measures to prevent the further release of drilling mud into the watercourse. Appropriate measures will vary depending on the lessons learned during the previous drill attempt.

Progressively implement the following measures to prevent the further release of drilling mud into the watercourse.

- a) Ensure that appropriate structures, materials, equipment and personnel are in place and available in the event of a subsequent release of drilling mud.
- b) Reduce drilling mud pressures if practical.
- c) Plug fissures/fracture with inert sealers or plugging agents pumped into the drill hole and left undisturbed for an appropriate period of time whereupon drilling will be resumed. If the sealing agents are not successful, drilling will be suspended and the plan reviewed and revised.
- d) Employ downhole cementing to either seal off the problem zone for redrilling or seal off a large portion of the existing drill hole to a point where a new drill path (generally at a lower elevation) can be attempted. If these measures are unsuccessful, then drilling will be suspended and the plan reviewed and revised.
- e) Move the drill and attempt to redrill from a new location employing the same protection measures implemented on the initial drill if conditions indicate that a second drill will be successful. Prior to commencing the redrill, the proposed drill path will be reviewed and revised accordingly.

10.0 PLANT SPECIES OF CONCERN DISCOVERY CONTINGENCY PLAN

Rare plant species (ranked S1 to S3) identified along the proposed pipeline route during the field surveys in spring and summer 2011 are described in Section 5.1.8.3 of this EA.

The suite of mitigative options (*i.e.*, staged mitigation) that may be implemented is outlined in Detail 6B-1 and includes the following:

- narrow down the proposed area of disturbance and protect the site using fencing or clearly mark the site using flagging;
- inform all users of access restrictions along native vegetation segments and in the vicinity of flagged or fenced sites;
- temporarily cover the site with geotextile pads, flex net, or swamp mats;
- extend road or watercourse bores to avoid or minimize impact on the site;
- realign the route to avoid the site; or
- propagate rare plants or specific portions of sensitive communities, via vegetative or reproductive means (*e.g.*, harvesting of seed from the right-of-way or adjacent area, salvaging and transplanting portions of sod and surrounding vegetation or collecting of cuttings).

The Rare Vascular Plant and Plant Community Survey report will outline appropriate mitigation to be implemented at each site.

Detail 6B-1**VASCULAR PLANT SPECIES OF CONCERN AND SENSITIVE PLANT COMMUNITY MITIGATION**

Protection measures and environmental management techniques for rare plants and sensitive plant communities will be based on site-specific conditions and species sensitivity criteria. Final decisions on mitigative measures will be made by EOG in consultation with botanical experts, and where appropriate, the regulatory authority. Mitigative measures generally fall into categories of avoidance, minimizing disturbance and alternative reclamation techniques. The following mitigative measures and options will be considered in the order presented:

1. Preliminary assessment and protection will include the following steps in all cases.
 - Expand field survey of the area to identify whether the species or community is found only within the pipeline construction right-of-way, or extends beyond it.
 - Consult with MB CDC and vegetation experts to verify the status ranking, known distribution, plant species requirements, etc., and to discuss the type of terrain and the construction constraints.
 - Stake and fence off individuals or populations on the right-of-way. This will be done as soon after identification as feasible, to protect rare plants during the pre-construction phase as well as during the construction and reclamation phases.
2. For S1 or S1S2 ranked rare plant species, complete protection is preferred. The mitigation strategy includes the following options in order of preference. One or more options may be used at a site.
 - Consider narrowing down the planned area of disturbance to avoid individuals or populations occurring on the right-of-way or temporary workspace if the species can be fully protected during and after construction, or if a viable, self-sustaining population occurs beyond the right-of-way (Detail 6A-13 in Appendix 6A).
 - Consider a minor realignment of the pipelines or a change in the work side in the immediate area of the vegetation to be protected.
 - Consider boring beneath the site and providing alternative measures for equipment to travel past the area of concern (e.g., protection matting, temporary bridge, drive around).
 - Consider employing appropriate salvage, propagation and transplant techniques (including transplanting the target species surrounded by an island of native vegetation), as directed by EOG's Vegetation Consultant (Detail 6A-14, 6A-16 in Appendix 6A).
3. For S2, S2S3, S1S3, S3, SH and SU ranked rare plant species, the mitigation strategy includes the following options in order of preference. One or more options may be used at a site.
 - Consider narrowing down the planned area of disturbance to avoid individuals or populations occurring on the right-of-way or temporary workspace if the species can be fully protected during construction, or if a viable, self-sustaining population occurs beyond the right-of-way (Detail 6A-13 in Appendix 6A).
 - Consider employing appropriate salvage, propagation and transplant techniques, as directed by EOG's Vegetation Consultant (Detail 6A-14, and 6A-16 in Appendix 6A).
 - Consider traffic restrictions to minimize the amount and type of traffic disturbance.
 - Consider using geotextiles and/or protective matting over the travel lane and spoil pile area to protect populations or habitats from scraping and compacting (Detail 6A-15 in Appendix 6A).
4. For sensitive plant communities the mitigation strategy includes the following options in order of preference. One or more options may be used at a site.
 - Consider narrowing down the planned area of disturbance to avoid individuals or populations occurring on the right-of-way or temporary workspace (Detail 6A-13). Employ the appropriate salvage, propagation and transplant and restoration techniques, as directed by EOG's Vegetation Consultant (Detail 6A-14 and 6A-16 in Appendix 6A).

