

AGRICULTURAL WATERCOURSE Classification

Introduction

The watercourse classification system that is outlined in this factsheet is used in agricultural areas to determine building setbacks, conduct riparian assessments and establish guidelines for drainage management.

To use the information provided in the Drainage Management Guide the watercourse type must be established before determining which guidelines can be followed. The watercourse classification helps to provide a framework from which management prescriptions are set. The intent of the watercourse classification is to reduce the need for agency approval for specific low-risk activities on constructed ditches while ensuring protection and conservation of fish and fish habitat. For example, some activities on constructed ditches may be done without agency contact. Most works on channelized and natural streams will require agency contact.

This Factsheet outlines watercourse classification definitions for agricultural areas in BC.

This watercourse classification system uses physical and hydrological parameters of a watercourse to

determine its 'type'. Using physical and hydrological parameters, watercourses can be classified into two main categories and two sub-sets: constructed ditches (wet or dry) and streams (channelized or natural). In any type of watercourse fish may or may not be present at certain times of the year. Fish presence may alter a management prescription.

Prior to undertaking maintenance activities there are three main questions that need to be considered prior to undertaking any works:

1. Is the work being undertaken in a *stream* or a *ditch*?
2. Is the watercourse *dry* at any time of year?
3. Is there *fish present* at any time of year?

Information to help answer these questions is provided within this Factsheet. If you are unable to answer these questions, contact your local agency for guidance.

Prior to undertaking any work on a constructed ditch or stream, refer to Fact Sheets No. 3 and No. 20 of this series, which outline WLAP, LWBC and DFO contact requirements.

Question 1: Is the work being done in a stream or a constructed ditch ?

Constructed Ditches (wet or dry)

Constructed ditches are defined as:

- Convey drainage water from an individual farm or supply irrigation water to an individual farm property.
- Not having any headwaters, may be permanently or intermittently wet and do not form a part of the natural waterways that drain a watershed.
- Irrigation diversion channels that divert water from a stream and dead end at an irrigation system. Water is not returned to a stream.
- If two or more constructed ditches drain into a collector ditch, the collector ditch is considered a constructed ditch as long as it only drains other constructed ditches.
- They may or may not have fish or aquatic life presence.



Dry Ditch – A dry ditch has a dry invert (bottom) at some time of year. Generally dry ditches do not have significant natural aquatic vegetation growth. Ditches that are normally dry but impound water with a control structure for irrigation or other purposes can be considered dry for the purposes of conducting drainage maintenance.

Wet Ditch – A wet ditch contains water at all times. A ‘wet ditch’ that intercepts a groundwater source (e.g. spring) and is accessible by fish should be managed

more like a natural stream to protect the fishery resource.

Constructed ditches that do not supply irrigation water are not identified under the *Water Act* but are recognized by the federal *Fisheries Act*. The federal *Fisheries Act* applies to both dry and wet constructed ditches as they may provide habitat for fish at certain times of the year.

Streams (Channelized or Natural)

Streams include all watercourses that are not classified as a constructed ditch. Streams can be categorized as either channelized or natural. The BC *Water Act* and *Fisheries Act* do not differentiate between channelized and natural streams with respect to licensing, legislative or regulatory requirements for conducting works in and about a stream.

Streams are defined by the following parameters:

- They have upland headwaters or other groundwater (spring) source for water flows.
- Are integral to the natural drainage of a watershed system.
- Have fish habitat characteristics which may include: aquatic or riparian vegetation, support aquatic invertebrates, seasonal or year round water flow and/ or other characteristics typical of streams.
- Are identified under the *Water Act* of BC.
- May or may not have fish or aquatic life presence.



Tip: Constructed Ditches and Natural Streams are the easiest to identify using the classification system. Once these are identified channelized streams are the watercourses that are left over.

Channelized Stream

A channelized stream is a permanent or relocated stream that has been diverted, dyked, straightened or dredged. Channelized streams are characterized by:

- Typically flow along property, field boundaries or roadways.
- Are generally straight channels that may show signs of natural channel processes.
- Are an integral part of natural drainage but have been altered or built to convey water for agricultural purposes such as drainage or irrigation.
- Irrigation diversion channels that route overflow water back to the stream are considered channelized streams.



It is recognized that in some instances, channelized streams require maintenance to maintain hydraulic function and flow capacity. Routine maintenance of such watercourses requires long term planning as well as providing provisions for improving the productive capacity of fish habitat.

