

## SECTION 815

### PROTECTION OF WATERCOURSES AND WATER BODIES

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#### **815.01 SCOPE**

This specification covers the environmental requirements for work being carried out at watercourses and water bodies. It includes references to Federal and Provincial Legislation and prescribed methods and procedures to employ when carrying out such work as culvert or bridge installations, stream diversions, fording, fill placement at water bodies, and any other work which may alter or impact any watercourse or water body, or the quality of the water therein.

#### **815.02 LEGISLATIVE REQUIREMENTS**

The Contractor shall be aware of all Federal and Provincial Legislation governing the protection of watercourses and water bodies and all revisions and amendments to this legislation.

## 815.02.01 PROTECTION OF INLAND FISHERIES ENVIRONMENT

All permanent or temporary works or undertakings which are proposed for watercourses or water bodies constituting fish habitat require authorization from the Department of Fisheries and Oceans Canada at least two weeks prior to the commencement of any work. The Contractor is required to obtain approval for all temporary stream crossings and provide the Owner's representative with two copies prior to any work.

Application forms for authorization for works or undertakings affecting fish habitat are available at Department of Fisheries and Oceans Canada office located at St. John's.

Contractors are referred to the Department of Fisheries and Oceans Canada publication entitled "Resource Road Construction - Environmental Guidelines and Design Criteria", latest edition, (and to other technical information). The DFO "fact sheets" contain recommended guidelines for culvert installations, road and bridge construction, and other works. They include mitigation measures and procedures intended to assist Contractors in minimizing impacts on fish and fish habitat.

Contractors are advised that Environmental and Fisheries regulations require that any work done in or near a watercourse, deemed to be viable fish habitat, must be restricted to the minimum of disturbance. The establishment of temporary and permanent buffer zones are required. (Reference, Standard Drawing No.1237). Great care must be taken during construction not to harmfully alter, disrupt, or destroy fish habitat or to deposit any substance which may be harmful to fish habitat in or near any watercourse where it may enter the watercourse. Culvert pipes must be constructed, according to the requirements of the applicable permits, to allow free movement of fish.

Contractors are advised to refer to the Fisheries Act with particular attention to:

- a) Section 35 - Outlines required authorization for work or undertaking which may affect fish habitat.
- b) Section 36 - Prohibits the deposit of a harmful substance of any type into water frequented by fish.
- c) Section 37 - Powers of the Minister for the provision of information such as plans, specifications, studies, etc., and to require any modifications to such plans and/or related information.
- d) Section 38 - Powers of a Ministerial Inspection.
- e) Sections 40-42 - Enforcement and Penalties.

## **815.02.02 THE ENVIRONMENTAL CONTROL (WATER AND SEWAGE) REGULATIONS**

Contractors shall maintain compliance with the Environmental Control (Water and Sewage) Regulations, 2003 or latest edition. This legislation is administered by the Water Resources Division of the Digital Government and Service NL.

No person shall discharge into a body of water any sewage or effluent.

## **815.02.03 THE WATER RESOURCES ACT DEPARTMENT OF ENVIRONMENT**

Where the Contractor must carry out any alteration of a body of water which is not required specifically as part of the contractual work with the Department of Transportation and Infrastructure, the Contractor must obtain a Permit from the Department of Environment and Climate Change before carrying out the work. Alterations to watercourses and water bodies such as culvert installations, bridges, stream diversions, rock fill placement in water bodies, etc., which are typically required as part of the contractual work are authorized and administered by TI and do not require separate approval from the Department of Environment and Climate Change. All such alterations to bodies of water must be carried out according to established procedures of the regulatory agencies so as to prevent pollution or damage to the environment.

The Contractor is referred to the following Environmental Guidelines of the NL Department of Environment and Climate Change, Water Resources Division, regarding construction procedures at watercourses:

Chapter	Title	Chapter	Title
3	WATERCOURSE CROSSINGS	7	DIVERSIONS, NEW CHANNELS, AND MAJOR ALTERATIONS
4	BRIDGES	9	PIPE CROSSINGS
5	CULVERTS	13	GENERAL CONSTRUCTION PRACTICES
6	FORDING		

## **815.03 FORDING OF WATERCOURSES**

The use of equipment or machinery in a watercourse or water body is generally not permitted. Should it be necessary for equipment to ford a watercourse, then the approval of the Owner's representative is required for the specified equipment only and at a designated location. The same crossing point shall be used each time that a fording is required. When extensive or frequent crossing of a watercourse is necessary, a temporary culvert or bridge installation may be required instead of fording. The

Contractor is referred to the NL Environmental Guidelines Chapter 6, "Fording" of the Dept. of Environment and Climate Change, regarding the selection, site preparation, and use of fording sites.

