

Directional drilling is used to install cables and pipelines for gas, telecommunications, power, sewer, oil and water lines underneath watercourses and roads. This method is preferable since the cable or pipeline is drilled underneath the watercourse with very little disturbance to the bed or banks of the watercourse. Directional drilling involves drilling a pilot bore hole underneath the watercourse towards a surface target, back reaming the bore hole to the drill rig while pulling the pipe along through the hole. This process typically uses the freshwater gel mud system composed of a mixture of clean, freshwater as the base, bentonite (clay-based drilling lubricant) as the viscosifier and polymers (synthetic) to transport drilled spoil, reduce friction and stabilize the bore hole. This method is more favourable than an open-cut water crossing because it minimizes the potential to impact fish and fish habitat.

One of the risks associated with directional drilling is the escape of drilling mud into the environment as a result of a spill, tunnel collapse or the rupture of mud to the surface, commonly known as “frac-out”. Frac-outs are caused when excessive drilling pressure results in drilling mud propagating vertically toward the surface. The risk of frac-outs can be reduced through proper design, careful monitoring and having appropriate equipment and response plans ready in the event of a frac-out.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under Section 35 of the *Fisheries Act* no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with Subsection 35(1) of the *Fisheries Act*.

The purpose of this Operational Statement is to describe measures to incorporate into your directional drill project in order to avoid negative impacts to fish habitat. You may proceed with this directional drill project without a DFO review when you meet the following conditions:

- ▶ there is a low risk of frac-out, supported by a geo-technical assessment,
- ▶ you have an emergency frac-out response plan and a contingency crossing plan in place that outlines the protocol to monitor, contain and clean-up a potential frac-out, and
- ▶ you incorporate the *Measures to Protect Fish and Fish Habitat when Directional Drilling* listed below in this Operational Statement.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of Subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact a DFO office in your area if you wish to obtain DFO's opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

You are required to respect all municipal, provincial, territorial or federal legislation (for example, the *Navigable Waters Protection Act*) that applies to the work being carried out in relation to this Operational Statement. If you have questions regarding this Operational Statement, please contact DFO by telephone at (418) 775-0726 or by email at [Habitat-qc@dfo-mpo.gc.ca](mailto:Habitat-qc@dfo-mpo.gc.ca).

We ask that you notify DFO, preferably 10 working days before starting your work by filling out and sending the attached notification form to: Fisheries and Oceans Canada, 850 route de la Mer, C.P. 1000, Mont-Joli, Québec, G5H 3Z4; Fax: (418) 775-0658. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

**This Operational Statement applies to the province of Québec.**

## Measures to Protect Fish and Fish Habitat when Directional Drilling

### Directional Drilling Measures

1. Design the drill path to an appropriate depth below the watercourse to minimize the risk of frac-out and to a depth to prevent the line from becoming exposed due to natural scouring of the stream bed. Ensure the drill entry and exit points are far enough from the banks of the watercourse to have minimal impact on these areas.
2. While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to access the construction site. This removal should be kept to a minimum.
3. Machinery crossing the watercourse (over and back) to bring equipment required for construction to the opposite side of the watercourse is limited to a one-time event. If the stream bed and banks are highly erodible (e.g., dominated by organic materials and silts) and significant erosion and degradation is likely to occur as a result of equipment crossings, then a temporary crossing structure or other practice should be used to protect these areas. The crossing must also adhere to the following timing windows: between June 27 and September 1, unless it is clearly established that the work schedule will not interfere with the fish species life cycles.
4. Operate machinery on land (above the high water mark) and in a manner that minimizes disturbance to the banks of the watercourse.
  - 4.1. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
  - 4.2. Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent any deleterious substance from entering the water.
  - 4.3. Keep emergency spill kit on site in case of fluid leaks or spills from machinery.
  - 4.4. Restore banks to original condition if any disturbance occurs.
5. Ensure drilling mud, sediment-laden water and any other deleterious substances are contained above the HWM mark and do not enter the watercourse.
  - 5.1. Dispose of excess drilling mud, cuttings and other waste materials at an adequately sized disposal facility located away from the water to prevent it from entering the watercourse.
6. Monitor the watercourse to observe signs of surface migration (frac-out) of drilling mud during all phases of construction.

