
User's Guide to the British Columbia Watershed/Waterbody Identifier System

Prepared by
Ministry of Sustainable Resource Management
Resource Information Branch
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Abstract

This document has been developed to describe the unique identification of all watersheds and waterbodies in BC. The watershed/waterbody identifier was originally designed for use at a scale of 1:50 000 to be a part of the BC Watershed Atlas. The identifier has been re-designed to allow for the identification of watersheds and waterbodies represented on 1:20 000 mapping. This document is intended to assist users of the identifier system and describes a step-by-step process to finding the appropriate existing codes and identifiers or defining interim locational points. Version 3.0 represents an update to Version 2.2 of the “User’s Guide to the BC Watershed/Waterbody Identifier System”.

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For further information about the Resources Information Standards Committee, please access the RISC website at: <http://srmwww.gov.bc.ca/risc/>.

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1. Introduction

1.1 Purpose

Many organizations in both the private and public sectors gather qualitative and quantitative data that describe waterbodies and watersheds at various scales and levels of detail across the Province of British Columbia. In order to ensure that this data can be combined and analysed with other datasets, all data gathering methodologies will need to use the BC Watershed/Waterbody Identifier System.

This document will assist users of the British Columbia Watershed/Waterbody Identifier System who are preparing for field work, or who have completed their field season and are ready to compile and summarize their aquatic surveys. It describes a step-by-step process to finding the appropriate codes and identifiers for each of the features to be described.

1.2 The Watershed/Waterbody Identifier System

The Watershed/Waterbody Identifier System is a computer-generated coding system that uniquely identifies watersheds and waterbodies in British Columbia. It is a component of the 1:50 000 British Columbia Watershed Atlas, a computerized base map of aquatic features in the province.

The Watershed/Waterbody Identifier System has two parts: a watershed code, and a waterbody identifier. Depending upon whether you are trying to identify a watershed or a waterbody, you would use one or both parts as shown in Table 1. For all aquatic features, the watershed code is a mandatory requirement.

Table 1 - Requirements for identifying aquatic features

Aquatic feature to identify	Requirement	
	Watershed code	Waterbody identifier
Watershed	yes	no
Stream	yes	no
Lake	yes	yes
Wetland	yes	yes

Some users will be familiar with previous identification systems, and may have a large body of existing data that is referenced using these older methods. Table 2 provides a summary of the key characteristics of the older methods, and compares them with the new system. Examples of identifiers from the old and new systems are provided for comparison purposes.

The Watershed/Waterbody Identifier System is currently being used to identify aquatic features mapped at 1:50 000 and 1:20 000 scales. While this system can also be used at larger mapping scales it is intended for 1:50 000 and 1:20 000 scales.

Table 2 - Key characteristics of the watershed code and waterbody identifier

Aquatic feature	Old identification methods	New identification method
Watershed	<p>RAB code:</p> <ul style="list-style-type: none"> The Resource Analysis Branch code was developed in the 1970's and is still used as a code in the Stream Information Summary System (SISS) Name: OLD_WS_CODE. Format: Numeric, 21 digit, 7 set array. <p>HWC:</p> <ul style="list-style-type: none"> The Hierarchical Watershed Code (HWC) was developed cataloguing most streams visible on the 1:50 000 NTS map sheets. Numeric, 37 digit, 12 set array. Database Name: WS_CODE Example: 160-6354-464-000-000-000-000-000-000-000-000 	<p>Watershed Code:</p> <ul style="list-style-type: none"> This code is an extended version of the HWC which is designed to work in cases for map scales ranging from 1:50 000 to 1:20 000. Name: WS_CODE. Format: Numeric, 45 digit, 12 set array. Example: 160-635400-46400-00000-0000-0000-000-000-000-000-000
Waterbody	<p>Lake Sequence Number:</p> <ul style="list-style-type: none"> A sequential number that uniquely identifies a lake within a watershed Name: LAKE_CODE. Format: Numeric, 3 characters. Example: 001 Applied only to lakes Did not consider many isolated waterbodies: only those that were part of a drainage. 	<p>Waterbody identifier:</p> <ul style="list-style-type: none"> The identifier is a label that uniquely identifies a waterbody within a watershed and within the province. It is composed of a system generated number in combination with the 4-letter acronym for its watershed group. Name: WB_KEY_WG. Format: Alpha-numeric, 9 characters Example: 00708HORS Applied to lakes, streams, canals and wetlands Includes isolated waterbodies

2. Overview

2.1 A Typical Project Sequence

Field survey projects commonly follow a four-step process. Provided below is an interpretation of this sequence in terms of the use of the watershed code and waterbody identifier.

1. **Pre-Field/Planning:** During pre-field/planning, the appropriate standard data cards to be used during photo interpretation or site visits are obtained. Once the planning is complete, the more detailed preparation work will include making a list of the aquatic features to be described, and looking up watershed codes and waterbody identifiers for each feature.
2. **Field Data Collection:** Once the preparation is complete, a survey team gathers field data using the cards. Alternatively, the work might entail interpretation of airphotos or satellite imagery.
3. **Data Capture:** Upon completion of the field work, the user reviews, compiles and processes the data.
4. **Report Preparation and Presentation:** Finally, the compiled data will be analyzed and reported as necessary.