Natural Stream

Natural streams have not been substantially altered or manipulated by humans. Natural streams often have the following characteristics:

- In stream submergent and emergent aquatic vegetation.
- Pool and riffle habitat.
- Riparian vegetative cover.
- Variations in channel bed morphology such as organic materials, sands, gravels or a combination thereof.

Question 2: Is the watercourse DRY at any time of year ?

During certain times of year a constructed ditch or stream may be dry. In the north and eastern parts of BC this may be during winter, whereas in southwestern BC this may be during summer. In general, for the protection of aquatic habitat, DFO recommends that work be undertaken when watercourses are dry. This limits the potential for direct impacts to fish and does not therefore require permitting for the salvage of fish. Risk to fisheries resources is substantially reduced when works are conducted during dry conditions.

The federal *Fisheries Act* applies to channelized and natural streams since they may provide fish habitat at some or all times of the year. The BC *Water Act* also applies to streams. The legislation does not differentiate between natural or channelized streams with respect to licencing, legislative or regulatory requirements for conducting maintenance works in and around a stream.

Figure 1 (below) graphically illustrates the relationship between the various classifications (types) of watercourses. Constructed ditches often flow into channelized and natural streams.

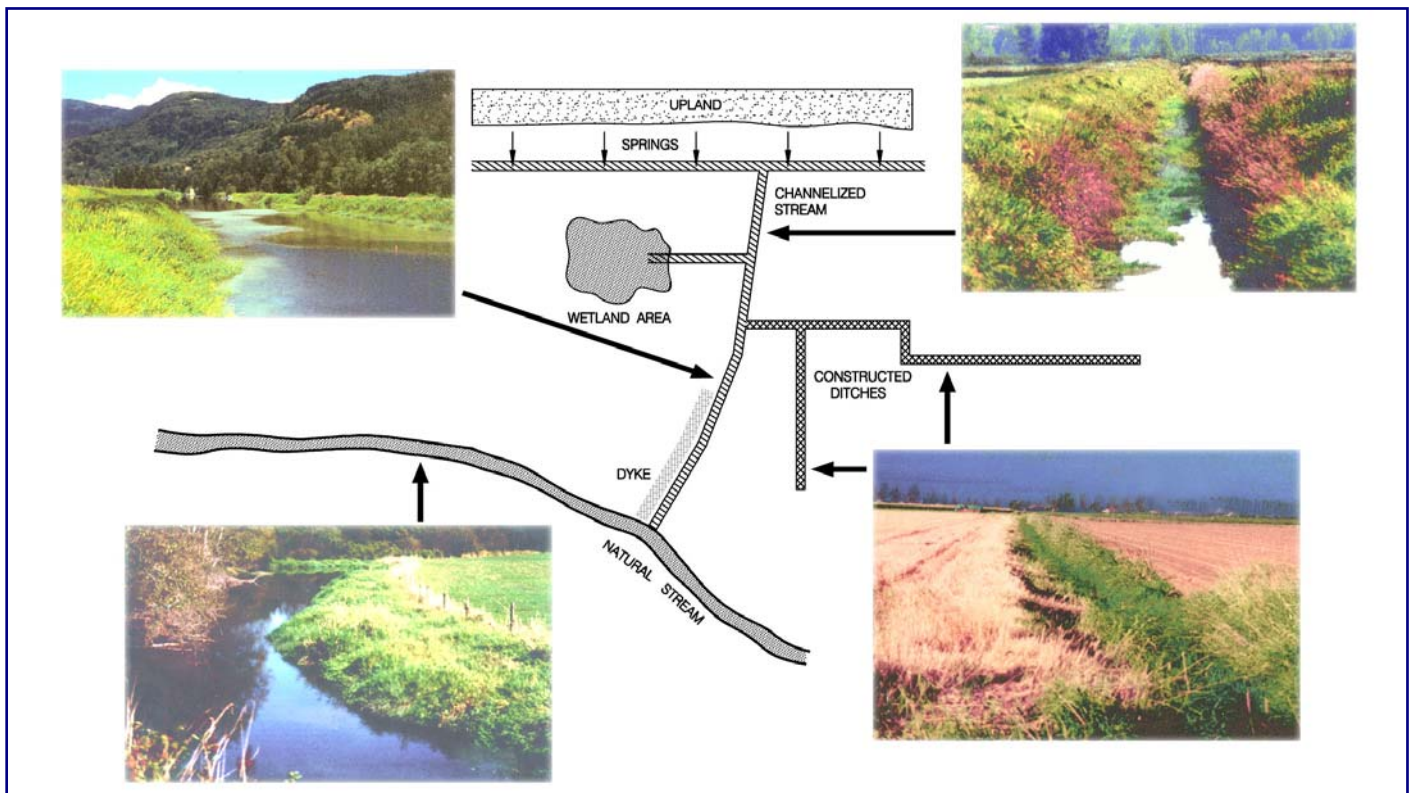


Figure 1 Schematic diagram relating photographic examples of Agricultural Watercourse Classification.

