Catalogue No. 92F0171GIE

Cartographic Boundary Files
2001 Census
Second Edition

Reference Guide

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Statistics Canada

Cartographic Boundary Files 2001 Census Second Edition

Reference Guide

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Note of Appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

What's new?

Second edition

- The hydrography was generalized by removing small lakes from the file to reduce noise. Large rivers emptying into the oceans were closed off, then the interior hydrography (double line river and lake polygons) was extracted to create the supplementary hydrography.

First edition

- Dissemination area boundary files for 2001 replace the enumeration area boundary files produced for the 1996 Census. The dissemination area is a new standard geographic area. It replaces the enumeration area as a basic unit for dissemination.

- Designated place parts (DPL_CSD) boundary file showing census subdivision components is available with the designated places boundary file.

- Economic region boundary file is available with the census division boundary file.

- The statistical area classification is available for census subdivisions on the Census Subdivision Boundary File.

- Increased hydrographic detail from the National Atlas and the National Topographic Data Base as reference to support the boundaries. These digital topographic data are provided by Geomatics Canada, Natural Resources Canada.

- Consistency with the Road Network Files for all of Canada; the roads in the Road Network Files can be used to reference all the boundaries in the Cartographic Boundary Files.

- All the spatial information is now based on the North American Datum of 1983 (NAD83).

Note 1: The 2001 Cartographic Boundary Files are the 2001 Census version of the 1996 Digital Cartographic Files. The Digital Boundary File products have been discontinued.

Note 2: Other boundary files, which are not positionally consistent with the Cartographic Boundary Files or the Road Network Files, are available on the GeoGratis site (www.geogratis.gc.ca) and the Statistics Canada Internet site (www.statcan.ca). The user can download these files. For more information about which files would be appropriate for your application, please consult section 3, **How to use this product**.

Table of Contents

1. About this guide

This Reference Guide is intended for users of any or all products in the Cartographic Boundary File series.

The **Overview** section provides information related to all products in the series, including a description of the products and the general methodology used to create the products.

Each of the next 12 sections focuses on a Cartographic Boundary File, each with three sub-sections: **Content**, **Data quality**, and **Technical specifications**. The content and technical specifications of each product are described in the following terms: number of geographic units, number of polygons, format of the geographic codes, and record layout. Also, a description of method of derivation or data quality considerations specific to each file is included if required.

The data quality statement provides information to evaluate the suitability of the data for a particular use. Technical specifications include system requirements, installation guidelines, record layout and file sizes (in bytes). In this section, the choice of lower and upper case letters for file names and record layout description may not correspond to the actual combination of upper and lower case in the product. The file sizes may differ slightly from what is indicated in the relevant table.

The glossary provides geographic terms and concepts in summary form only. More details can be found in the *2001 Census Dictionary* (Catalogue No. 92-378-XIE).

This Reference Guide does not provide details on specific software packages available to use with Cartographic Boundary Files. Users are advised to contact the appropriate software vendor for information. Please contact your nearest Regional Reference Centre for information.

This Reference Guide is based on the best information available at the time of its release. It in no way constitutes a warranty of the data in the event that users may observe characteristics that deviate from those stated in this document. Many geographic codes and numbers presented in this guide have been transcribed from computer screens and internal written reports and then key-entered. All efforts have been made to ensure that the verification of this product has been thoroughly done, however, there is no guaranty that the data are 100% accurate.

2. Overview

The Cartographic Boundary Files

Cartographic Boundary Files are a series of products containing the boundaries of standard geographic areas together with the shoreline around Canada. A separate file will be provided with large inland lakes and double line rivers. The lakes and shorelines will hereafter be referred to as hydrography. The **coordinates** are latitude / longitude and are based on the North American Datum of 1983 (NAD83). The Cartographic Boundary Files for 2001 replace the Digital Cartographic Files produced for the 1996 Census.

The Cartographic Boundary Files are available for the following ***standard*** levels of geography[1]:

- **provinces** and **territories** (Catalogue number 92F0160XCE)
- **federal electoral districts** (using 1996 Representation Order) (92F0163XCE)
- **census divisions** (92F0161XCE)
- **economic regions** (92F0161XCE)
- **census consolidated subdivisions** (92F0167XCE)
- **census subdivisions** (92F0162XCE)
- **census metropolitan areas** / **census agglomerations** (92F0166XCE)
- **census tracts** (92F0168XCE)
- **urban areas** (92F0164XCE)
- **designated places** (92F0165XCE)
- **dissemination areas** (new for 2001) (92F0169XCE)

All of the Cartographic Boundary Files can be purchased as national files. Boundary files for census tracts, dissemination areas and the census subdivisions are available as standard products for:

- Canada
- 10 Provinces and 3 territories
- 27 census metropolitan areas
- 19 census agglomerations with census tracts

Subsets of the Cartographic Boundary Files are available from the Regional Offices as a custom product.

[1] In this Reference Guide, the terms standard geography level or standard geographic units are used to refer to the geography levels defined in the *Standard Geography Classification* and geography levels established primarily for the purpose of collecting and disseminating Census data. A diagram illustrating the hierarchy of standard geography levels is included in *Appendix A* of this guide.

Figure 1 illustrates the hydrographic detail available in the Cartographic Boundary Files:

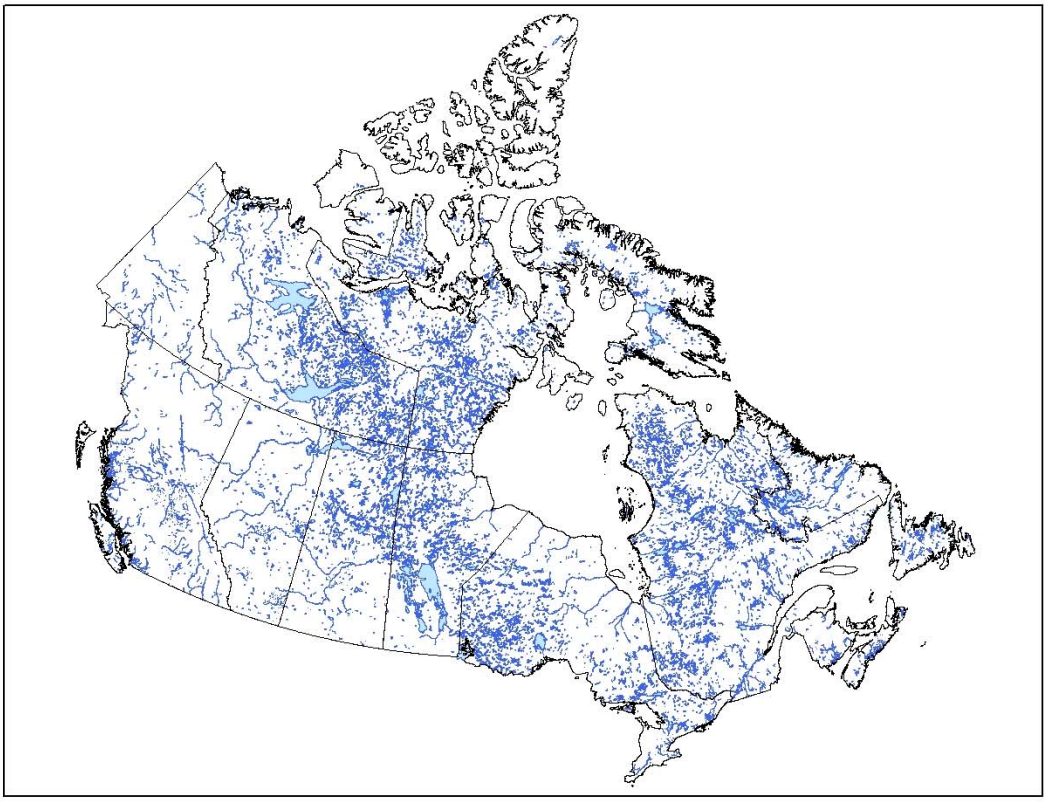


Figure 1: Province / territory Cartographic Boundary File with hydrography, 2001 Census

Supplementary hydrography coverages are also available for use with the Cartographic Boundary Files. Please Appendix H for more information. Figure 2 illustrates the Census Subdivision Cartographic Boundary File for Vancouver with the supplementary hydrography and United States boundary layers:

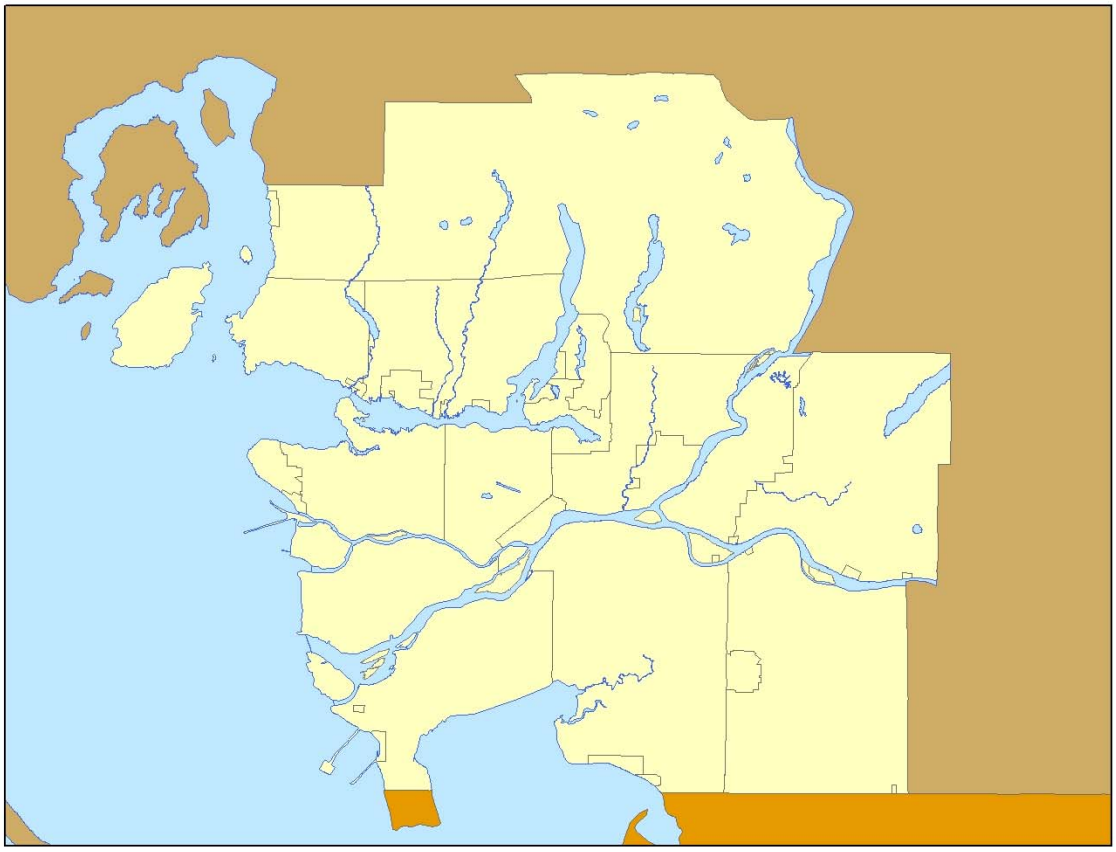


Figure 2: Census subdivision boundaries for the census metropolitan area of Vancouver.

Reference date

The **geographic reference date** is a date determined by Statistics Canada to finalize the geographic framework for which census data will be collected, tabulated and reported. The geographic reference date for the 2001 Census, and therefore for the geographic area boundaries in the Cartographic Boundary Files, is **January 1, 2001**.

3. How to use this product

Purpose of the Product

Cartographic Boundary Files (CBF) were created to support the spatial analysis and thematic mapping of data from the 2001 Census of Population, where realistic shorelines are required. They can also be used with Census of Agriculture or other Statistics Canada data for data analysis and thematic mapping.

With the appropriate computer software, Cartographic Boundary Files provide the framework for thematic mapping to support applications such as land use and demographic studies, or social, economic and market research. Geographic identifiers provide the linkage between the statistical data and the geographic area boundaries. Cartographic Boundary Files can also be used to create new geographic areas by aggregating standard geographic areas, and for other data manipulations available with the user's software. The Cartographic Boundary Files are positionally consistent with the **Road Network Files** and **Skeletal Road Network Files**, which can provide additional geographic context for mapping applications.

The Cartographic Boundary Files were created for thematic mapping – particularly choropleth mapping of Census data. The shorelines were integrated with the boundaries to enable users to more easily shade the land polygons. Supplementary hydrography is also available to support the mapping of inland lakes, oceans and land outside the landmass of Canada. Please see Appendix H for more information on this. The boundaries of the Cartographic Boundary Files include shoreline around Canada and the shoreline of larger inland water bodies within Canada (i.e. Great Lakes).

The Urban Area boundary files were created to be used for shading the more urbanised areas when mapping other boundaries such and the CMA / CA or census tract boundaries (available as Cartographic Boundary Files).

Other boundary files, similar to the Cartographic Boundary Files, are available for downloading at no charge from the internet.

Using the Cartographic Boundary Files with other boundary files

When considering how to use the Cartographic Boundary Files, users should be aware of the compatibility of these files with other similar files. Other boundary files are available for download on the Internet. These files are available for some of the same geography levels that are available for the Cartographic Boundary Files. Some of the mapping products available are:

Population Ecumene Boundary File on the Statistics Canada Internet site

The Population **Ecumene** Boundary Files contain generalized ecumene boundaries. The Province / Territory version can be used to produce small-scale **thematic maps** of statistical data, including major water features. In addition, the Population Ecumene Census Division Boundary File is suitable for thematic mapping at a small-scale when showing statistical data by census division.