### Emergency Frac-out Response and Contingency Planning

7. Keep all material and equipment needed to contain and clean up drilling mud releases on site and readily accessible in the event of a frac-out.
8. Develop a frac-out response plan that includes measures to stop work, contain the drilling mud and prevent its further migration into the watercourse, notify all applicable authorities, including the closest DFO office in the area (phone : (418) 775-0726 or fax : (418) 775-0658), and clean up and dispose of the drilling mud. Ensure clean up measures do not result in greater damage to the shoreline and watercourse than from leaving the drilling mud in place.



9. Ensure clean up measures do not result in greater damage to the banks and watercourse than from leaving the drilling mud in place.
10. Develop a contingency crossing plan including measures to either locate a more appropriate location to re-drill or to isolate the watercourse to complete the crossing at the current location (see measures #11-14 below on how to isolate the channel).

### **Contingency for Isolated Crossings In the Event of a Frac-out**

The following measures should be followed to complete an isolated crossing in the event of a frac-out, when relocating and re-drilling are not feasible. An isolated crossing (i.e., dam and pump, flume) involves diverting the flow around the construction site.

11. Time the isolated crossing to protect spawning fish and incubating eggs by adhering to the following timing windows: between June 27 and September 1, unless it is clearly established that the work schedule will not interfere with the fish species life cycles.
12. **Temporary Isolation**
  - 12.1. Install effective sediment and erosion control measures before starting work to prevent entry of sediment into the watercourse. Inspect them regularly during the course of construction to ensure they are functioning properly. Make all necessary repairs if any damage is discovered.
  - 12.2. Use coffer dams such as aqua-dams, sand bags, concrete blocks, steel or wood wall, clean rip-rap with an impermeable liner, sheet pile or other appropriate designs to separate the in-water work site from flowing water.
  - 12.3. Use clean material to build flow diversion structures and face the structures with clean, washed granular material that is adequately sized (i.e., moderate sized rip-rap and not sand or gravel) to hold the structure in place during construction. Material to build the flow diversion structure should not be taken from below the HWM.
  - 12.4. Design coffer dams to accommodate any expected high flows of the watercourse during the construction period.
  - 12.5. Minimize flow constriction to maintain unobstructed fish passage and restore original flow as soon as work is completed.
  - 12.6. Before starting trench construction, salvage fish from behind the coffer dam and return them to the downstream portion of the watercourse.
  - 12.7. Remove accumulated sediment from behind the coffer dam before it is removed and ensure that the original bed of the watercourse is not excavated.
  - 12.8. Restore the original channel bottom gradient and substrate after removing coffer dams.
  - 12.9. Treat water from dewatered areas or divert into a vegetated area or settling basin to remove suspended solids and prevent sediment and other deleterious substances from entering the watercourse.
  - 12.10. Gradually remove the coffer dam to equalize the water levels inside and outside the isolated areas and reduce the amount of suspended sediment that is carried downstream.
13. **Pumped Diversions**  
Pumped diversions are used to isolate a portion of a channel to allow work 'in the dry' while maintaining downstream flows.

- 13.1. Do not use pumped diversions where there are fish passage concerns.
- 13.2. Before pumping water from the work area, salvage fish within the isolated area and return them to the downstream portion of the watercourse (please contact provincial authorities for the required permit or authorization).
- 13.3. Ensure intakes are sized and adequately screened to prevent debris blockage and fish mortality (refer to DFO's *Freshwater Intake End-of-Pipe Fish Screen Guidelines*).
- 13.4. Ensure pumping system is sized to accommodate any expected high flows of the watercourse during the construction period. Back-up pumps should be kept on site in case of pump failure.
- 13.5. Line the area where the intake discharges with clean rock to prevent erosion and the release of suspended sediments downstream.

### **14. Machinery**

In addition to the measures in Measure #4, these measures should be incorporated when doing an isolated crossing:

- 14.1. Install stabilized entrances at machinery access points and establish single site entry and exit.
- 14.2. Minimize distance between machinery access points from the stream banks to the work site to reduce disturbance to fish habitat.
15. Stabilize any waste materials removed from the work site to prevent them from entering the watercourse. This could include covering stockpiles with biodegradable mats or tarps or planting stockpiles with grass or shrubs.
16. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent soil erosion and to help seeds germinate. If there is insufficient time in the growing season remaining for the seeds to germinate, stabilize the site (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and then vegetate the following spring.