Question 3: Are there FISH PRESENT at any time of year ?

In some areas watercourse classification maps showing fish presence or absence have been prepared by local governments with support from DFO and WLAP. Fish presence is generally designated by the color of the lines depicting the watercourse, as indicated below. Fish presence includes all salmonid

species. Most maps do not provide information on threatened, endangered or other regionally significant fish or wildlife species at this time. A fish presence designation indicates that fish may be present at some time of the year, not necessarily year round.

Table 1 denotes the watercourse classification that has been used in some habitat atlases. Various versions of this system may be used.

Fish Presence (RED-coded)

If fish have been found to be present in the watercourse during any portion of their life cycle, then this watercourse is classified as “Fish Present” and is

delineated by a red line in the classification system. Fish presence does not necessarily mean present at all times of the year.

Unknown Fish Presence (YELLOW-coded)

In watercourses or portions of watercourses where fish have not been observed, the watercourse is classified as having “Fish Unknown” and is delineated by a yellow line in the classification system. To confirm fish absence, additional field investigation would be

required to determine if fish utilize these watercourses during any portion of their life cycle. Unless absence is proven, a yellow-coded watercourse must be treated as if fish are present when work is undertaken.










Fish Absence (GREEN-coded)

In watercourses or portions of watercourses where fish are NOT present at any time of year, it is classified as having “Fish Absence”. For channelized and natural watercourses, approved detailed field assessments may be necessary to prove fish absence. Constructed ditches that have a permanent blockage or barrier to fish to prevent fish from accessing the ditch can be

classified as fish absent. The classification system shows fish absence with a green line.

Watercourses having “Fish Absence” do not require fish salvage prior to completing maintenance works on constructed ditches or for any other works which may be approved or authorized by provincial or federal agencies.



Table 1 Watercourse Classification System in Agricultural Areas			
	Fish Presence	Fish Unknown	Fish Absence
Natural	Solid Red Line 	Solid Yellow Line 	Solid Green Line 
Channelized	Dashed Red Line 	Dashed Yellow Line 	Dashed Green Line 
Ditches	Dotted Red Line 	Dotted Yellow Line 	Dotted Green Line 

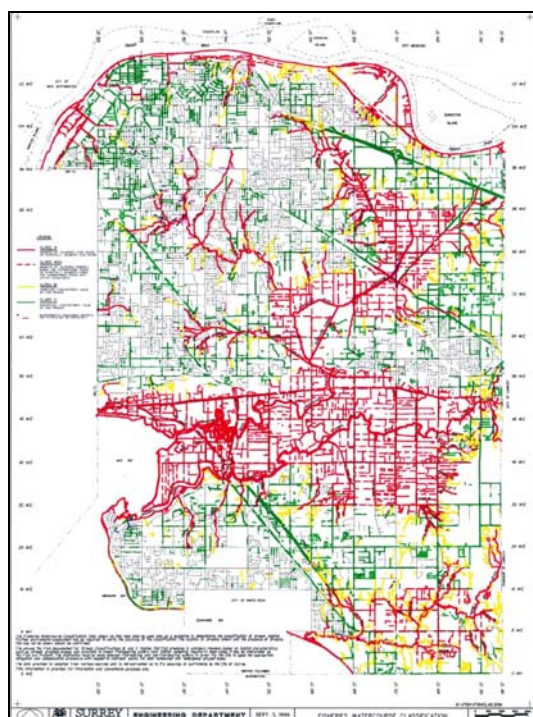


Figure 2 Fish Presence Color Scheme in Surrey

An example of the color scheme for fish presence has been prepared for Surrey. (See Figure 2) The red areas denoting fish presence are primarily next to the Nicomekl and Serpentine rivers and the channels that flow into those streams. The green colors designate areas that are generally up lands where streams have been culverted and the channels filled in or changed due to roads and other development.