The 2001 Census Population Ecumene Boundary Files are **not positionally** consistent with the Cartographic Boundary File product series. Cartographic Boundary Files are recommended for thematic mapping and visualization of census data at the more detailed levels of Geography. ***Users who wish to use the Population Ecumene Boundary Files with other boundary files should consider their positional differences.***

Boundary files on GeoGratis
Various boundary files are available (for download at no charge) on the GeoGratis Internet site www.geogratis.gc.ca. Some of these are suitable for small-scale mapping.

The files on the GeoGratis site also contain 2001 Census boundaries from Geography Division but the boundaries have been moved to positionally conform with the GeoBase hydrology Level 0. The GeoGratis boundary files are not positionally consistent with the reference Road Network File or Skeletal Road Network File available Statistics Canada. (However, the GeoGratis boundary files are positionally consistent with other files available through GeoGratis). Please consult www.geogratis.gc.ca for more details on the GeoGratis files.

Cartographic Boundary Files are recommended for thematic mapping and visualisation of census data at the more detailed levels of geography. ***In deciding which set of boundary files to use, one should consider which other geospatial data will be used in conjunction with the boundary files.***

Limitations

The positional accuracy of the Cartographic Boundary Files does not support cadastral, surveying or engineering applications.

The source data used to create the products carried a wide range of different scales. Therefore, the Cartographic Boundary Files will not be precise if plotted at a larger scale than the scale of the source material used in their creation. In particular, the shorelines originally digitised at a scale of 1:1,000,000 (outside census metropolitan areas and census agglomerations) will not support large-scale mapping.

The Cartographic Boundary Files are recommended for local and regional scale mapping. Boundaries can be mapped at scales ranging from 1:1,000,000 to 1:5,000,000 as well as 1:250,000 and greater detail for maps containing data within census metropolitan areas and census agglomerations.

General methodology

Creation of the hydrography layer
Water polygons from both the National Topographic Data Base (1:50,000 and the 1:250,000 maps) and National Atlas (GeoBase hydrology Level 0) were chosen for the hydrography layer. The larger water bodies from the 1:50,000 and the 1:250,000 maps from the National Topographic Data Base were used to provide reference information within census metropolitan areas and census agglomerations. National Atlas hydrography provided information for the rest of the country. The hydrography was generalized by removing small lakes from the file to reduce noise. Large rivers emptying into the oceans were closed off, then the interior hydrography (double line river and lake polygons) was extracted to create the supplementary hydrography.

Creation of the basic boundary layer
A basic boundary layer (without hydrography) was created from the **National Geographic Base** (NGB). This digital file consists of polygons with identification codes for upper level geographic areas.

Creation of the basic boundary layer with shoreline
The hydrography layer was integrated with the basic boundary layer to create one boundary layer with realistic shorelines. This layer was verified to ensure all the polygons necessary to distinguish dissemination areas, designated places and federal electoral districts were present in the layer. The verification was done against the boundary information on the National Geographic Base as well as information held in the ORACLE tables of the Query Base, a data base maintained within Statistics Canada.

Creation of the boundaries for the Cartographic Boundary Files
Individual boundary files were created by aggregating polygons in the ***Basic Boundary Layer with Shoreline.*** Dissemination area boundary files were created by aggregating polygons that formed individual dissemination areas. (Any boundaries that were not needed to distinguish dissemination areas were removed from the file). Designated place boundary files and the federal electoral district boundary files were also created in the same way from the Basic Boundary Layer with Shoreline. All boundary files were created by aggregating polygons from the dissemination area boundary files.

Attribute information for the Cartographic Boundary Files
Additional information such as the name of each boundary unit was included in the boundary files. This information was derived from the Query Base. For example, for the designated places boundary files, the DPL Name and the DPL Type were included as attributes of the DPL polygons.

Finally, the files were verified, translated and appropriately labelled.

Comparison with other products

The 2001 Cartographic Boundary Files replace the 1996 Digital Cartographic Files. The following enhancements are on the 2001 Census files:

- Increased hydrographic detail is used from the National Atlas (1:1,000,000 GeoBase hydrology Level 0) and the National Topographic Data Base (within metropolitan areas) as reference to support the boundaries (see Appendix H).
- Better consistency with the roads on the Road Network Files for all of Canada; the roads in the Road Network Files can be used to reference *all* the boundaries in the Cartographic Boundary Files

New boundary files available in this series for the 2001 Census are:

- Dissemination area boundary file.
- Designated place parts boundary file showing census subdivision components is available with the designated places boundary file.
- Economic Region boundary file is available with the Census Division boundary file.

4. Dissemination Areas

Content

The Dissemination Areas Cartographic Boundary File for Canada contains boundaries for 52 943 dissemination areas for the 2001 Census. The dissemination area (DA) is a small, relatively stable geographic unit composed of one or more blocks. It is the smallest standard geographic area for which all census data are disseminated. Dissemination areas cover all the territory of Canada.

The Dissemination Area Boundary File consists of polygons representing the dissemination areas. Every polygon encoded as a dissemination area has a DAuid (a code to uniquely identify each dissemination area) associated with it. The national Dissemination Area Boundary File consists of polygons representing dissemination areas. There are more polygons than dissemination areas primarily because of the additional polygons needed to represent islands.

In this file, 50 dissemination areas falling entirely in water (or with a land area less than 10 square kilometers) are not included. These dissemination areas do not contain any population. These dissemination areas were created due to the intersection of the boundaries of higher level geographic areas. (Please see Appendix I for more information on this).

Some Dissemination Area slivers were found on islands. Please see Appendix K for more infomation on this.

A breakdown of the number of dissemination areas and polygons by province / territory are provided below for the Dissemination Area Cartographic Boundary File:

Province / Territory	Dissemination areas	Polygons	Dissemination areas in more than one polygon
Canada	52 943	58 550	696
Newfoundland and Labrador	1 221	1 902	92
Prince Edward Island	224	257	24
Nova Scotia	1 396	1 566	91
New Brunswick	1 345	1 391	29
Quebec	12 153	12 593	81
Ontario	18 588	18 992	204
Manitoba	2 235	2 254	13
Saskatchewan	2 937	2 952	13
Alberta	5 143	5 154	11
British Columbia	7 437	7 849	109
Yukon Territory	117	126	2
North West Territories	92	362	6
Nunavut	55	3 152	21

Data quality

Spatial data quality elements *provide information on the fitness-for-use of a spatial database by describing why, when and how the data are created, and how accurate the data are. The elements include an overview describing the purpose and usage, as well as specific quality elements*

reporting on the lineage, positional accuracy, attribute accuracy, logical consistency and completeness. This information is provided to users for all spatial data products disseminated for the census.

Lineage

Describes the history of the spatial data, including descriptions of the source material from which the data were derived, and the methods of derivation. It also contains the dates of the source material, and all transformations involved in producing the final digital files or map products.

