

**Appendix E**

**Union Gas Limited and Fisheries and  
Oceans Canada Agreement related to  
Watercourse Crossings for Pipeline  
Construction and Maintenance**



Fisheries  
and Oceans, Canada

Pêches  
et Océans, Canada

Ontario Great Lakes Area

Secteur de l' Ontario et des Grands Lacs

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Bridgette Jones  
Union Gas Limited  
P.O. Box 2001  
50 Keil Drive North  
Chatham, Ontario  
N7M 5M1

May 2, 2008

Dear Ms. Jones:

**SUBJECT: Agreement Letter between Union Gas Limited and Fisheries and Oceans Canada – Ontario Great Lakes Area Related to Watercourse Crossings for Pipeline Construction and Maintenance (DFO-UGLA / UGL AGREEMENT 2008)**

In 1997, Fisheries and Oceans Canada – Ontario Great Lakes Area (DFO-UGLA) and Union Gas Limited (UGL) established a process for the review and notification of water crossing projects. Under this Agreement, UGL conducts water crossings under a specific set of conditions and mitigation measures without DFO review. As a result of our recent meetings, this Agreement letter along with the following represents our updated agreement:

- Attachment A - direction on the compliance with the federal *Species at Risk Act*, and
- Attachment B - sediment and erosion control plans.

This Agreement entitles UGL to implement “dry” or trench less pipeline crossings (including small directional drills) conducted in accordance with the sediment control plans (SCP) contained in Attachment B without submitting formal plans for DFO-FHM's review. For projects that are not covered by the sediment and erosion control plans, UGL will comply with applicable Operation Statements (e.g. directional drilling, beaver dam removal). Please refer to the following website for the latest versions of the Operational Statements ([http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/on/index\\_e.htm](http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/on/index_e.htm)).

The generic SCP's include:

- “Generic Sediment Control Plan for Dry Flume Water Crossings”, dated January, 2008.
- “Generic Sediment Control Plan for Dam and Pump Water Crossings” dated January, 2008.
- “Generic Sediment Control Plan for Temporary Vehicle Crossings” dated January, 2008.

Canada

DFO-OGLA is satisfied that if "dry"/trenchless watercourse crossings are carried out as specified in the generic SCP's, the proposed work is not likely to contravene subsection 35(1) of the *Fisheries Act*, which stipulates that:

*"No person shall carry on any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat."*

DFO-OGLA will continue reviewing projects whenever the harmful alteration, disruption or destruction on fish habitat may be involved or under SARA. This would include, but not necessarily be limited to, the following scenarios:

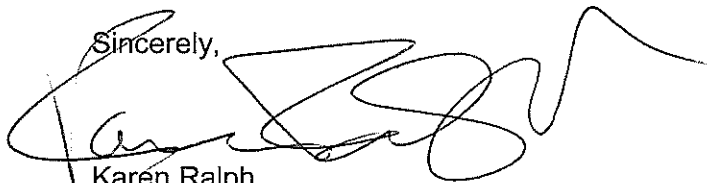
- Projects that have the potential to contravene SARA must be referred to DFO for review to ensure compliance with SARA. To make this determination, follow the guidance in Attachment A.
- Pipeline crossings employing 'wet' open trench methods require site specific review. This also extends to include works which may impact wetlands and/or other sensitive fish habitat features that may not necessarily be inundated with water at the time of the work. Details of the work and existing conditions will need to be established early in the planning stage to enable DFO-OGLA or a partner agency to make a determination of the potential impacts to fish and fish habitat. An Authorization will be prepared once site specific details of the mitigation and compensation measures are approved by DFO-OGLA. The use of explosives in waters frequented by fish may result in the destruction of fish by means other than fishing. An Authorization, pursuant to Section 32 of the *Fisheries Act*, will be required for watercrossings that require the use of explosives.

If the harmful alteration, disruption or destruction of fish habitat occurs as a result of a change in the generic SCP's, prosecution under subsection 35(1) of the *Fisheries Act* may be initiated.

Please notify DFO-OGLA of all water crossings that apply to this agreement a minimum of 10 days prior to the work using the appropriate notification form.

If you have any questions, please feel free to contact me at (905) 336-6285.

Sincerely,



Karen Ralph,  
Chief, Area Operations  
Ontario – Great Lakes Area  
Fisheries and Oceans Canada

Copy Ed DeBruyn, Area Director, OGLA  
District Managers, OGLA  
Doug Schmidt, Union Gas Limited  
Jane Tymoshuk/Derrick Beach, OGLA

## **Attachment A: Guidance on the *Species at Risk Act***

### **Background**

The Species at Risk Act (SARA) was created to prevent wildlife species from becoming extinct. It requires Canada to provide for the recovery of species at risk due to human activity, and to manage species of Special Concern, to prevent them from becoming Endangered or Threatened. The Act covers all wildlife species at risk nationally, their residences and critical habitats, and applies to all lands in Canada. SARA not only prohibits the killing, harming, harassing, capturing or taking of species at risk, but also makes it illegal to destroy their residences and critical habitats.

More specifically, the provisions of SARA:

- set out prohibitions against the killing or harming of a listed species and the destruction of their residences and critical habitats;
- require other federal departments to consider the impact on a listed species, their residences and critical habitats before issuing authorizations for certain activities; and
- provide for effective enforcement measures and significant penalties where needed to serve as a deterrent.

Refer to the SARA Public Registry at <http://www.sararegistry.gc.ca/> for a current list of fish and mussel species that are afforded protection under SARA. Since the list of species subject to SARA is revised periodically by the Minister of the Environment in response to annual assessments conducted by COSEWIC, the SARA Public Registry should be checked for the most up-to-date list.

**Three federal Ministers** are responsible for the administration of SARA:

- The Minister of Fisheries and Oceans is responsible for aquatic species at risk;
- The Minister of Canadian Heritage (through the Parks Canada Agency) is responsible for individuals of species at risk found in national parks, national historic sites or other protected heritage areas;
- The Minister of the Environment is responsible for all other species at risk, and is also responsible for the administration of the Act.

Under SARA, the federal government must produce recovery strategies and action plans for species listed as Endangered or Threatened. Recovery strategies must be completed within one year for Endangered species, and within two years for Threatened species, of being listed under SARA.

The list of species subject to SARA is revised periodically by the Minister of the Environment in response to annual assessments conducted by COSEWIC. For an up-to-date list of wildlife species on each schedule, refer to the SARA Public Registry at <http://www.sararegistry.gc.ca/>.

### **Review Process - Aquatic Species at Risk**

It will be the responsibility of Union Gas Limited (UGL) to determine whether a project should be referred to DFO for review under SARA. A series of distribution maps will be provided to UGL on an annual basis to be used as a screening tool. UGL will refer to the distribution maps to determine whether there is the potential for aquatic SAR to be present at proposed pipeline crossing sites. A Reference Guide provides further direction on the process to follow for projects proposed within the distribution range of a listed aquatic SAR.