Transportation and Infrastructure discourages fording unless absolutely necessary and assessed by the Owner's representative. The Contractor shall discuss all proposed fording sites with TI a minimum of 5 working days before any fording activity. Site selection require the written approval of the Owner's representative.

#### **815.04 CLEARING AND/OR GRUBBING ADJACENT TO WATERCOURSES**

The Owner's representative shall mark limits for clearing and grubbing adjacent to watercourses. Buffer zones of undisturbed vegetation shall be maintained at watercourse crossings as marked in the field. (Reference, Standard Drawing No.1237, Typical Temporary and Permanent Buffer Zones at Stream Crossings.) A permanent buffer zone shall be maintained both sides of the construction zone at watercourse crossings, wherein, no disturbance or cutting of vegetation is to take place. A temporary ungrubbed buffer zone shall be maintained on both sides of the watercourse, unless otherwise directed by the Owner's representative, within the construction zone at watercourse crossings until such time as the installation of the crossing is to be carried out. The Contractor shall use appropriate mitigation measures such as the use of silt fencing, sedimentation basins and take-off ditches to control sediment laden runoff from entering watercourses.

#### **815.05 GENERAL PROCEDURES FOR INSTALLING WATERCOURSE CROSSINGS**

The Contractor shall present to the Owner's Representative for approval, a plan for the construction of unwatering systems including diversion systems, pumping systems, settling and/or filtration systems, a minimum of 3 working days prior to the start of any work at the site.

A pre-construction meeting shall be convened on-site between the Contractor and the Owner's representative to review environmental protection measures and associated contract details pertaining to the watercourse crossing, prior to any work being carried out at the proposed crossing site. All work carried out at watercourses shall be performed in the dry and with due care and caution so as to prevent unnecessary disturbance or impact on adjacent land or downstream areas.

To avoid impacts on fish in Newfoundland & Labrador, do not carry out in-water work:

in estuaries and main stems of scheduled salmon rivers from May 1 to September 30 (migrating period) in tributaries and headwaters of scheduled salmon rivers on the island of Newfoundland from October 1 to May 31 (spawning, incubating and hatching period) in tributaries and headwaters of scheduled salmon rivers in Labrador from September 15 to June 15 (spawning, incubating and hatching period)

Scheduled salmon rivers and brown trout rivers are listed in the NL Angler's Guide or in the Newfoundland & Labrador Fishery Regulations.

The Contractor shall carry out all work in and around watercourses in accordance with all Federal and Provincial permits and requirements, the relevant sections of the TI Specifications Book, and the contract drawings.

The Contractor shall give 3 working days' notice prior to any in stream or near stream grubbing or excavation.

Buffer zones shall be established and maintained as described in Section 815.04.

An accepted cofferdam shall be installed at the low end of the construction zone to collect all site water which is to be disposed of in an accepted manner. (See Section 815.07 Treatment of Silted Water).

The operation of heavy equipment shall be confined to dry stable areas in order to prevent the generation of mud and silted water. All flow shall be diverted or pumped around or through the work area, by a means acceptable to the Owner's representative, so as to maintain flow in the watercourse immediately below the site, prevent erosion, and maintain acceptable water quality. The flow diversion system shall have sufficient freeboard to be capable of accommodating rain events or provision shall be made to safely discharge elevated flows without causing washouts of constructed works, erosion, or siltation in downstream areas. The discharge location of the pumping or diversion system shall be stabilized to prevent erosion. All unwatering operations shall be constantly monitored by the Contractor.

Work should be carried out from the downstream section of the work area and progress to the upstream.

The Contractor shall ensure that fish are not left stranded in the work area at the time the diversion system is made operational. All stranded fish shall be removed by appropriate means and quickly returned to the watercourse below the construction area to prevent mortalities. An impermeable cofferdam of non-erodible material, such as sandbags and

sheet plastic, shall be constructed at the outlet area of the construction zone to prevent any silted water from entering downstream areas and to assist in unwatering operations.

The location, size, construction, and operation of sedimentation basins shall be carried out according to Department specifications or as directed by the Owner's representative and so as to achieve adequate settling parameters within the basins and ensure that discharged water from the basins, which is entering any watercourse, meets the water quality standards set forth in the Environmental Control (Water and Sewage) Regulations, (See Section 815.02.02).

Operation of the sedimentation basins shall be continuously monitored by the Contractor to ensure proper functioning and maintenance.

Excavation shall be carried out to the limits marked in the field by the Owner's representative. All excavations shall be carried out using a tracked excavator which will operate within the limits of the work area or as directed by the Owner's representative.

Excavated material shall be removed from the site and stockpiled at an accepted location where it will not enter any watercourse.