Aggregating polygons from a layer of geographic information created all of the Cartographic Boundary Files. Please see Appendix F for details on this process.

Positional accuracy

Refers to the absolute and relative accuracy of the positions of geographic features. Absolute accuracy is the closeness of the coordinate values in a dataset to values accepted as or being true. Relative accuracy is the closeness of the relative positions of features to their respective relative positions accepted as or being true. Descriptions of positional accuracy include the quality of the final file or product after all transformations.

The boundaries are derived from the National Geographic Base. The data in the National Geographic Base is stored in double precision. However, the positional accuracy of the features in the National Geographic Base varies. The data storage precision allows features that are next to each other on the ground to be placed in the correct position on the map, relative to each other, without overlap.

The positional accuracy of the Cartographic Boundary Files is based on the positional accuracy of the source material used in its production (the National Geographic Base, the National Atlas GeoBase hydrology Level 0 and the National Topographic Data Base). Please see Appendix G for more information on the roads in the National Geographic Base. The larger water bodies from the 1:50,000 and the 1:250,000 maps from the National Topographic Data Base were used to provide reference information within census metropolitan areas and census agglomerations. The National Atlas (GeoBase hydrology Level 0) hydrography was used outside the census metropolitan areas and census agglomerations. Some of the smaller inland water polygons were removed from the Cartographic Boundary Files. Please see Appendix F for more information on the production process.

Some vertices in the file were removed as a result of line generalization done (based on the Douglas-Peucker algorithm and using ARC/INFO® 8.1) with a weed tolerance of 0.1 metres.

Attribute accuracy

Refers to the accuracy of the quantitative and qualitative information attached to each feature (such as population for an urban area, street name, census subdivision name and code).

The attribute data associated with the polygons in the Cartographic Boundary Files were independently verified against the data in the Query Base and found to be accurate.

The CMAuid attribute on the dissemination area boundary file is a null value outside of census metropolitan areas and census agglomerations.

Logical consistency

Describes the fidelity of relationships encoded in the data structure of the digital spatial data.

Every polygon was also verified to have a unique identifier for the dissemination area: the DAuid. Every case where a polygon did not have a unique DAuid was examined. Some polygons did not have unique DAuid. All of these dissemination areas consisted of a set of polygons that were separated by water bodies. For example, two islands, each a polygon, may belong to the same dissemination area.

Every DAuid in the Dissemination Area Cartographic Boundary File was verified to be in the Query Base as a DAuid value for the 2001 Census.

The data set was tested to ensure that the size of the polygons was consistent with the geographic units being represented. Specifically, very small polygons and sliver polygons were examined. Slivers are defined here as very long, thin polygons.

The following criteria was used to detect slivers:

{ (perimeter x perimeter) / area > 1,000 } AND {area < 200,000 meters}

Consistency with other products

The positions of the boundary arcs are generally consistent with those of the Road Network Files and Skeletal Road Network Files. The arcs in the Road Network Files and Skeletal Road Network Files were simplified to remove unnecessary vertices in the straight-line segments (generalized with the option «pointremove»). It is possible for some arcs to differ slightly from those of the National Geographic Base (a few arcs could have been moved by 1 meter).

Hydrography was specially created for the Cartographic Boundary Files to enable thematic mapping at local and regional scales. The hydrography used in the province / territory layer in the Cartographic Boundary Files differs from that used in the **Reference Maps**. For this reason, minor differences may be noticable between the depiction of hydrography and boundaries.

The hydrography used in the Cartographic Boundary Files was created to be consistent with the roads in the road network files. However, boundary arcs in the Road Network Files (designated by ARC_GROUP of “BO”) are those present in the National Geographic Base. This very detailed information, including boundary arcs that for legal reasons are present in the water, were left in the Road Network Files as they were depicted in the National Geographic Base. The detailed information was also considered preferable for **geocoding** with the BLOCKuid information in the Road Network Files. However, when mapping the Cartographic Boundary Files (or the Province / Territory Cartographic Boundary layer) with the Road Network Files, users should consider not mapping the RNF boundary arcs (ARC_GROUP of “BO”) if they do not want these to fall in the water.

Some dissemination areas that may be found in GeoSuite or GeoSearch are not in the Dissemination Area Cartographic boundary file. These are dissemination areas with no population and minimal or no land area. (Please see Appendix I for more information.)

The dissemination area **representative points** in GeoSuite were derived without consideration of the hydrography used in the Cartographic Boundary Files and may not be consistent with that hydrography. That is, some of the dissemination area representative points in GeoSuite may fall in water as depicted in the Cartographic Boundary Files.

The land area for various geographic areas present in GeoSuite may not be consistent with that computed from the Cartographic Boundary Files. This is because the land / water areas in the Cartographic Boundary Files are based on hydrography that was specially generalized and created for thematic mapping.

Completeness

Refers to the degree to which geographic features, their attributes and their relationships are included or omitted in a dataset. It also includes information on selection criteria, definitions used, and other relevant mapping rules.

The number of dissemination areas as well as their unique identifiers was verified against the information in the Query Base. Comparisons were also made with a set of boundary files derived independently from the national geographic base. Some dissemination areas with no associated population and either minimal or no land area were not included in the Cartographic Boundary Files.

Please see Appendix I for a full list of missing dissemination areas.

Technical specifications

Each Cartographic Boundary File consists of two layers of data. The boundaries of the standard geographic areas have been re-defined for thematic mapping purposes by integrating them with the shoreline. Supplementary files for the oceans, Great Lakes, St. Lawrence River, Greenland and bordering United States are available upon request. (Please see Appendix H for the technical specifications of supporting files.)

File specifications

These are the standard formats in which 2001 Census digital spatial products will be available from Geography Division.

Software formats

All products available on CD-ROM for purchase containing digital boundaries and road network information will be available in the following formats:

- ARC/INFO® interchange format version 8.1
  ASCII export file
  File extension(s): .e00 (spatial and tabular data)
- MapInfo® interchange format version 6.0
  ASCII export files
  File extension(s): .MIF (graphic data), .MID (tabular data)

Installation instructions

Both the ARC/INFO® and MapInfo® are compressed in self-executable WinZip® files (file extension .EXE). Users can uncompress these files by executing them in DOS, or selecting

them in Windows® and double clicking on the file icon, or executing them in the RUN dialogue in Windows®.

File names and sizes

File names are formatted in order to better indicate to the client the source of data, coverage, geographic area, language and file format of the data.