Projects that have the potential to contravene SARA must be referred to DFO for review to ensure compliance with SARA. UGL will refer projects to DFO for review under SARA when it has been determined that Schedule 1 SARA aquatic species are present at the project site and will be potentially impacted by proposed project activities.

For projects that are referred to DFO by UGL, DFO will review works or undertakings, prepare authorizations and issue letters of advice in accordance with the provisions in the SARA, the *Fisheries Act* and CEAA. DFO is responsible for the enforcement of the SARA and protection of federally listed aquatic SAR in Ontario. The review of any proposed projects and/or enforcement activities will take into consideration the protection of SAR, ensuring compliance of the prohibitions of the Act as described in Sections 32, 33 and 58 (see below). These prohibitions only apply to Endangered or Threatened species listed on Schedule 1 of the Act, and to Extirpated species only if a SARA-compliant Recovery Strategy recommends its reintroduction to Ontario.

Since many measures in the SARA are already within the authority of the Minister of Fisheries and Oceans under the *Fisheries Act* (e.g. preventing destruction of fish habitat), the SARA will not replace, but complement, current responsibilities under the *Fisheries Act*.

### **SARA Permits:**

It is the responsibility of UGL to obtain SARA permits when proposed project activities may affect an Extirpated, Endangered or Threatened fish or mussel species on Schedule 1 of the SARA. UGL will refer any proposed projects that may require a SARA permit to DFO for review.

A SARA permit should be obtained prior to the initiation of any the project construction activities when:

- Project activities may cause incidental harm to a SAR, in particular the contravention of any one of the 3 SARA prohibitions (Sections 32, 33 and 58)
- Field surveys are proposed to detect fish or mussel SAR including any monitoring programs for SAR
- Mitigation strategies include either SAR mussel relocations or fish salvage operations

Note: A SARA compliant Authorization may be issued for projects requiring both a *Fisheries Act* Authorization and a SARA permit. This type of Authorization combines the *Fisheries Act* Authorization and SARA permit into one document. The most appropriate approach for approvals will be determined on a case by case basis by the DFO assessor reviewing the file.

### ***Species at Risk Act – Prohibitions***

**32.** (1) *No person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species....*

**33.** *No person shall damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered species or a threatened species or that is listed as an extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada....*

**58.** (1) *Subject to this section, no person shall destroy any part of the critical habitat of any listed endangered species or of any listed threatened species—or of any listed extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada —if*  
(a) *the critical habitat is on federal land, in the exclusive economic zone of Canada or on the continental shelf of Canada;*  
(b) *the listed species is an aquatic species; or*  
(c) *the listed species is a species of migratory birds protected by the Migratory Birds Convention Act....*

### **Selected References**

Fisheries and Oceans Canada, *Species at Risk Act*:

[http://www.dfo-mpo.gc.ca/species-especes/home\\_e.asp](http://www.dfo-mpo.gc.ca/species-especes/home_e.asp) (English site)

[http://www.dfo-mpo.gc.ca/species-especes/home\\_f.asp](http://www.dfo-mpo.gc.ca/species-especes/home_f.asp) (French site)

Fisheries and Oceans Canada. 2007. Reference Guide for Fish and Mussel Species at Risk Distribution Maps. A Referral Review Tool for Projects Affecting Aquatic Species At Risk.

*Species at Risk Act*:

SARA Public Registry: <http://www.sararegistry.gc.ca/>

Environment Canada Species at Risk website: <http://www.speciesatrisk.gc.ca/>

COSEWIC <http://www.cosewic.gc.ca>

Habitat Stewardship Program <http://www.cws-scf.ec.gc.ca/hsp-pih>

**Attachment B: Sediment Control Plans**

## Generic Sediment Control Plan – Vehicle Crossings

This plan sets out the measures that will be taken by Union Gas Limited (company) and its contractors to control downstream sediment to the lowest level practically achievable during the construction, use and removal of temporary vehicle water crossing at streams, rivers and ponds. The conditions and techniques set out on this plan are to be followed unless approved otherwise by the Department of Fisheries and Oceans (DFO).

### General Measures

The company must use materials, construction practices, mitigation techniques and monitoring of operations at every water crossing in order to prevent the unauthorized harmful alteration, disruption or destruction of fish habitat or the impairment of water quality. Vehicle crossings typically include temporary bridges such as wooden mats (swamp mats), portable bridges and culvert/grade fill ramps. The following requirements apply to any waterbody (stream, river, pond) and areas adjacent to it.

- Temporary vehicle access to be in place for less than four seasons and no work shall occur outside of timing windows, unless prior approval is obtained from the permitting agency. If temporary vehicle access is to stay in place outside of the in-water timing windows, then appropriate fish passage will be provided.
- Use existing vehicle access across watercourses wherever possible.
- Prior to removal of the low vegetative cover, effective mitigation techniques for erosion and sediment control must be in place to protect water quality. Limit the areal extent of disturbance to the minimum needed for construction and delay grubbing to immediately prior to grading operations.
- Prior to commencing the installation of temporary vehicle crossings, local weather stations will be monitored to determine whether any precipitation is forecasted. If practical work will be delayed until weather conditions are favourable and if flows are in flood stage. If necessary to proceed with work under unfavourable conditions, the company will exercise due diligence.
- Vehicle crossing structures capable of handling anticipated high water flows during the construction period will be used. See guidelines below on sizing of water openings.
- Coarse cobbles, sandbags, geotextile liners and/or curb stringers to protect culvert and ramp approach fills from erosion and to prevent sedimentation of a watercourse will be used.
- On the approaches to vehicle crossing structures, road ditches constructed for drainage control will incorporate the necessary erosion and sedimentation control measures (e.g., silt fence, check dams) to prevent sediment from entering the watercourse.
- Except during construction of the crossing, the company will not obstruct any watercourse so as to impede the free movement of water and fish.
- All exposed mineral soil must be graded to a stable slope and treated as quickly as possible to prevent erosion and sediment from entering the water.
- All temporary vehicle crossing structures will be removed upon completion of construction. Banks and approaches will be restored and stabilized immediately upon removal of a vehicle crossing structure.
- The area around water crossings is to be regularly monitored and if erosion problems develop, immediate action is to be taken with appropriate treatments and completed as quickly as possible. Accumulated sediment is to be removed regularly from sediment control mitigations.
- Equipment fording will only be allowed with approval from the applicable government agencies. Fording will only be considered if:
  - The fording site does not support known critical aquatic habitat, such as spawning gravels;
  - The fording does not take place during fish spawning, incubation or migration periods;
  - The work site cannot be accessed from the opposite side of the watercourse to avoid fording activities;
  - The fording site has low profile and gradual banks which will not require grading to support vehicle traffic;
  - The fording site has relatively shallow water depths (less than 1m) at time of use;
  - The fording site has coarse substrate which will support vehicle travel without creating erosion and sedimentation;
- Run-off from the approach slopes to the ford can be effectively controlled to prevent sediment introductions to the stream.
- The number of crossings of the fording should be limited to a one-time event (over and back).
- Boundaries of the fording site will be marked on both sides of the crossing to confine all vehicle traffic to the ford.
- Fords will be aligned at right angles to the channel flow wherever possible to minimize instream travel.
- Excess soil will be removed from vehicles before fording. In addition, all vehicles using the ford will be in good working order and checked to ensure no fuel, hydraulic fluid or lubricating fluid leaks are present.
- Bed and banks of ford sites will be restored when no longer needed.
- For additional information refer to the Fisheries and Oceans Operational Statement–Clear Span Bridges. If the installation of a clean span bridge can meet all the conditions as stated in the Operational Statement, DFO review is not necessary.
- The company will be held responsible for implementation of this plan.