See <http://www.bcfisheries.gov.bc.ca/fishinv/toolkits.html> for the Fish and Fish Habitat Standards Toolkit to assist in the collection of Aquatic and Fisheries related data.

3. Finding a Watershed Code and/or Waterbody Identifier

3.1 Information Sources

Now that the overall approach to using the watershed/waterbody identifier system has been presented, the specific task of finding codes and identifiers for aquatic features can be discussed. There are three information sources that can be used to find codes and identifiers (Table 3).

Table 3 - Information sources for watershed codes and waterbody identifiers

Information requirement	Information source		
	BC Watershed Atlas	WWW page	SRM Service Centre support
Watershed Code	yes	yes	yes
Waterbody Identifier	yes	yes	yes

3.1.1 Finding Codes and Identifiers Using the BC Watershed Atlas

The British Columbia Watershed Atlas is a detailed source of digital mapping information that can be browsed interactively using a Geographic Information System (GIS) to list existing watershed codes and waterbody identifiers. Table 4 shows a step-by-step process for using the Atlas to find this information.

Table 4 - Using the Watershed Atlas to find codes and identifiers

<p>Starting Assumptions:</p> <ol style="list-style-type: none">1. You understand the key concepts behind the BC Watershed Atlas;2. You have access to Geographic Information Software that can display and query the Watershed Group (WSG) digital datasets that make up the BC Watershed Atlas;3. You understand how to use a GIS for simple display and query tasks;4. You have downloaded copies of the GIS datasets of interest.
<p>Steps:</p> <p>Start up the GIS or Map Browser.</p> <p>Use the GIS or Map Browser to open the watershed group dataset(s).</p> <p>Within each WSG dataset:</p> <p> For the watersheds to be identified:</p> <p> Open the watershed layer of the Atlas (Filename: LWSD“wsg” or “wsg”WSD where “wsg” is the four-letter watershed group name).</p> <p> For each watershed:</p> <p> Use the display tools to highlight the watershed of interest. This might include the use of panning, zooming and colour theming techniques.</p> <p> On the map display, use the query tool to point to the watershed you want to identify and list the associated attributes.</p> <p> On the field data collection form for that watershed, note down the value for the field “WS_CODE.”</p> <p> For the waterbodies to be identified:</p> <p> Open the stream network layer of the Atlas (Filename: LWSS“wsg” or “wsg”_SS)</p> <p> For each waterbody:</p> <p> Use the display tools to highlight the waterbody of interest. This might include the use of panning, zooming and colour theming techniques.</p> <p> On the map display, use the query tool to point to the waterbody you want to identify and list the associated attributes.</p> <p> On the data collection form for that waterbody, note down the value for the field “WS_CODE”</p> <p> * For Lakes and Wetlands, on the data collection form for that waterbody, note down the value for the field “WB_KEY_WG”</p>

3.1.2 Finding Watershed Codes Using the World-wide Web

If you do not have access to the BC Watershed Atlas and you only need access to Watershed Codes, the next best alternative is the World-wide Web pages maintained by MSRM. There are options for finding watershed codes and waterbody id's via the web.

Go to <http://srmapps.gov.bc.ca/apps/fidq/>, where you will be presented with a query form that allows you to retrieve watershed codes from the province-wide database of streams and lakes. The criteria the database can use to retrieve watershed codes includes: Gazetted Name, UTM Zone, UTM Northing, UTM Easting, Primary Region, Primary Map (1:50 000), and Type (Lake or Stream).

Go to <http://www.bcfisheries.gov.bc.ca/fishinv/watershed-code.html>, where digital map files for watershed features and associated watershed code and waterbody identifiers have been derived by tiling the B.C. Watershed Atlas into individual map sheets based on the BCGS 1:20 000 grid. The files are in Adobe Acrobat format that allows for panning and zooming

capability without GIS software. Since the output is not exactly 1:20 000 care should be exercised when overlaying the Pdf's.

3.2 Interim Locational Points

3.2.1 Creating Watershed/Waterbody Interim Locational Points

If after using all of these sources you still have watersheds/waterbodies without identifiers, you will need to assign interim locational points. The following guidelines should be used when creating interim locational identifiers.

Identify individual waterbodies: Those waterbodies requiring watershed codes and/or waterbody ids should have all appropriate information entered on the appropriate data cards and where applicable into the project FDIS or mini-FDIS. Data includes ilp number, TRIM mapsheet number and UTM coordinate for the ilp. In those situations where there is not a clear indication of the locations of headwaters, waterbody mouth, lake outlets, etc., additional information should be provided in an appropriate comment field (i.e. the local name field of FDIS).

Interim Locational Points must be included on final maps: All ilp's must be mapped in such a way to allow for the Ministry to match ilp locations to database information and generate watershed codes and/waterbody ids for the ilp waterbody.