Province / Territory and tracted CMAs / CAs	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Canada	gda_000b02a_e	47.12	gda_000b02m_e	35.47
Newfoundland and Labrador	gda_010b02a_e	3.36	gda_010b02m_e	2.59
St. John's (CMA)	gda_001b02a_e	0.42	gda_001b02m_e	0.31
Prince Edward Island	gda_011b02a_e	0.33	gda_011b02m_e	0.22
Nova Scotia	gda_012b02a_e	2.59	gda_012b02m_e	2.36
Halifax (CMA)	gda_205b02a_e	0.60	gda_205b02m_e	0.48
New Brunswick	gda_013b02a_e	2.02	gda_013b02m_e	1.70
Moncton (CA)	gda_305b02a_e	0.20	gda_305b02m_e	0.14
Saint John (CMA)	gda_310b02a_e	0.31	gda_310b02m_e	0.26
Quebec	gda_024b02a_e	9.36	gda_024b02m_e	7.15
Chicoutimi – Jonquière (CMA)	gda_408b02a_e	0.26	gda_408b02m_e	0.20
Drummondville (CA)	gda_447b02a_e	0.12	gda_447b02m_e	0.09
Granby (CA)	gda_450b02a_e	0.11	gda_450b02m_e	0.09
Montréal (CMA)	gda_462b02a_e	2.34	gda_462b02m_e	1.23
Québec (CMA)	gda_421b02a_e	0.69	gda_421b02m_e	0.44
Saint-Jean-sur-Richelieu (CA)	gda_459b02a_e	0.12	gda_459b02m_e	0.10
Sherbrooke (CMA)	gda_433b02a_e	0.20	gda_433b02m_e	0.14
Trois-Rivières (CMA)	gda_442b02a_e	0.20	gda_442b02m_e	0.15
Ontario	gda_035b02a_e	13.58	gda_035b02m_e	9.26
Barrie (CA)	gda_568b02a_e	0.18	gda_568b02m_e	0.14
Belleville (CA)	gda_522b02a_e	0.21	gda_522b02m_e	0.15
Brantford (CA)	gda_543b02a_e	0.13	gda_543b02m_e	0.09
Greater Sudbury (CMA)	gda_580b02a_e	0.23	gda_580b02m_e	0.18
Guelph (CA)	gda_550b02a_e	0.15	gda_550b02m_e	0.10
Hamilton (CMA)	gda_537b02a_e	0.56	gda_537b02m_e	0.32
Kingston (CMA)	gda_521b02a_e	0.46	gda_521b02m_e	0.30
Kitchener (CMA)	gda_541b02a_e	0.36	gda_541b02m_e	0.21
London (CMA)	gda_555b02a_e	0.42	gda_555b02m_e	0.26
North Bay (CA)	gda_575b02a_e	0.16	gda_575b02m_e	0.12
Oshawa (CMA)	gda_532b02a_e	0.27	gda_532b02m_e	0.16
Ottawa – Hull (CMA)	gda_505b02a_e	0.86	gda_505b02m_e	0.51
Peterborough (CA)	gda_529b02a_e	0.17	gda_529b02m_e	0.12
Sarnia (CA)	gda_562b02a_e	0.17	gda_562b02m_e	0.12
Sault Ste. Marie (CA)	gda_590b02a_e	0.20	gda_590b02m_e	0.14
St. Catharines – Niagara (CMA)	gda_539b02a_e	0.44	gda_539b02m_e	0.27
Thunder Bay (CMA)	gda_595b02a_e	0.29	gda_595b02m_e	0.19
Toronto (CMA)	gda_535b02a_e	2.92	gda_535b02m_e	1.53
Windsor (CMA)	gda_559b02a_e	0.38	gda_559b02m_e	0.23
Manitoba	gda_046b02a_e	1.65	gda_046b02m_e	1.26

Province / Territory and tracted CMAs / CAs	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Winnipeg (CMA)	gda_602b02a_e	0.55	gda_602b02m_e	0.28
Saskatchewan	gda_047b02a_e	1.90	gda_047b02m_e	1.44
Regina (CMA)	gda_705b02a_e	0.23	gda_705b02m_e	0.14
Saskatoon (CMA)	gda_725b02a_e	0.24	gda_725b02m_e	0.15
Alberta	gda_048b02a_e	3.29	gda_048b02m_e	2.42
Calgary (CMA)	gda_825b02a_e	0.68	gda_825b02m_e	0.37
Edmonton (CMA)	gda_835b02a_e	0.72	gda_835b02m_e	0.43
Lethbridge (CA)	gda_810b02a_e	0.12	gda_810b02m_e	0.09
Medicine Hat (CA)	gda_805b02a_e	0.16	gda_805b02m_e	0.12
Red Deer (CA)	gda_830b02a_e	0.12	gda_830b02m_e	0.09
British Columbia	gda_059b02a_e	6.08	gda_059b02m_e	4.55
Abbotsford (CMA)	gda_932b02a_e	0.17	gda_932b02m_e	0.12
Kamloops (CA)	gda_925b02a_e	0.28	gda_925b02m_e	0.23
Kelowna (CA)	gda_915b02a_e	0.23	gda_915b02m_e	0.17
Nanaimo (CA)	gda_938b02a_e	0.17	gda_938b02m_e	0.12
Prince George (CA)	gda_970b02a_e	0.21	gda_970b02m_e	0.17
Vancouver (CMA)	gda_933b02a_e	1.28	gda_933b02m_e	0.60
Victoria (CMA)	gda_935b02a_e	0.39	gda_935b02m_e	0.23
Yukon Territory	gda_060b02a_e	0.21	gda_060b02m_e	0.18
North West Territories	gda_061b02a_e	0.49	gda_061b02m_e	0.32
Nunavut	gda_062b02a_e	2.79	gda_062b02m_e	1.59

Geographic representation

- All files distributed by the Geography Division are in the North American Datum of 1983 (NAD 83).
- The files are available in the geographic coordinate system (latitude / longitude).
- To make this file useful (i.e. to calculate distance) it must be projected.

Record layout and item description

Dissemination area (DA) record layout:

The following table shows the format of the attributes contained on the boundary files.

Item Name	Width	Output	Type	Decimals
AREA[1]	4	12	F	3
PERIMETER[1]	4	12	F	3
<File Name># [1]	4	5	B	0
<File Name>-ID [1]	4	5	B	0
DAuid	8	8	C	-
PRuid	2	2	C	-
CSDuid	7	7	C	-
CMAuid	3	3	C	-

[1] Items included with ARC/INFO® Interchange files only.

Item Description:

Item	Description
AREA	Area of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files).
PERIMETER	Perimeter of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files).
<File Name>#	Maintained by ARC/INFO® for internal processing (item not included in MapInfo® files).
<File Name>-ID	Maintained by ARC/INFO® for internal processing (item not included in MapInfo® files).
DAuid	Uniquely identifies an dissemination area (composed of the 2-digit province or territory code, the 2-digit Census Division code, and the 4-digit DA code).
PRuid	Uniquely identifies a province or territory.
CSDuid	Uniquely identifies a census subdivision (SGC code - composed of the 2-digit province code, the 2-digit census division code and the 3-digit census subdivision code).
CMAuid	Uniquely identifies a census metropolitan area or census agglomeration.