### Sizing of Water Opening

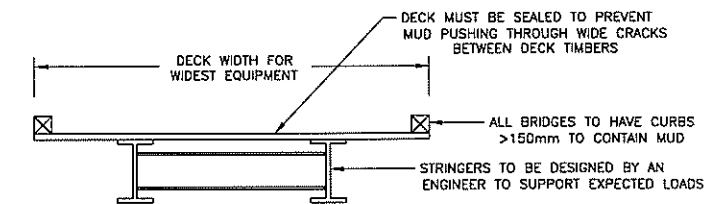
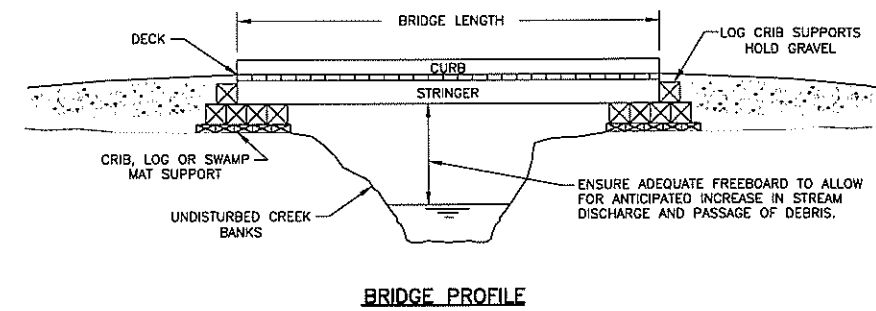
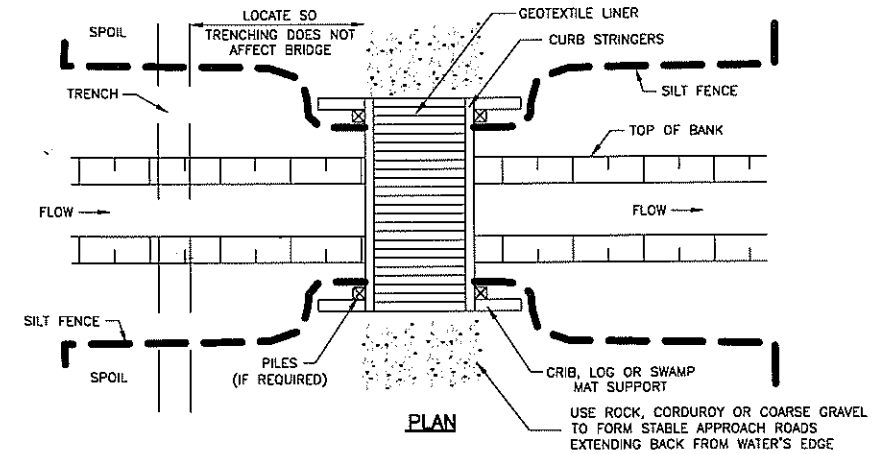
It is important that the size of the water opening be selected so the structure can safely pass flood flows that can reasonably be expected to occur during the life of the crossing. Either of the following methods can be followed:

- Install a bridge that clear spans the creek from top of bank to top of bank and ensure adequate freeboard to allow for anticipated increase in stream discharge and passage of debris.
- Conduct a hydrology analysis to determine theoretical opening size. The design flow will be the two year flood (Q2), unless the culvert is to be left in place through the spring freshet, in which case the theoretical opening size will be based on the five year flood (Q5). Culvert sizes may also be selected to be the same as existing nearby culverts that have been in place for many years and have performed satisfactorily.
- Culvert sizes and lengths must be approved by DFO prior to installation.
- If culverts are used, the approved size or equivalent multiple culverts must be installed. If a bridge is selected with cribs or piers in the water, the opening must provide the same end area as the culvert and must be approved by DFO.

## Detailed Construction Sequence – Temporary Bridges

In general terms, the following sequence of construction and mitigation measures will be followed at all temporary bridges:

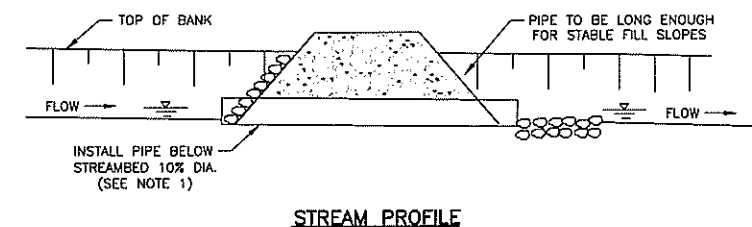
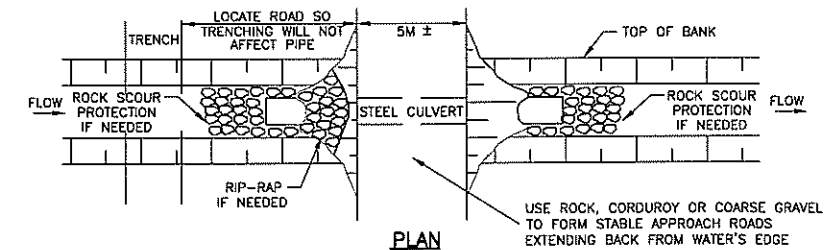
1. Generally, there are no restrictions on timing for the construction of clear-span structures as they do not involve in-water work. However, if there are any activities with the potential to disrupt fish or fish habitat (e.g., in-water crossing of watercourse by machinery), these should be done during provincial fisheries, timing windows.
2. Install the bridge in a manner that will minimize sediment entering the water. Stringers must be engineered to support the loads expected on the bridge. Curbs at least 150 mm high must be installed along the edge of the deck and if necessary, the deck lined with geotextile to contain mud on the bridge. Fasteners connecting components must be strong enough to hold them in position during the life of the bridge. If used, cribs are to be filled with rock or cobble. Rip rap erosion protection is to be placed around the cribs and on the fill slopes projecting into the water.
3. Road approaches leading to bridges and flume vehicle crossings must be raised and stable so equipment loads are supported a sufficient distance back from the water to reduce mud entering the stream from equipment tracks. This may require using materials such as gravel, rock or corduroy. If cuts are needed to obtain a satisfactory grade, they are to be dug with side ditches and stable slopes. Erosion and sediment control measures are to be installed to keep sediment on land (e.g., check dams, filter cloth, rip rap, seed and mulch, sediment traps, etc.)
4. While the bridge is in use, any buildup of mud on the bridge deck or approaches that is affecting water quality is to be scraped off and disposed of in an approved location.
5. Temporary crossings shall be removed as quickly as possible when no longer required. Surplus gravel and bridge materials are to be removed from the crossing area and stabilized above the floodplain in an approved location. The creek bed and banks are to be restored to a stable angle and protected with erosion resistant material compatible with flow velocity (e.g., coarse gravel or rip rap). Measures such as berms or logs may be needed to prevent sediment laden water running down the road.
6. Vegetate any disturbed areas by planting and seeding preferably native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.