When corrugated steel pipes are installed, impervious material shall be placed under the invert of the pipe and around the haunches of the pipe at the inlet area so as to ensure that all flow is confined within the pipe, particularly during low flow conditions, and not lost into the porous fill zones outside the pipe.

All sections of newly constructed channel and pipe inlet and outlet areas shall be adequately stabilized so as to prevent destabilization, erosion, or scouring of the channel and fill embankments. Rip-rap on road slopes shall be placed concurrently with backfilling operations on the pipe so that inlet and outlet areas are protected immediately from erosion.

Any disturbed areas or exposed soils within the high water zone of the watercourse shall be stabilized by such means as placing rip-rap or well staked sodding within 48 hours of completion of backfilling operations. Other adjacent disturbed areas shall be rehabilitated by sodding or seeding, or as directed by the Owner's representative.

Upon completion of the work, flow shall be introduced slowly into the new channel or watercourse crossing. Any silted water generated as a result shall be prevented from entering downstream areas of the watercourse, and pumped or treated as required.

Where baffles are required as part of a culvert installation all activities associated with the baffle pipe installation including the diversion of all water flow from the natural watercourse into the baffled pipe, abandonment of any temporary stream diversion system and rehabilitation of the surrounding disturbed area shall be carried out efficiently without delay so as to not interfere with fish migration.

All construction related waste materials shall be removed from the work site(s).

Sedimentation basins shall be pumped dry and backfilled with the original excavated material and compacted. Hand seeding, hydroseeding and/or sodding of disturbed areas shall be carried out as directed by the Owner's representative. Additional rehabilitation may be required by the Owner's representative.

#### **815.06 USE OF FRESH CONCRETE IN OR NEAR BODIES OF WATER**

When concrete is placed in or adjacent to a watercourse or water body, all necessary precautions shall be taken to prevent the concrete from adversely affecting water quality. Whenever possible, fresh concrete shall not come in contact directly with the waters of a watercourse. Standing water zones shall be drawn down prior to placing fresh concrete. All form work shall be well secured and made tight to prevent leakage of fresh concrete into any adjacent waters. Where tremmie concrete is required, the work shall be carried out under the specific directions of the Owner's representative. The washing of concrete delivery trucks or chutes is not permitted within 100 m of any watercourse or water body. All necessary precautions shall be taken when handling related substances such as form coatings and concrete admixtures to prevent any spill or leakage of these substances.

#### **815.07 CONTROL AND TREATMENT OF SILTED WATER**

Silted or muddy water is not permitted to be released into any watercourse or water body or into any ditch or area that leads directly to a watercourse or water body. Runoff from adjacent areas shall be channeled, piped, diverted, or confined to prevent the water from entering construction zones and becoming polluted. Where due to rain events, runoff from construction zones and areas of exposed soils contains mud or silt, appropriate measures shall be taken by the Contractor to confine, settle, or channel such water so that adjacent watercourses or water bodies are not adversely affected. Such measures may include the provision of mud basins, settling basins, ditch blocks, silt fencing, temporary ditching, or other means necessary to prevent pollution. Silted runoff water or water released or pumped from construction zones may be discharged to an accepted vegetated area where ground absorption will occur or to an accepted settling area or to a settling basin constructed in accordance with contract drawings or as directed by the Owner's representative.

**815.08 FILL PLACEMENT AT WATER BODIES**

Fill material placed in or at water bodies shall be clean blasted rock. Where in the opinion of the Owner's representative, significant silty bottom sediments will disperse with potential of creating water quality problems, the fill zone shall be isolated from the remainder of the water body by such means as a silt curtain as accepted by the Owner's representative. Rock shall be placed into the water zone so as to create the least amount of disturbance of bottom sediments. Rock shall be placed along the outer edge of the fill zone to close off and isolate the fill zone from the rest of the water body. Fill placement shall proceed with runs of rock along the inside of the first outer run of fill. Successive runs of rock fill shall be placed in this manner until the zone is filled back to the inner fill limits. Height of the placed rock fill shall be maintained a minimum of 300 millimetres above water level during fill operations. Equipment shall not operate in standing water zones. Removal of displaced sediments and/or bog shall be carried out as directed by the owner. Pumping of water from the fill zone to a designated area may be required by the owner to reduce water levels in the fill zone and prevent movement of silted water through the rock fill back into the water body.

**815.09 REMOVAL OF STRUCTURAL STEEL PROTECTIVE COATINGS**

Solid waste produced by the removal of steel protective coatings is not permitted to be released into any watercourse or water body or into any ditch or area that leads directly to a watercourse or water body. The specifications in **825.03** are intended to provide guidance to individuals involved in the removal of structural steel protective coatings with respect to the minimum acceptable control measures and the appropriate disposal procedures for the generated solid waste.