5. Provinces and territories

Content

The Provinces and Territories Cartographic Boundary File for Canada contains the boundaries of all ten Provinces and three Territories for the 2001 Census. Province and territory refer to the major political units of Canada. From a statistical point of view, province and territory are basic areas for which data are tabulated.

The province / territory boundary file consists of polygons representing the provinces and territories. Every polygon encoded as a province or territory has a PRuid (a code to uniquely identify each province or territory) associated with it. The province / territory is available at the national level only. The national province / territory boundary file consists of polygons representing ten provinces and three territories. There are more polygons than provinces / territories primarily because of the additional polygons needed to represent islands.

A breakdown of the number of provinces and territories and polygons by province / territory are provided below for the province / territory Cartographic Boundary File:

Province / Territory	Polygons
Canada	4 988
Newfoundland and Labrador	637
Prince Edward Island	12
Nova Scotia	142
New Brunswick	46
Quebec	336
Ontario	120
Manitoba	1
Saskatchewan	1
Alberta	1
British Columbia	379
Yukon Territory	9
North West Territories	264
Nunavut	3 040

Data quality

Spatial data quality elements provide information on the fitness-for-use of a spatial database by describing why, when and how the data are created, and how accurate the data are. The elements include an overview describing the purpose and usage, as well as specific quality elements reporting on the lineage, positional accuracy, attribute accuracy, logical consistency and completeness. This information is provided to users for all spatial data products disseminated for the census.

Lineage

Describes the history of the spatial data, including descriptions of the source material from which the data were derived, and the methods of derivation. It also contains the dates of the source material, and all transformations involved in producing the final digital files or map products.

Aggregating polygons from a layer of geographic information created all of the Cartographic Boundary Files. Please see Appendix F for details on this process.

Positional accuracy

Refers to the absolute and relative accuracy of the positions of geographic features. Absolute accuracy is the closeness of the coordinate values in a dataset to values accepted as or being true. Relative accuracy is the closeness of the relative positions of features to their respective relative positions accepted as or being true. Descriptions of positional accuracy include the quality of the final file or product after all transformations.

The boundaries are derived from the National Geographic Base. The data in the National Geographic Base is stored in double precision. However, the positional accuracy of the features in the National Geographic Base varies. The data storage precision allows features that are next to each other on the ground to be placed in the correct position on the map, relative to each other, without overlap.

The positional accuracy of the Cartographic Boundary Files is based on the positional accuracy of the source material used in its production (the National Geographic Base, the National Atlas GeoBase hydrology Level 0 and the National Topographic Data Base). Please see Appendix G for more information on the roads in the National Geographic Base. The larger water bodies from the 1:50,000 and the 1:250,000 maps from the National Topographic Data Base were used to provide reference information within census metropolitan areas and census agglomerations. The National Atlas (GeoBase hydrology Level 0) hydrography was used outside census metropolitan areas and census agglomerations. Some of the smaller inland water polygons were removed from the Cartographic Boundary Files. Please see Appendix F for more information on the production process.

Some vertices in the file were removed as a result of line generalization done (based on the Douglas-Peucker algorithm and using ARC/INFO® 8.1) with a weed tolerance of 0.1 metres.

Attribute accuracy

Refers to the accuracy of the quantitative and qualitative information attached to each feature (such as population for an urban area, street name, census subdivision name and code).

The attribute data associated with the polygons in the Cartographic Boundary Files were independently verified against the data in the Query Base and found to be accurate.

Logical consistency

Describes the fidelity of relationships encoded in the data structure of the digital spatial data.

Every polygon was verified to have a unique identifier for the Province or Territory: the PRuid. Every case where a polygon did not have a unique PRuid was examined. Some polygons did not have unique PRuid. All of these Provinces and Territories consisted of a set of polygons that were separated by water bodies. For example, two islands, each a polygon, may belong to the same Province or Territory.

Every PRuid in the Provinces and Territories Cartographic Boundary File was verified to be in the Query Base as a PRuid value for the 2001 Census.

The data set was tested to ensure that the size of the polygons was consistent with the geographic units being represented. Specifically, very small polygons and sliver polygons were examined. Slivers are defined here as very long, thin polygons.

The following criteria was used to detect slivers:

{ (perimeter x perimeter) / area > 1,000 } AND {area < 200,000 meters}

Consistency with other products

The positions of the boundary arcs are generally consistent with those of the Road Network Files and Skeletal Road Network Files. The arcs in the Road Network Files and Skeletal Road Network Files were simplified to remove unnecessary vertices in the straight-line segments (generalized with the option «pointremove»). It is possible for some arcs to differ slightly from those of the National Geographic Base (a few arcs could have been moved by 1 meter).

Hydrography was specially created for the Cartographic Boundary Files to enable thematic mapping at local and regional scales. The hydrography used in the province / territory layer in the Cartographic Boundary Files differs from that used in the Reference Maps. For this reason, minor differences may be noticable between the depiction of hydrography and boundaries.

The hydrography used in the Cartographic Boundary Files was created to be consistent with the roads in the road network files. However, boundary arcs in the Road Network Files (designated by ARC_GROUP of “BO”) are those present in the National Geographic Base. This very detailed information, including boundary arcs that for legal reasons are present in the water, were left as they were depicted in the National Geographic Base. The detailed information was also considered preferable for geocoding with the BLOCKuid information in the Road Network Files. However, when mapping the Cartographic Boundary Files (or the Province / Territory Cartographic Boundary layer) with the road network files, users should consider not mapping the RNF boundary arcs (ARC_GROUP of “BO”) if they do not want these to fall in the water.

The Provinces / Terriories found in this file are consistent with those found in GeoSuite and GeoSearch. The land area for various geographic areas present in GeoSuite may not be consistent with that computed from the Cartographic Boundary Files. This is because the land / water areas in the Cartographic Boundary Files are based on hydrography that was specially generalized and created for thematic mapping.

Completeness

Refers to the degree to which geographic features, their attributes and their relationships are included or omitted in a dataset. It also includes information on selection criteria, definitions used, and other relevant mapping rules.

The number of Provinces and Territories as well as their unique identifiers was verified against the information in the Query Base. Comparisons were also made with a set of boundary files derived independently from the national geographic base.

Technical specifications

Each Cartographic Boundary File consists of only one layer of data. The boundaries of the standard geographic areas have been re-defined for thematic mapping purposes by integrating them with hydrography.

File specifications

Each Cartographic Boundary File consists of two layers of data. The boundaries of the standard geographic areas have been re-defined for thematic mapping purposes by integrating them with the shoreline. Supplementary files for the oceans, Great Lakes, St. Lawrence River, Greenland and bordering United States are available upon request. (Please see Appendix H for the technical specifications of supporting files)

Software formats

All products available on CD-ROM for purchase containing digital boundaries and road network information will be available in the following formats:

- ARC/INFO® interchange format version 8.1
  ASCII export file
  File extension(s): .e00 (spatial and tabular data)
- MapInfo® interchange format version 6.0
  ASCII export files
  File extension(s): .MIF (graphic data), .MID (tabular data)

Installation instructions

Both the ARC/INFO® and MapInfo® are compressed in self-executable WinZip® files (file extension EXE). Users can uncompress these files by executing them in DOS, or selecting them in Windows® and double clicking on the file icon, or executing them in the RUN dialogue in Windows®.