## Detailed Construction Sequence – Temporary Culverts

In general terms, the following sequence of construction and mitigation measures will be followed at all temporary culverts:

1. Install culvert pipe of diameter and length as per approval conditions. Culvert invert is to be set to allow a minimum of 10cm water depth for fish passage where soil conditions permit (otherwise at at stream grade and slope). If streambed soils are soft, install coarse gravel or rockfill pad under the pipe. Pipe installation can be done in flowing water unless DFO specifies otherwise. Culvert backfill and fill for the road is to be coarse granular or rock fill material. Erosion protection may be needed on the upstream road fill slope and if scour is possible, rip rap is to be placed in the streambed upstream and downstream of the pipe outlet.
2. The road approach leading to the culvert crossing must be raised and stable so equipment loads are supported a sufficient distance back from the water to reduce mud entering the water from equipment tracks. This may require using materials such as gravel, rock or corduroy. If cuts are needed to obtain a satisfactory grade, they are to be dug with side ditches and stable slopes. Erosion and sediment control measures are to be installed to keep sediment on land (e.g., check dams, filter cloth, rip rap, seed and mulch, sediment traps, etc.)
3. While the culvert is in use, any build-up of mud on the road surface or approaches that is affecting water quality is to be scraped off and disposed of in an approved location.
4. When the temporary crossing is no longer required, it is to be removed as quickly as possible. Removal shall not occur outside the construction windows as identified in the approval without prior written approval from DFO. Surplus gravel is to be removed from the crossing area and disposed of in an approved location. The creek bed and banks are to be restored to a stable angle and protected with erosion resistant material compatible with flow velocity (e.g., coarse gravel, rip rap or erosion control matting). Measures such as berms or logs may be needed to prevent sediment laden water running down the road.
5. Vegetate any disturbed areas by planting and seeding preferably native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.



### NOTES

Union Gas is responsible for implementation of appropriate sediment and erosion control to mitigate impacts to fish and fish habitat. Fisheries and Oceans Canada, Ontario–Great Lakes Area has reviewed Union Gas drawing, "GENERIC SEDIMENT CONTROL PLAN TEMPORARY VEHICLE CROSSINGS" dated January 2008, and endorses its use as a guideline for implementation of erosion and sediment measures.

For more information on this plan, please contact:  
Doug Schmidt,  
Principal Environmental Planner,  
Union Gas Limited,  
1-800-571-8446, ext. 2895

DATE	REV NO	REVISION	BY	APPD



PROJECT  
UNION GAS LIMITED  
CONSTRUCTION PROGRAM

LOCATION  
ALL TEMPORARY VEHICLE CROSSINGS  
(BRIDGES & CULVERTS) IN ONTARIO

DRAWING TITLE  
GENERIC SEDIMENT CONTROL PLAN  
TEMPORARY VEHICLE CROSSINGS

SCALE NTS DATE JAN. 1/08

FILE No. PROJECT No

DRAWN GTH CHECKED GTH DRAWING 3 of 3 REV 0

APPROVED



## Generic Sediment Control Plan – Dry Flume Crossings

This plan sets out the measures that will be taken by Union Gas Limited (company) and its contractors to control downstream sediment to the lowest level practically achievable during the construction of dry flume type crossings. The conditions and techniques set out on this plan are to be followed unless approved otherwise by the Department of Fisheries and Oceans (DFO).

### General Measures

The company must use materials, construction practices, mitigation techniques and monitoring of operations at every water crossing in order to prevent the unauthorized harmful alteration, disruption or destruction of fish habitat or the impairment of water quality. The following requirements apply to any permanent or intermittent waterbody (stream, river, pond) and areas adjacent to it.