12.0 WILDLIFE SPECIES OF CONCERN DISCOVERY CONTINGENCY PLAN

Wildlife Species of Concern Discovery Prior to Construction

Wildlife species identified along the proposed pipeline route during the field surveys in June and July 2011 and their conservation status are presented in Section 5.1.9.1 of this ESA. The wildlife or habitat was assessed based on the following criteria:

- the position of the wildlife or habitat feature with respect to the proposed area of development;
- the presence of topographic features or vegetation to effectively screen the wildlife or habitat from construction activities;
- the timing of construction versus the critical timing constraints for the species; and the potential for an alteration of construction activities to minimize or avoid sensory disturbance.

The mitigative measures available include the following:

- abide by provincial/federal timing constraints within the recommended set back distances;
- abide by daily timing restrictions on construction activities;
- narrow down the proposed area of disturbance and protect the site using fencing or clearly mark the site using flagging;
- alter or delay construction activities to avoid sensory disturbance (e.g., no burning);
- extend road or watercourse bores to avoid or minimize effects on the site;
- inform all users of access restrictions in the vicinity of flagged or fenced sites;
- realign the route to avoid the site;
- salvage and transplant vegetation or native seed of critical importance to wildlife species of concern where the habitat could not be avoided;
- install nest boxes or platforms or otherwise replace or enhance habitat during reclamation or restoration; and
- relocate nests or other habitat features or individuals if practical and monitor post-construction response.

Wildlife Species of Concern Discovery During Pipeline Construction

In the event that wildlife species of concern or their site-specific habitat is discovered during construction of the pipelines, the discovery will be assessed and appropriate mitigation measures from the list above will be determined.

In the event that wildlife species of concern or their site-specific habitat are discovered during construction of the pipelines, follow the measures outlined below.

1. Suspend work immediately in the vicinity of any newly discovered wildlife species of concern. Work at that location may not resume until the measures below are undertaken.
2. Environmental Inspector will notify the Chief Inspector.
3. The Environmental Inspector will assess the discovery and either allow construction to be resumed or, in the event of a confirmed or potential discovery, proceed by notifying:
 - applicable government agencies as required; and
 - EOG's Wildlife Consultant.
4. EOG's Wildlife Consultant may deem it necessary to visit the site and will, regardless of whether a site visit is warranted, develop an appropriate mitigation plan in consultation with EOG's Project Engineer. The mitigative measures available include those listed above.

13.0 WILDLIFE ENCOUNTER CONTINGENCY PLAN

In the event of an encounter with wildlife during the construction phase of the pipelines either at the construction site or on the commute to and from the construction site, follow the measures outlined below.

1. Report any incidents (*e.g.*, aggressive behaviour, nuisance behaviour) with wildlife to the Environmental Inspector who will immediately notify the applicable provincial agency (*i.e.* Manitoba Conservation) and, if warranted, the local police detachment.
2. Report any trapped, injured, or dead animals on the site to the Environmental Inspector. The Environmental Inspector will contact the applicable provincial agency to consult on appropriate action.
3. Report location and details of collisions with wildlife to the Environmental Inspector. The Environmental Inspector will notify the applicable provincial authorities and, if warranted, the local police detachment.
4. Once the preceding contacts have been made, the Environmental Inspector will also contact the EOG's Project Engineer.

14.0 HERITAGE RESOURCE DISCOVERY CONTINGENCY PLAN

Heritage Resource Discovery Prior to Construction

As the majority of the proposed pipeline route crosses cultivated lands and a review of the archaeological site inventory and experience in the region indicates there is low potential for intact archaeological components, a historical resources impact assessment will not be conducted for the proposed EOG Pipeline Project.

Heritage Resource Discovery During Construction

In the event that archaeological, historical or palaeontological resources are discovered during construction of the pipelines, the sites will be assessed and appropriate mitigative measures will be determined. The site will be assessed based on the following criteria:

- the significance of the site;
- the location of the site with respect to the route;
- the feasibility of alternate routing or siting to avoid the resource; and
- the decision of the appropriate authority (*i.e.*, Manitoba Culture, Heritage, Tourism and Sport (MCHTS)).

The heritage resources report will specify mitigative measures at each site discovered. The mitigative measures that may be implemented include the following:

- have present a qualified archaeologist or palaeontologist to monitor the trenching operations;
- narrow down the proposed area of disturbance and protect the site using fencing or clearly mark the site using flagging;
- install geotextile and swamp mat(s) to protect the site;
- conduct an excavation to salvage and establish an adequate record of the site according to provincial heritage resources guidelines; or
- realign the route or resituate the facility to avoid the site.

In the event that heritage resources are discovered during construction, follow the measures outlined below.

1. Suspend work immediately in the vicinity of any newly discovered archaeological, palaeontological, historical or traditional land use site. Work at that location may not resume until the measures below are undertaken.
2. Notify the Environmental Inspector who will notify the Chief Inspector.
3. The Environmental Inspector will provide an initial assessment of possible archaeological, palaeontological and historical remains and either allow construction to resume or, in the event of a confirmed or potential discovery, proceed by notifying:
 - EOG's Heritage Resource Specialist;
 - applicable government agencies (e.g., MCHTS) as required; and
4. EOG's Heritage Resource Specialist may deem it necessary to visit the site and will, regardless of whether a site visit is required, develop an appropriate mitigation plan in consultation with EOG's Project Engineer and, if necessary, the appropriate government agency. The mitigative measures available include those listed above.