The geographic area names in the Cartographic Boundary Files contain accented characters. These characters can be seen in UNIX and Windows® versions of ARC/INFO® and MapInfo®. (They ware tested on desktop versions of ARC/INFO® 8.1, MapInfo® 6.0 and MapInfo® 4.5. The accents were also visible in ARC/INFO® 8.01 in UNIX.) To preserve accents, ArcToolbox® is recommended for importing files into the desktop version of ARC/INFO® 8.1.

File names and sizes

File names are formatted in order to better indicate to the client the source of data, coverage, geographic area, language and file format of the data.

	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Canada	gpr_000b02a_e	11.19	gpr_000b02m_e	6.66

Geographic representation

- All files distributed by Geography Division are in the North American Datum of 1983 (NAD 83).
- The files are available in the geographic coordinate system (latitude / longitude).
- To make this file useful (i.e. to calculate distance) it must be projected.

Record layout and item description

Provinces / Territories record layout:

The following table shows the format of the attributes contained on the boundary files:

Item Name	Width	Output	Type	Decimals
AREA[1]	8	18	F	5
PERIMETER[1]	8	18	F	5
<File Name># [1]	4	5	B	0
<File Name>-ID [1]	4	5	B	0
PRename	25	25	C	-
PRfname	25	25	C	-
PRuid	2	2	C	-
PReabbr	10	10	C	-
PRfabbr	10	10	C	-

[1] Items included with ARC/INFO® Export files only

Item Description:

Item	Description
AREA	Area of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
PERIMETER	Perimeter of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
<File name> #	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
<File name>-ID	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
PRename	the province or territory name in English
PRfname	the province or territory name in French
PRuid	uniquely identifies a province or territory
PReabbr	the official English abbreviation for the province name
PRfabbr	the official French abbreviation for the province name

6. Federal Electoral Districts (1996 Representation Order)

Content

The Federal Electoral Districts Cartographic Boundary File for Canada contains the boundaries of all 301 federal electoral districts for the 2001 Census. A federal electoral district is an area represented by a member of the House of Commons. The federal electoral district boundaries used for the 2001 Census are based on the 1996 Representation Order. The Federal Electoral Districts Boundary File differs from the 1996 Census version as it incorporates hydrographic features.

The Federal Electoral Districts boundary file consists of polygons representing the federal electoral district. Every polygon encoded as a Federal Electoral District (1996 Representation Order) has a FEDuid (a code to uniquely identify each federal electoral district) associated with it. The Federal Electoral Districts Boundary File is available at the national level only. The Federal Electoral Districts Boundary File consists of polygons representing 301 Federal Electoral Districts. There are more polygons than Federal Electoral Districts primarily because of the additional polygons needed to represent islands.

Some Federal Electoral District slivers were found on islands. Please see Appendix K for more infomation on this.

A breakdown of the number of Federal Electoral Districts and polygons by province / territory are provided below for the Federal Electoral District Cartographic Boundary File:

Province / Territory	Federal Electoral Districts	Polygons	Federal Electoral Districts in more than one polygon
Canada	301	5 295	68
Newfoundland and Labrador	7	643	7
Prince Edward Island	4	18	4
Nova Scotia	11	156	9
New Brunswick	10	56	6
Quebec	75	412	8
Ontario	103	226	20
Manitoba	14	14	0
Saskatchewan	14	14	0
Alberta	26	26	0
British Columbia	34	417	11
Yukon Territory	1	9	1
North West Territories	1	264	1
Nunavut	1	3 040	1

Data quality

Spatial data quality elements provide information on the fitness-for-use of a spatial database by describing why, when and how the data are created, and how accurate the data are. The elements

include an overview describing the purpose and usage, as well as specific quality elements reporting on the lineage, positional accuracy, attribute accuracy, logical consistency and completeness. This information is provided to users for all spatial data products disseminated for the census.

Lineage

Describes the history of the spatial data, including descriptions of the source material from which the data were derived, and the methods of derivation. It also contains the dates of the source material, and all transformations involved in producing the final digital files or map products.

Aggregating polygons from a layer of geographic information created all of the Cartographic Boundary Files. Please see Appendix F for details on this process.

Positional accuracy

Refers to the absolute and relative accuracy of the positions of geographic features. Absolute accuracy is the closeness of the coordinate values in a dataset to values accepted as or being true. Relative accuracy is the closeness of the relative positions of features to their respective relative positions accepted as or being true. Descriptions of positional accuracy include the quality of the final file or product after all transformations.

The boundaries are derived from the National Geographic Base. The data in the National Geographic Base is stored in double precision. However, the positional accuracy of the features in the National Geographic Base varies. The data storage precision allows features that are next to each other on the ground to be placed in the correct position on the map, relative to each other, without overlap.

The positional accuracy of the Cartographic Boundary Files is based on the positional accuracy of the source material used in its production (the National Geographic Base, the National Atlas GeoBase hydrology Level 0 and the National Topographic Data Base). Please see Appendix G for more information on the roads in the National Geographic Base. The larger water bodies from the 1:50,000 and the 1:250,000 maps from the National Topographic Data Base were used to provide reference information within census metropolitan areas and census agglomerations. The National Atlas (GeoBase hydrology Level 0) hydrography was used outside the census metropolitan areas and census agglomerations. Some of the smaller inland water polygons were removed from the Cartographic Boundary Files. Please see Appendix F for more information on the production process.

Some vertices in the file were removed as a result of line generalization done (based on the Douglas-Peucker algorithm and using ARC/INFO® 8.1) with a weed tolerance of 0.1 metres.

Attribute accuracy

Refers to the accuracy of the quantitative and qualitative information attached to each feature (such as population for an urban area, street name, census subdivision name and code).

The attribute data associated with the polygons in the Cartographic Boundary Files were independently verified against the data in the Query Base and found to be accurate.

Logical consistency

Describes the fidelity of relationships encoded in the data structure of the digital spatial data.

Every polygon was verified to have a unique identifier for the Federal Electoral Districts: the FEDuid. Every case where a polygon did not have a unique FEDuid was examined.Some polygons did not have unique FEDuid. All of these Federal Electoral Districts consisted of a set of polygons that were separated by water bodies. For example, two islands, each a polygon, may belong to the same Federal Electoral District.

Every FEDuid in the FED Cartographic Boundary File was verified to be in the Query Base as a FEDuid value for the 2001 Census.

The data set was tested to ensure that the size of the polygons was consistent with the geographic units being represented. Specifically, very small polygons and sliver polygons were examined. Slivers are defined here as very long, thin polygons.