- \* The company will adhere to all permits and approvals of federal and provincial agencies related to watercourse crossings.
- \* The company will notify the appropriate federal or provincial agencies prior to commencement of a watercourse crossing in accordance with regulatory permit conditions.
- \* In-stream work will occur during the appropriate time windows for the geographic region and for the fish species present unless otherwise permitted by the appropriate agencies.
- \* Prior to removal of the low vegetative cover, effective mitigation techniques for erosion and sediment control must be in place to protect water quality. Limit the areal extent of disturbance to the minimum needed for construction and delay grubbing to immediately prior to grading operations.
- \* All watercourses will require a minimal disturbance zone (MDZ) to be clearly marked with flagging prior to the commencement of clearing activities or any construction activity near the waterbody. This flagging will be set back a minimum of 5m from the waterbody and will be based on site specific conditions. Extra work area required at watercourse crossing will be situated away from the waterbody outside of the minimal disturbance zone (MDZ).
- \* Materials removed or stockpiled during construction (e.g., excavated soil, backfill material) must be deposited in a manner to ensure sediment does not enter a waterbody. Appropriate erosion and sediment controls (e.g. revegetation, vegetated buffer strips, drainage control, sediment settling devices, and sediment fence or other appropriate mitigation measures) will be installed around spoil or stockpiles, to prevent sediment from stockpile runoff from entering a watercourse.
- \* All vehicles, machinery and other construction equipment shall not enter the water. There must be no fording of any stream.
- \* Except during construction of the crossing, the company will not obstruct any watercourse so as to impede the free movement of fish.
- \* Flow shall be maintained at all times downstream of the watercrossing.
- \* All exposed soil must be stabilized (e.g. graded to a stable slope and erosion control measures implemented) as quickly as possible to prevent erosion.
- \* The company is to adhere to the Generic Sediment Control Plan For Temporary Vehicle Crossings.
- \* All required materials (e.g., silt fencing, filter cloth, polyethylene liners, granular material, rip rap, dam materials) and installation equipment (e.g., pipe, flumes, pumps, pump hoses, generators, spares, energy dissipaters) will be on-site and in good working order prior to construction.
- \* Prior to commencing watercourse crossings, local weather stations will be monitored to determine whether any precipitation is forecasted. In-stream activity will be delayed if flows are in flood stage and until weather conditions are favourable.
- \* Water intakes used in fish bearing waters will be screened in accordance with the DFO Freshwater Intake Fish Screening Guidelines (1995).
- \* Fish recovery and transfer will be conducted prior to and during the isolation of flow and in accordance with permit regulations. See detailed construction sequence for timing of fish recovery operations.
- \* In-stream activities in all watercourses (e.g., trenching, pipe installation, backfilling) will be completed in as short a time as possible to minimize disturbance to water quality, fish and fish habitat.
- \* In situations where the crossing can be completed in one day, in-stream excavation will begin in the early morning to allow for same day installation.
- \* Refueling and lubrication of equipment will be conducted in areas that will allow any accidental spill of deleterious substance to be disposed of in an approved location before it reaches any waterbody. Appropriate spill prevention kits shall be readily available on site.
- \* The area around water crossings is to be regularly monitored and if erosion problems develop, immediate action is to be taken with appropriate treatments and completed as quickly as possible. Accumulated sediment is to be removed regularly.
- \* Revegetation must be completed as quickly as possible. Revegetate any disturbed areas by planting and seeding preferably native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
- \* The company will be held responsible for implementation of this plan.
- \* All use of silt fence, rock check dams and dewatering traps shall be constructed/installed in accordance to the most up to date company specifications and drawings. Where these mitigation measures are not sufficient to prevent sediment from entering the waterbody, additional mitigation measures will be implemented to prevent sediment from entering the waterbody.

### Contingency Plan

If unforeseen events (e.g., bedrock in trench, flume washout) cause the strategies set out in this plan to be insufficient or inappropriate to meet the objective, the company is expected to respond in a timely manner with all reasonable measures consistent with safety, to prevent, counteract or remedy any effects on fish or fish habitat that may result. DFO is to be notified as soon as practical.

Spill reporting procedures established by MOE shall be used to report any unexpected discharge of silt or sediment or other deleterious substance at the water crossing. The spill shall also be reported to the DFO as soon as possible in these circumstances.

If DFO determines that long term damage to fish habitat has occurred due to failure of this plan to control sediment, a restoration plan will be developed by the company, in consultation with and approval from DFO for implementation by the company.

### Flume Sizing

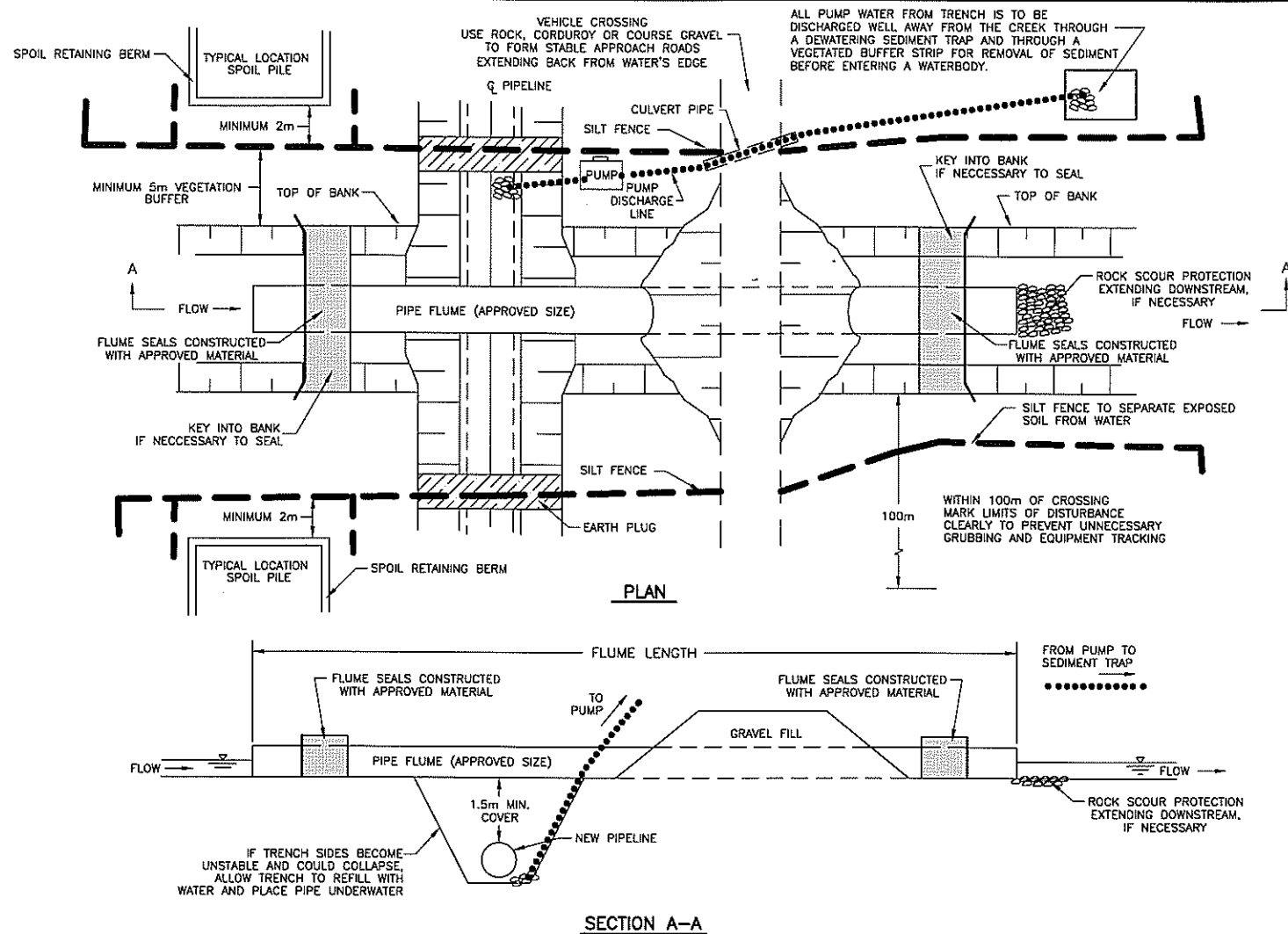
As a general guide, the flume method will be applied to streams where the expected maximum discharge of the watercourse exceeds 1.0 cubic metre/second. A combination of pumps and flumes may be required to bypass stream flow and to control water entrained within the isolated area. Specific methods proposed for each stream crossing will also be influenced by site specific conditions such as channel configuration, bank configuration and flow rates.