GIS Presentation

The watercourse classification system is often incorporated into a Geographic Information System (GIS). Figure 3 shows the data layers that could be incorporated into a GIS system for agricultural areas. Different information collected by other agencies can also be incorporated into the various layers. The watercourse classification system would be part of the water features layer. Figure 4 is an example of the watercourse classification and fish presence layer as presented on a cadastre map. Figure 5 shows the same information as presented on an orthophoto.



Figure 4 Watercourse Classification on Cadastre Map

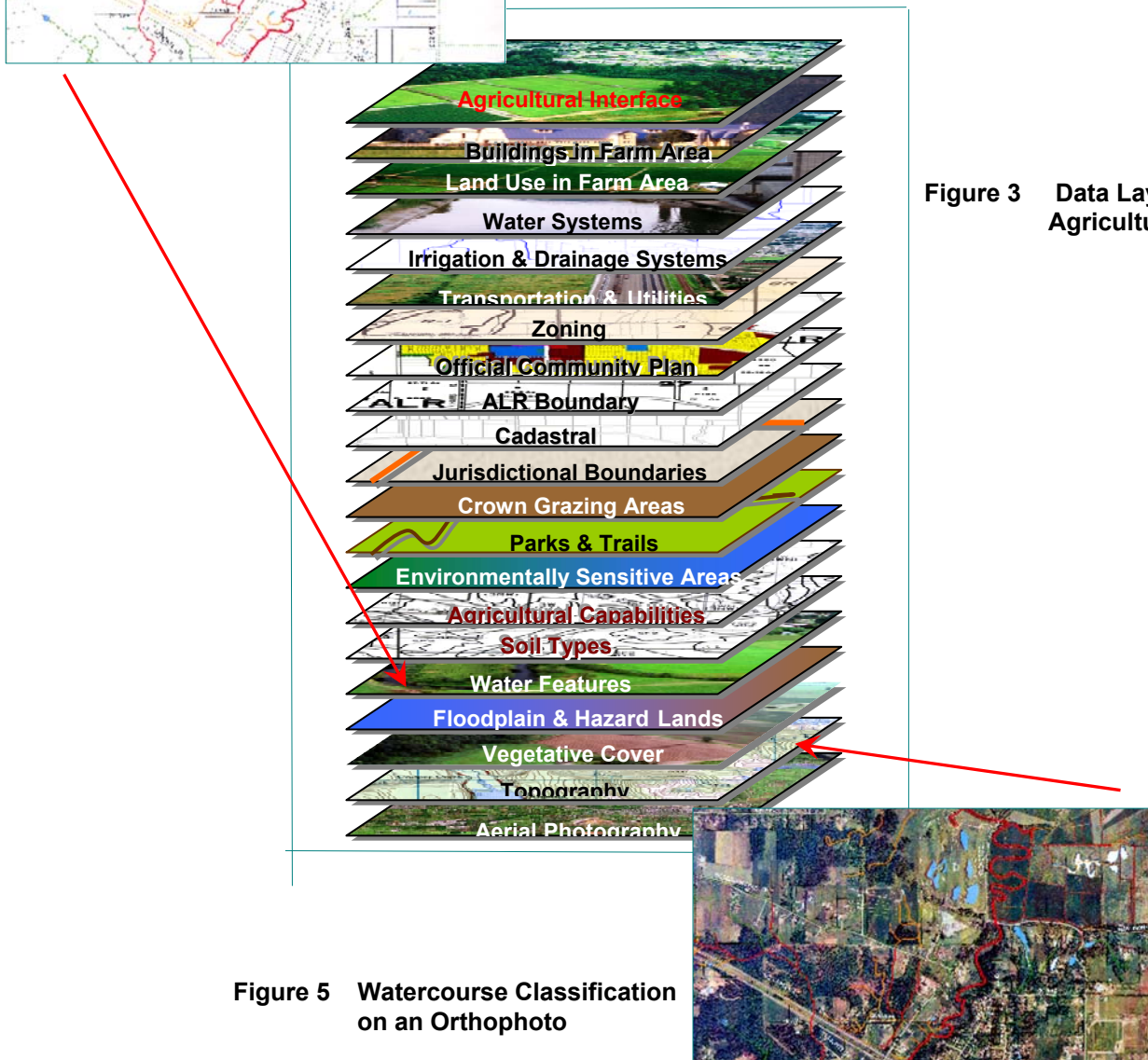


Figure 5 Watercourse Classification on an Orthophoto