NOTE Separate ILP maps are not to be submitted, however ILP's must still be assigned and included in the final mapping product submitted to the Ministry.

Anomalies

There will be many situations where the "location" of the interim locational point or which stream is referred to may not be obvious. Below are some of the most frequently encountered situations (point locations are indicated on Figure 1):

1. Stream breaks up into many channels (delta or estuary) – give point at mouth of channel appearing to carry bulk of flow.
2. Lake has more than one outlet – give point at channel outlet which appears to carry bulk of flow.
3. Stream disappears underground – provide locational point where stream disappears.
4. The stream in question forks upstream of the end of a stream in the Watershed Atlas: how do I know which to consider the parent vs. the tributary? Consult "Rules for Mainstem Designation" at http://www.bcfisheries.gov.bc.ca/fishinv/pdf/tech1_mainstem.pdf , ilp the streams at their mouths and comment to clarify.
5. Two tributary streams enter parent at same point – provide locational point at mouths and comment to clarify.

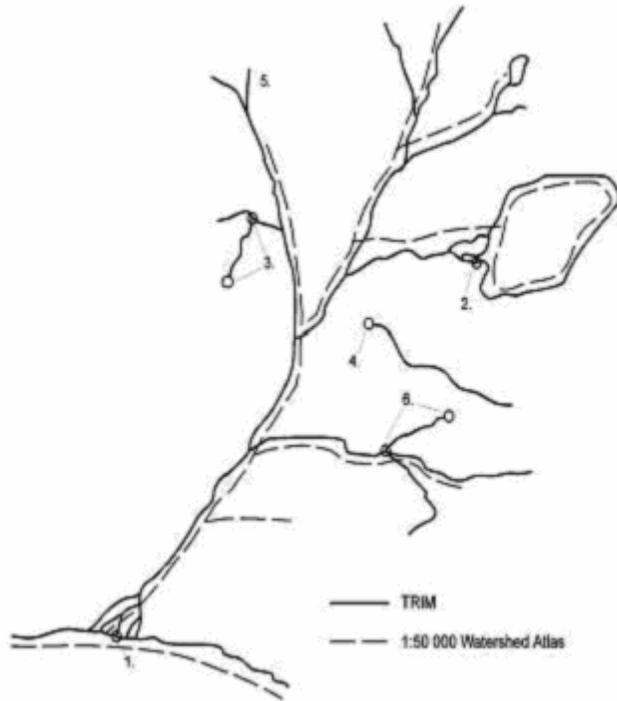


Figure 1 - Example scenarios for mapping locational points

For a more detailed discussion of coding in the creation of the Watershed Atlas refer to “Physical Data Model of the British Columbia Watershed Atlas.”

Glossary

Alias: A locally used name of a waterbody.

Gazetted Name: The official name of the waterbody being surveyed as listed in the Gazetteer of Canada for British Columbia.

Headwaters: The source of a stream, river or lake. For the purpose of this document, headwaters are defined based on their depiction on the NTS 1:50 000 map series.

Mouth: A mouth is the downstream terminus of a waterbody as it intercepts another waterbody (i.e., confluence, estuary, delta, etc.)

Sequence Number: A sequential numeric code that uniquely identifies a lake within a watershed.

Stream: The water course formed when water flows between continuous definable channel boundaries, with definable beds and banks, and with perennial or intermittent flow; such flow must be in a definite direction; includes rivers, creeks, streams, brooks, and springs.

Waterbody: A natural or man-made container or portion thereof which permanently or semi-permanently holds standing or running water. A waterbody is determined by the evidence of permanent/semi-permanent presence of water. For the purpose of the Watershed/Waterbody Identifier System (including this document) the word “waterbody” includes lakes, ponds, swamps, marshes, bogs, reservoirs, canals, and stream segments which appear as double lines on 1:50 000 maps.

Waterbody Identifier: An alpha-numeric identifier that uniquely identifies a waterbody within the Province of British Columbia.

Watershed: A catchment area for water that is bounded by the height of land and drains to a point on a stream or body of water. A watershed can be wholly contained within another watershed. A watershed is used to define boundaries used for environmental management, but is not the boundary itself (i.e., a watershed “divide” is a physical boundary).

Watershed Atlas: The topologically structured digital map used by various organizations to geo-reference aquatic-related data. The Atlas consists of all aquatic-related linework (lakes, streams, wetlands) and text as it appears on the 1:50 000 map sheets. In addition, watershed boundaries have been delineated for third order and greater stream systems.

Watershed Code: A 45-digit numeric code that uniquely identifies (province-wide) the lowest order watershed associated with the stream at its mouth.

Watershed Group: A watershed group provides a means of subdividing the Provincial coverage of the Watershed Atlas into manageable “chunks.” The Watershed Groups are based upon natural watershed boundaries that cover drainage areas comparable to most aquatic management and planning activities. In order to make the Watershed Atlas dataset manageable, it is divided into smaller groupings called Watershed Groups.