Flumes will be sized initially based on engineering hydrologic calculations. These theoretical sizes will be used as a guide, for confirmation in the field between the company and DFO.

The capacity of the flumes will be sized to handle 150% of the anticipated flow.

Flumes in place for less than 2 weeks may have their size selected by the company based on actual measured flow in the creek at the time of installation plus an additional 50% buffer.

Flume sizes may also be selected to be the same as nearby culverts that have been in place for many years and have performed satisfactorily.



### Detailed Construction Sequence – Dry Flume Crossings

In general terms, the following sequence of construction and mitigation measures will be followed at all "dry flume" type water crossings.

1. Mark out and maintain limits of authorized work areas with fencing or flagging tape to avoid unnecessary disturbance of vegetation. Ensure equipment operators working on the crossing have been briefed about this plan and the measures needed to protect water quality. Install prework sediment control measures, including silt fences and measures to contain excavated spoil and backfill. All necessary equipment and materials to build the flume must be on site or readily available prior to commencing in-water construction. Pipe shall be strung, welded and coated ready for installation prior to watercourse trenching.
2. Install flumes equal to or larger than the diameter determined by the methods described above. Flume length is to be identified in the permit application. Flume is to set 10 percent of diameter below streambed level where soil conditions permit (otherwise installed at stream grade and slope). Place impervious dams at each end of the flume, upstream first then downstream. Alternative dam materials include coarse gravel with rip rap protection, peastone bags, steel plate and rockfill. During placement, install an impervious membrane, if necessary, to prevent leakage. Dams may need keying into the bank and streambed. Once area is isolated, conduct fish recovery and transfer operations and dewater the area between the dams. All pump water is to be discharged well away from the creek and through a sediment trap for filtering of solid material before entering the creek. Pump discharge lines shall be installed to keep pumped water from coming into contact with soil on the construction site.
3. Excavate trench through plugs and under flume, then dewater. Work area dewatering will be filtered to remove suspended solids. Lower in pipe by passing under flume and backfill immediately. The top 300 mm of trench backfill is to be clean rock, cobble material or native streambed material. The Company is to use granular backfill if the native material is not suitable. In this case, the excavated material is to be moved back and deposited behind sediment fences. Any excess material is to be disposed of above the high water mark in an approved location and stabilized to prevent reentry into the waterbody. Work is to be completed as quickly as possible.
4. Flumes shall be removed as quickly as possible, when no longer required for pipe laying or for road access, in the following manner: remove the vehicle crossing ramp; surplus gravel is to be removed from the crossing area to an approved location. Creek banks are to be restored to a stable angle and protected with erosion resistant material compatible with flow velocity (e.g., coarse gravel, rip rap or erosion control matting) to the maximum extent possible before removing the dams. If rip rap material contains fines, the completed face is to be washed off and the turbid water pumped to land. Then remove downstream dam; remove upstream dam; complete bank trimming and erosion protection. If pea stone bags are used for the dams, place and remove by hand to avoid equipment breaking bags.
5. Restore, stabilize and reclaim bed and banks of waterbody to preconstruction profiles and protected with erosion resistant material compatible with flow velocity (e.g., \*do not use erosion control matting in the bankfull channel\* coarse gravel or rip rap) to the maximum extent possible between dams. If rip rap material contains fines, the completed face is to be washed off and the turbid water pumped to the dewatering sediment trap. All construction material (e.g. dams, rip rap, spilled pea gravel from pea stone bags) not required to return the waterbody to preconstruction condition shall be removed from the site and stabilized above the high water mark in an approved location. Removal of all materials will be done in a manner that will not introduce sediment to the waterbody.
6. Site stabilization, which includes control of stormwater drainage using a combination of methods such as silt fences, erosion blankets, diversion berms and check dams etc., is to be completed within 10 days of the removal of the flume. If stabilization is delayed, short term erosion control measures shall be used to prevent sediment entering the water. Material accumulated at silt fences is to be removed or stabilized in place. Silt fences are to be removed when the site is permanently stabilized.
7. Vegetate any disturbed areas by planting and seeding preferably native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
8. If post-construction monitoring reveals erosion problems, remedial work is to be undertaken as quickly as possible.

### NOTES

Union Gas is responsible for implementation of appropriate sediment and erosion control to mitigate impacts to fish and fish habitat. Fisheries and Oceans Canada, Ontario-Great Lakes Area has reviewed Union Gas drawing, "GENERIC SEDIMENT CONTROL PLAN DRY FLUME WATER CROSSINGS" dated January 2008, and endorses its use as a guideline for implementation of erosion and sediment measures.

For more information on this plan, please contact:  
Doug Schmidt,  
Principal Environmental Planner,  
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1-800-571-8446, ext. 2895


DATE	REV NO	REVISION	BY	APPD

PROJECT		UNION GAS LIMITED CONSTRUCTION PROGRAM		
LOCATION		ALL DRY FLUME WATER CROSSINGS IN ONTARIO		
DRAWING TITLE		GENERIC SEDIMENT CONTROL PLAN DRY FLUME WATER CROSSINGS		
SCALE	NTS	DATE	JAN. 1/08	
FILE No.		PROJECT NO		
DRAWN	CHECKED	DRAWING	REV	
GTH		1 of 3	0	
APPROVED				

PROJECT		UNION GAS LIMITED CONSTRUCTION PROGRAM		
LOCATION		ALL DRY FLUME WATER CROSSINGS IN ONTARIO		
DRAWING TITLE		GENERIC SEDIMENT CONTROL PLAN DRY FLUME WATER CROSSINGS		
SCALE	NTS	DATE	JAN. 1/08	
FILE No.		PROJECT NO		
DRAWN	CHECKED	DRAWING	REV	
GTH		1 of 3	0	
APPROVED				

## Generic Sediment Control Plan – Dam & Pump Crossing

This plan sets out the measures that will be taken by Union Gas Limited (company) and its contractors to control downstream sediment to the lowest level practically achievable during the construction of dam and pump type crossings. The conditions and techniques set out on this plan are to be followed unless approved otherwise by the Department of Fisheries and Oceans (DFO).

### General Measures

The company must use materials, construction practices, mitigation techniques and monitoring of operations at every water crossing in order to prevent the unauthorized harmful alteration, disruption or destruction of fish habitat or the impairment of water quality. The following requirements apply to any permanent or intermittent waterbody (stream, river, pond) and areas adjacent to it.

