



## Distributor's Release Notes for National Scale Frameworks Hydrology, Canada

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### Introduction

The Atlas of Canada's National Scale Frameworks are a collection of integrated geospatial datasets at the 1:1 000 000 scale representing physical, human and environmental themes. This collection consists of the following themes:

- National Scale Frameworks Hydrology, Canada;
- National Scale Frameworks Rail Network, Canada;
- National Scale Frameworks Road Network, Canada;
- National Scale Frameworks Populated Places, Canada.

The datasets in these themes have been derived from a variety of sources and integrated so that the data's relative positions are correct. This data is for use at the 1:1 000 000 scale, and reflects the accuracy and detail appropriate to a national scale view.

This product is released as part of the Geomatics for Sustainable Development of Natural Resources (GSDNR) program. This release represents the culmination of three years of partnership work led by the Atlas of Canada and involving Environment Canada, Statistics Canada, the Centre for Topographic Information, and the GeoConnections program. These four new frameworks are available free of charge on-line via the GeoConnections Discovery Portal at [www.geogratis.cgdi.gc.ca](http://www.geogratis.cgdi.gc.ca). Under the GSDNR program, compilation of Atlas frameworks will continue.

In addition, the Atlas of Canada's National Scale Frameworks collection forms a base to which an increasing number of national-scale thematic frameworks from other Federal Government agencies are being integrated (e.g. Ecological Regions, Administrative Boundaries, Census Sub-divisions).

### What is Available

The National Scale Frameworks Hydrology consists of area, linear and point geospatial and attribute data for Canada's hydrology at a national scale. It provides a representation of Canada's surface water features, and data completeness reflects the content of the source, the original Vector Map level 0 (VMAPO) revision 4 hydrographic layers, except where revision editing has been performed.

Key value-added characteristics include river flow direction, connectivity and the tagging of geographical name keys to selected rivers, lakes and islands included in the *Concise Gazetteer of Canada*.

The product set for the hydrology theme consists of six groupings:

- Drainage Network Skeleton
  - Water bodies
  - Islands
  - Drainage Areas
  - Supplemental Drainage Features
  - Cartographic
1. The Drainage Network Skeleton data is comprised of linear features: single line rivers, flow lines within waterbodies and ocean coastlines. Flow lines within waterbodies are virtual linear features representing the hydrological flow through area features (e.g. lakes, rivers and intermittent waterbodies). These flow lines complete the linear network where rivers would run through lakes, permitting hydrologic network analysis and cartographic generalization. This data is required for analytical applications. The coastline component of the Drainage Network Skeleton also delineates oceanic islands.
  2. The Waterbodies data is comprised of area features: lakes, intermittent waterbodies, islands, and rivers wide enough to be represented as an area feature (e.g. St. Lawrence River, Mackenzie River). In a few exceptional cases, islands had to be represented by "holes" in the polygons in the Waterbodies data. Some area features have been subdivided and several types of virtual linear features serve to separate them. Features in this data are linked (by an attribute) to their corresponding flow line in the Drainage Network Skeleton. Therefore the Waterbodies data may be used in conjunction with the Drainage Network Skeleton for analytical applications.
  3. The Islands data is comprised of area and linear features: islands within inland waters and the waterbodies and single line rivers within these islands. Oceanic islands are not included as they are part of the coastline component of the Drainage Network Skeleton data. The Islands data exists to complete the cartographic representation of Canadian hydrology. The Islands data is not logically connected with the Drainage Network Skeleton, and can not be used for analytical applications. It should be noted that flow lines of the Drainage Network Skeleton do not take into account of the existence of islands and therefore do not necessarily flow around them. In a few exceptional cases, islands had to be represented by "holes" in the polygons in the Waterbodies data. Some islands themselves contain waterbodies and rivers, not significant for network analysis. However, in order to support a complete cartographic representation such waterbodies and rivers have been added to the Islands data.
  4. The Drainage Areas data is largely based on the Water Survey of Canada (WSC) drainage area boundaries at the sub-sub-basin level. The data model supports the derivation, from the Fundamental Drainage Areas data (sub-sub-basin level), of the WSC and Atlas of Canada drainage area hierarchies and the data is available in all three schemes. Drainage area definitions for both WSC and Atlas of Canada boundaries were reviewed resulting in some modifications. Larger scale reference data sources were used for further manual boundary adjustments. This data has been integrated with other National Scale Frameworks hydrology data and is considered a component of the hydrology theme.

5. The Supplemental Drainage Features data contains three features: Hydrometric Gauging Stations, Catchments and Station Basins.

The Hydrometric Gauging Stations data consists of a point coverage of selected Water Survey of Canada (WSC) hydrometric gauging stations, linked, via attribute, to flowlines in the drainage network. The selection consists of stations that a) have a drainage area of greater than 200 square kilometres, and b) are located on a river that is included in the Drainage Network Skeleton data. Each station point is coded with HYDEX station codes.

The Catchments data is a polygon coverage representing an approximate catchment area for each individual river segment and lake in the drainage network. Each catchment is coded to correspond to a flowline in the Drainage Network Skeleton data.

The Station Basins data consists of an approximation of a drainage area for each of the hydrometric gauging stations, created by aggregating catchment polygons upstream of each gauging station. This polygon coverage is coded with HYDEX station codes.

6. The Cartographic data is suitable for cartographic or display purposes, but not for analysis. It is a selection of the Lakes, Islands and Linear Drainage Network data but does not include flow lines or other virtual features.

### **Download Information**

The hydrology data is available for the full country.

The data can be downloaded at:

<http://geogratis.cgdi.gc.ca/download/frameworkdata/hydrology>

### **Available Documentation**

Metadata documentation and Distributor's Release Notes can be downloaded at:

<http://geogratis.cgdi.gc.ca/download/frameworkdata/hydrology>

### **Visualization of Data**

Not available at present.

### **Attributes for other Applications**

Stream-ordering attributes built into the drainage network skeleton permit a simple selection of the flowlines that are upstream or downstream of a given point on the network. The resulting selection of flowlines can be extended to a selection of catchment polygons representing the approximate area on the ground which drains through the given point.

Hydrometric gauging station points and gauging station basins both include, as an attribute, the station's HYDEX station ID. This ID can be used to access historical and, where available,

real-time water level and streamflow data from Environment Canada's Water Survey of Canada website, or from the HYDAT CD-ROM.

Drainage Areas data include population and private dwelling counts attributes (aggregated by drainage area) that have been supplied by Statistics Canada. Statistics Canada information is used with the permission of Statistics Canada. Users are forbidden to copy the data and disseminate them, in an original or modified form, for commercial purposes, without the expressed permission of Statistics Canada. Information on the availability of the wide range of data from Statistics Canada can be obtained from Statistics Canada's Regional Offices, its World Wide Web site at <http://www.statcan.ca>, and its toll-free access number 1-800-263-1136.

Geographical names as included in the Concise Gazetteer of Canada and unique name keys from the Canadian Geographic Names DataBase are attached to a selection of rivers, lakes and islands in the hydrology data.

Revised: July 30<sup>th</sup>, 2003.

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