Aussi disponible en français.



# NOTIFICATION FORM

Québec  
Operational Statement

VERSION 2.0  
Valid until March 31, 2007

PROPONENT INFORMATION			
NAME:			
STREET ADDRESS:			
CITY/TOWN:		PROVINCE/TERRITORY:	POSTAL CODE:
TEL. NO. (RESIDENCE):		TEL. NO. (WORK):	
FAX NO:		EMAIL ADDRESS:	
CONTRACTOR INFORMATION (provide this information if a Contractor is working on behalf of the Proponent)			
NAME:			
STREET ADDRESS:			
CITY/TOWN:		PROVINCE/TERRITORY:	POSTAL CODE:
TEL. NO. (RESIDENCE):		TEL. NO. (WORK):	
FAX NO:		EMAIL ADDRESS:	
PROJECT INFORMATION			
Select Operational Statements that are being used (check all applicable boxes):			
<input type="checkbox"/> Aquatic Vegetation Removal	<input type="checkbox"/> Culvert Maintenance	<input type="checkbox"/> Maintenance of Riparian Vegetation in Existing Rights-of-Way	
<input type="checkbox"/> Beach Creation	<input type="checkbox"/> Directional Drilling	<input type="checkbox"/> Moorings	
<input type="checkbox"/> Beach Maintenance	<input type="checkbox"/> Dock Construction	<input type="checkbox"/> Overhead Lines	
<input type="checkbox"/> Beaver Dam Removal	<input type="checkbox"/> Ice Bridges	<input type="checkbox"/> Punch and Bore Crossings	
<input type="checkbox"/> Bridge Maintenance	<input type="checkbox"/> Isolated Ponds	<input type="checkbox"/> Routine Maintenance Dredging	
<input type="checkbox"/> Clear-Span Bridges	<input type="checkbox"/> Log Salvage	<input type="checkbox"/> Underwater Cables	
Select the type of water body or watercourse at or near your project:			
<input type="checkbox"/> River, Stream, Creek	<input type="checkbox"/> Marine (Ocean or Sea)		
<input type="checkbox"/> Lake (8 hectares or greater)	<input type="checkbox"/> Estuary		
<input type="checkbox"/> Pond or wetland (pond is less than 8 hectares)			
PROJECT LOCATION (S) (fill out this section if the project location is different from Proponent Information; append multiple project locations on an additional sheet if necessary)			
Name of water body or watercourse		Coordinates of the Project (UTM co-ordinate or Degrees, Minutes, Seconds), if available	
		Easting: Latitude:	Northing: Longitude:
Legal Description (Plan, Block, Lot, Concession, Township, Section, Range)		Directions to Access the Project Site (i.e., Route or highway number, etc.)	
Proposed Start Date (YYYY/MM/DD):		Proposed Completion Date (YYYY/MM/DD):	

We ask that you notify DFO, preferably 10 working days before starting your work, by filling out and sending in, by mail or by fax, this notification form to: Fisheries and Oceans Canada, 850 Route de la Mer, P.O. Box 1000, Mont-Joli, Québec G5H 3Z4; Fax : (418) 775-0658. This information is requested in order to evaluate the effectiveness of the work carried out in relation to the Operational Statement.

I, \_\_\_\_\_ (print name)  
certify that the information given on this form is, to the best of my knowledge, correct and complete.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**Note:** If you cannot meet all of the conditions and cannot incorporate all of the measures in the Operational Statement then your project may result in a violation of Subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact the DFO office in your area if you wish to obtain DFO's opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

Information about the above-noted proposed work or undertaking is collected by DFO under the authority of the *Fisheries Act* for the purpose of administering the fish habitat protection provisions of the *Fisheries Act*. Personal information will be protected under the provisions of the *Privacy Act* and will be stored in the Personal Information Bank DFO-SCI-605. Under the *Privacy Act*, individuals have a right to, and on request shall be given access to, any personal information about them contained in a personal information bank. Instructions for obtaining personal information are contained in the Government of Canada's Info Source publications available at [www.infosource.gc.ca](http://www.infosource.gc.ca) or in Government of Canada offices. Information other than "personal" information may be accessible or protected as required by the provisions of the *Access to Information Act*.

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