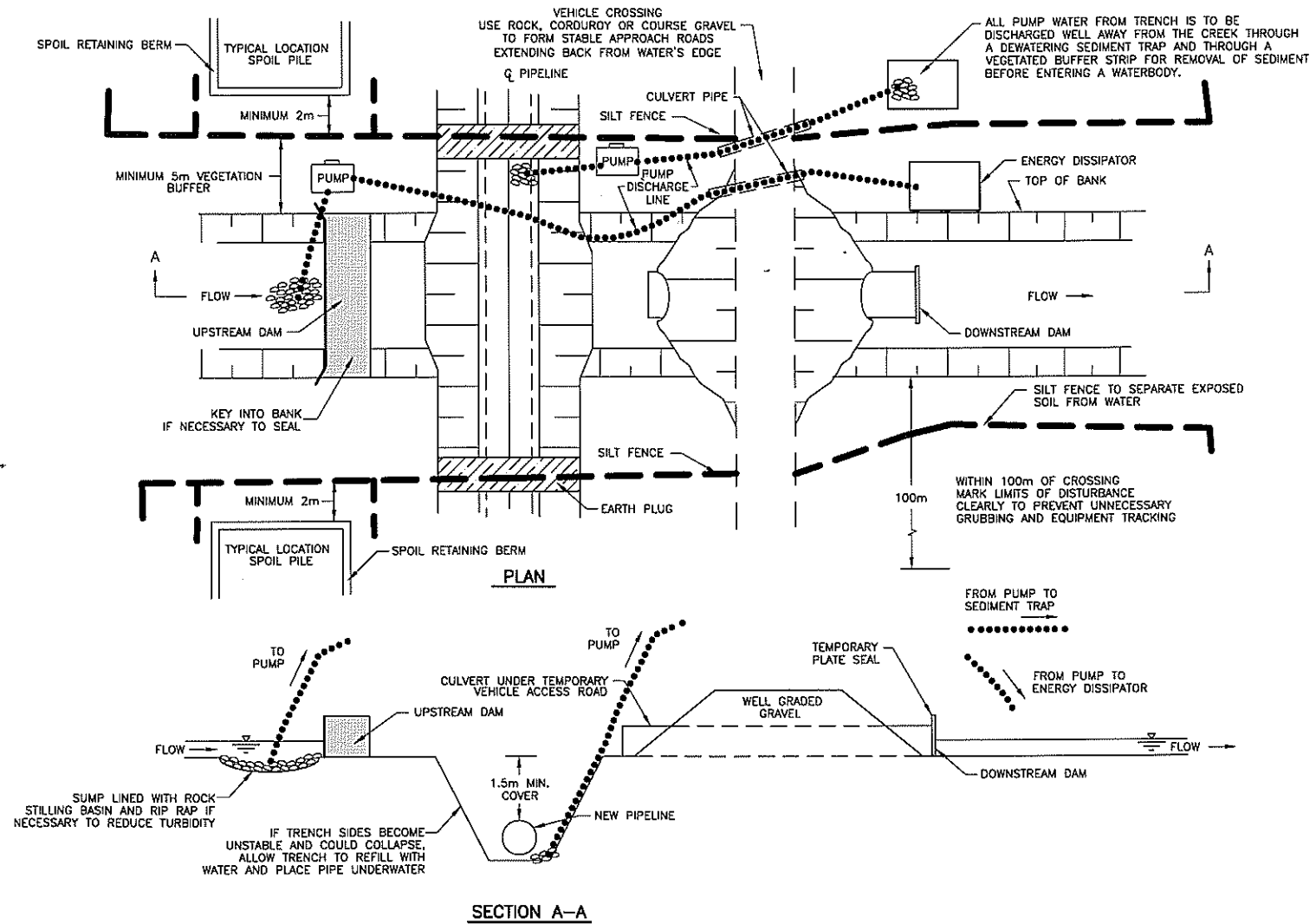
- \* The company will adhere to all permits and approvals of federal and provincial agencies related to watercourse crossings.
- \* The company will notify the appropriate federal or provincial agencies prior to commencement of a watercourse crossing in accordance with regulatory permit conditions.
- \* In-stream work will occur during the appropriate time windows for the geographic region and for the fish species present unless otherwise permitted by the appropriate agencies.
- \* Prior to removal of the low vegetative cover, effective mitigation techniques for erosion and sediment control must be in place to protect water quality. Limit the areal extent of disturbance to the minimum needed for construction and delay grubbing to immediately prior to grading operations.
- \* All watercourses will require a minimal disturbance zone (MDZ) to be clearly marked with flagging prior to the commencement of clearing activities or any construction activity near the waterbody. This flagging will be set back a minimum of 5m from the waterbody and will be based on site specific conditions. Extra work area required at watercourse crossing will be situated away from the waterbody outside of the minimal disturbance zone (MDZ).
- \* Materials removed or stockpiled during construction (e.g., excavated soil, backfill material) must be deposited in a manner to ensure sediment does not enter a waterbody. Appropriate erosion and sediment controls (e.g. revegetation, vegetated buffer strips, drainage control, sediment settling devices, and sediment fence or other appropriate mitigation measures) will be installed around spoil or stockpiles, to prevent sediment from stockpile runoff from entering a watercourse.
- \* All vehicles, machinery and other construction equipment shall not enter the water. There must be no fording of any stream.
- \* Except during construction of the crossing, the company will not obstruct any watercourse so as to impede the free movement of fish.
- \* Flow shall be maintained at all times downstream of the watercrossing.
- \* All exposed soil must be stabilized (e.g. graded to a stable slope and erosion control measures implemented) as quickly as possible to prevent erosion.
- \* The company is to adhere to the Generic Sediment Control Plan For Temporary Vehicle Crossings.
- \* All required materials (e.g., silt fencing, filter cloth, polyethylene liners, granular material, rip rap, dam materials) and installation equipment (e.g., pipe, flumes, pumps, pump hoses, generators, spares, energy dissipators) will be on-site and in good working order prior to construction.
- \* Prior to commencing watercourse crossings, local weather stations will be monitored to determine whether any precipitation is forecasted. In-stream activity will be delayed if flows are in flood stage and until weather conditions are favourable.
- \* If there is any flow in the creek, the company is to install pumps to maintain streamflow around the blocked off section of channel. An energy dissipator is to be built to accept pump discharge and prevent streambed or streambank erosion.
- \* Adequate pump capacity will be on site to handle anticipated water flows and any potential increases in flow during the construction period. Backup pumps with adequate capacity to handle 100% of the downstream flow must be on site and ready for immediate replacement, should the primary operating pump(s) fail.
- \* Water intakes used in fish bearing waters will be screened in accordance with the DFO Freshwater Intake Fish Screening Guidelines (1995).
- \* Fish recovery and transfer will be conducted prior to and during the isolation of flow and in accordance with permit regulations. See detailed construction sequence for timing of fish recovery operations.
- \* In-stream activities in all watercourses (e.g., trenching, pipe installation, backfilling) will be completed in as short a time as possible to minimize disturbance to water quality, fish and fish habitat.
- \* In situations where the crossing can be completed in one day, in-stream excavation will begin in the early morning to allow for same day installation.
- \* Refueling and lubrication of equipment will be conducted in areas that will allow any accidental spill of deleterious substance to be disposed of in an approved location before it reaches any waterbody. Appropriate spill prevention kits shall be readily available on site.
- \* The area around water crossings is to be regularly monitored and if erosion problems develop, immediate action is to be taken with appropriate treatments and completed as quickly as possible. Accumulated sediment is to be removed regularly.
- \* Revegetation must be completed as quickly as possible. Revegetate any disturbed areas by planting and seeding preferably native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
- \* The company will be held responsible for implementation of this plan.
- \* All use of silt fence, rock check dams and dewatering traps shall be constructed/installed in accordance to the most up to date company specifications and drawings. Where these mitigation measures are not sufficient to prevent sediment from entering the waterbody, additional mitigation measures will be implemented to prevent sediment from entering the waterbody.

### Contingency Plan

If unforeseen events (e.g., bedrock in trench, dam washout) cause the strategies set out in this plan to be insufficient or inappropriate to meet the objective, the company is expected to respond in a timely manner with all reasonable measures consistent with safety, to prevent, counteract or remedy any effects on fish or fish habitat that may result. DFO is to be notified as soon as practical.

Spill reporting procedures established by MOE shall be used to report any unexpected discharge of silt or sediment or other deleterious substance at the water crossing. The spill shall also be reported to the DFO as soon as possible in these circumstances.

If DFO determines that long term damage to fish habitat has occurred due to failure of this plan to control sediment, a restoration plan will be developed by the company, in consultation with and approval from DFO for implementation by the company.



### Detailed Construction Sequence – Dam and Pump Crossings

In general terms, the following sequence of construction and mitigation measures will be followed at all "dam and pump" type water crossings.

1. Mark out and maintain limits of authorized work areas with fencing or flagging tape to avoid unnecessary disturbance of vegetation. Ensure equipment operators working on the crossing have been briefed about this plan and the measures needed to protect water quality. Install pre-work sediment control measures, including silt fences and measures to contain excavated spoil and backfill. All necessary equipment and materials to build the dams and to pump water must be on site or readily available prior to commencing in-water construction. Pipe shall be strung, welded and coated ready for installation prior to watercourse trenching.
2. Install pumps in natural pool upstream of the excavation. Excavate temporary sump within right-of-way if no natural pool exists. Check pump operation to equalize flow and ensure water intakes used in fish bearing waters are screened in accordance with DFO guidelines. Rip rap, stilling wells, filter cloth, gravel filters or other mitigation measures will be used at the upstream inlet of the pump to prevent suspension of sediment from pumping when necessary. Rip rap and rock check dams will be used when necessary to prevent scouring and erosion at the pump outlet. Pump discharge lines shall be installed to keep pumped water from coming into contact with soil on the construction site.
3. Dams are to be made of steel plate, inflatable rubber dam (aquadam), peastone bags, cobbles, well graded coarse gravel fill or rock fill and constructed so that sediment is not introduced to the waterbody. An impervious membrane is to be incorporated into the dam if necessary to control seepage flow. Dams may need keying into the banks and streambed. Install downstream dam only if needed to keep the trench area dry. Dewater the area between dams and for fish bearing streams, conduct fish salvage operations. All pump water is to be discharged well away from the creek and through a dewatering sediment trap for removal of sediment before entering the waterbody.
4. Excavate trench through plugs and streambed as quickly as possible, re-positioning discharge hose as necessary. Lower the pipe in the trench and backfill immediately. During this operation, try to maintain pumping as much as possible. The top 300 mm of trench backfill is to be clean rock, cobble material or native streambed material. The company is to use granular backfill if the native material is not suitable. Any excess material is to be disposed of above the high water mark in an approved location and stabilized to prevent reentry into the waterbody. Work is to be completed as quickly as possible.
5. Restore, stabilize and reclaim bed and banks of waterbody to preconstruction profiles and protected with erosion resistant material compatible with flow velocity (e.g., \*do not use erosion control matting in the bankfull channel\* coarse gravel or rip rap) to the maximum extent possible between dams. If rip rap material contains fines, the completed face is to be washed off and the turbid water pumped to the dewatering sediment trap. All construction material (e.g. dams, rip rap, spilled pea gravel from pea stone bags) not required to return the waterbody to preconstruction condition shall be removed from the site and stabilized above the high water mark in an approved location. Removal of all materials will be done in a manner that will not introduce sediment to the waterbody. The downstream dam shall be removed first. Keep pump running until normal flow is resumed. Complete bank trimming and erosion protection. If pea stone bags are used for the dams, place and remove by hand to avoid equipment breaking bags.
6. Site stabilization, which includes control of stormwater drainage using combinations of silt fences, erosion blankets, diversion berms and check dams etc., is to be completed within 10 days of trench backfilling. If stabilization is delayed, short term erosion control measures shall be used to prevent sediment entering the water. Material accumulated at silt fences is to be removed or stabilized in place. Silt fences are to be removed when the site is permanently stabilized.
7. Vegetate any disturbed areas by planting and seeding preferably native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
8. If post-construction monitoring reveals erosion problems, remedial work is to be undertaken as quickly as possible.

### NOTES

Union Gas is responsible for implementation of appropriate sediment and erosion control to mitigate impacts to fish and fish habitat. Fisheries and Oceans Canada, Ontario-Great Lakes Area has reviewed Union Gas drawing, "GENERIC SEDIMENT CONTROL PLAN DAM AND PUMP WATER CROSSINGS" dated January 2008, and endorses its use as a guideline for implementation of erosion and sediment measures.

For more information on this plan, please contact:  
Doug Schmidt,  
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DATE	REV NO	REVISION	BY	APPD



PROJECT  
UNION GAS LIMITED  
CONSTRUCTION PROGRAM

LOCATION  
ALL DAM AND PUMP WATER  
CROSSINGS IN ONTARIO

DRAWING TITLE  
GENERIC SEDIMENT CONTROL PLAN  
DAM AND PUMP WATER CROSSINGS

SCALE NTS DATE JAN. 1/08

FILE No. PROJECT NO

DRAWN CHECKED DRAWING REV  
GTH 2 of 3 0

APPROVED