The following criteria was used to detect slivers:

{ (perimeter x perimeter) / area > 1,000 } AND {area < 200,000 meters}

Consistency with other products

The positions of the boundary arcs are generally consistent with those of the Road Network Files and Skeletal Road Network Files. The arcs in the Road Network Files and Skeletal Road Network Files were simplified to remove unnecessary vertices in the straight-line segments (generalized with the option «pointremove»). It is possible for some arcs to differ slightly from those of the National Geographic Base (a few arcs could have been moved by 1 meter).

Hydrography was specially created for the Cartographic Boundary Files to enable thematic mapping at local and regional scales. The hydrography used in the province / territory layer in the Cartographic Boundary Files differs from that used in the Reference Maps. For this reason, minor differences may be noticable between the depiction of hydrography and boundaries.

The hydrography used in the Cartographic Boundary Files was created to be consistent with the roads in the road network files. However, boundary arcs in the Road Network Files (designated by ARC_GROUP of “BO”) are those present in the National Geographic Base. This very detailed information, including boundary arcs that for legal reasons are present in the water, were left as they were depicted in the National Geographic Base. The detailed information was also considered preferable for geocoding with the BLOCKuid information in the Road Network Files. However, when mapping the Cartographic Boundary Files (or the Province / Territory Cartographic Boundary layer) with the road network files, users should consider not mapping the RNF boundary arcs (ARC_GROUP of “BO”) if they do not want these to fall in the water.

The Federal Electoral Districts that are found in this file are consistent with those found in GeoSuite and GeoSearch. The land area for various geographic areas present in GeoSuite may not be consistent with that computed from the Cartographic Boundary Files. This is because the land / water areas in the Cartographic Boundary Files are based on hydrography that was specially generalized and created for thematic mapping.

Completeness

Refers to the degree to which geographic features, their attributes and their relationships are included or omitted in a dataset. It also includes information on selection criteria, definitions used, and other relevant mapping rules.

The number of federal electoral districts as well as their unique identifiers was verified against the information in the Query Base. Comparisons were also made with a set of boundary files derived independently from the national geographic base.

Technical specifications

Each Cartographic Boundary File consists of two layers of data. The boundaries of the standard geographic areas have been re-defined for thematic mapping purposes by integrating them with the shoreline. Supplementary files for the oceans, Great Lakes, St. Lawrence River, Greenland and bordering United States are available upon request. (Please see Appendix H for the technical specifications of supporting files.)

File specifications

These are the standard formats in which 2001 Census digital spatial products will be available from Geography Division.

Software formats

All products available on CD-ROM for purchase containing digital boundaries and road network information will be available in the following formats:

- ARC/INFO® interchange format version 8.1
  ASCII export file
  File extension(s): .e00 (spatial and tabular data)
- MapInfo® interchange format version 6.0
  ASCII export files
  File extension(s): .MIF (graphic data), .MID (tabular data)

Installation instructions

Both the ARC/INFO® and MapInfo® are compressed in self-executable WinZip® files (file extension EXE). Users can uncompress these files by executing them in DOS, or selecting them in Windows® and double clicking on the file icon, or executing them in the RUN dialogue in Windows®.

The geographic area names in the Cartographic Boundary Files contain accented characters. These characters can be seen in UNIX and Windows® versions of ARC/INFO® and MapInfo®. (They ware tested on desktop versions of ARC/INFO® 8.1, MapInfo® 6.0 and MapInfo® 4.5. The accents were also visible in ARC/INFO® 8.01 in UNIX.) To preserve accents, ArcToolbox® is recommended for importing files into the desktop version of ARC/INFO® 8.1.

File names and sizes

File names are formatted in order to better indicate to the client the source of data, coverage, geographic area, language and file format of the data.

	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Canada	gfed000b02a_e	12.92	gfed000b02m_e	8.67

Geographic representation

- All files distributed by Geography Division are in the North American Datum of 1983 (NAD 83).
- The files are available in the geographic coordinate system (latitude / longitude).
- To make this file useful (i.e. to calculate distance) it must be projected.

Record layout and item description

Federal Electoral Districts (1996 representation order) record layout:
The following table shows the format of the attributes contained on the boundary files.

Item Name	Width	Output	Type	Decimals
AREA[1]	8	18	F	5
PERIMETER[1]	8	18	F	5
<File Name># [1]	4	5	B	0
<File Name>-ID [1]	4	5	B	0
FEDname	60	60	C	-
FEDuid	5	5	C	-
PRuid	2	2	C	-

[1] Items included with ARC/INFO® Interchange files only

Item Description:

Item	Description
AREA	Area of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
PERIMETER	Perimeter of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
<File Name>#	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
<File Name>-ID	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
FEDname	the official federal electoral district name
FEDuid	uniquely identifies a federal electoral district (composed of the 2-digit province code and the 3-digit federal electoral district code, 1996 Representation Order)
PRuid	uniquely identifies a province or territory

7. Economic Regions (file available with the census division CBF)

Content

The Economic Region Cartographic Boundary File for Canada contains the boundaries of all 76 economic regions for the 2001 Census. An economic region (ER) is a grouping of complete **census divisions** (with one exception in Ontario) created as a standard geographic unit for analysis of regional economic activity. The Economic Region Boundary File is new for the 2001 Census and will be packaged with the Census Division boundary file.

The Economic Region Boundary File consists of polygons representing the economic region. Every polygon encoded as an Economic Region has an ERuid (a code to uniquely identify each economic region) associated with it. The Economic Region Boundary File is available at the national level only. The Economic Region Boundary File consists of polygons representing 76 economic regions. There are more polygons than economic regions primarily because of the additional polygons needed to represent islands.

A breakdown of the number of Economic Regions and polygons by province / territory are provided below for the Economic Region Cartographic Boundary File:

Province / Territory	Economic regions	Polygons	Economic regions in more than one polygon
Canada	76	5 057	35
Newfoundland and Labrador	4	640	4
Prince Edward Island	1	12	1
Nova Scotia	5	146	4
New Brunswick	5	50	3
Quebec	17	354	6
Ontario	11	131	10
Manitoba	8	9	1
Saskatchewan	6	6	0
Alberta	8	8	0
British Columbia	8	388	3
Yukon Territory	1	9	1
North West Territories	1	264	1
Nunavut	1	3 040	1

Data quality

Spatial data quality elements provide information on the fitness-for-use of a spatial database by describing why, when and how the data are created, and how accurate the data are. The elements include an overview describing the purpose and usage, as well as specific quality elements reporting on the lineage, positional accuracy, attribute accuracy, logical consistency and completeness. This information is provided to users for all spatial data products disseminated for the census.

Lineage

Describes the history of the spatial data, including descriptions of the source material from which the data were derived, and the methods of derivation. It also contains the dates of the source material, and all transformations involved in producing the final digital files or map products.

Aggregating polygons from a layer of geographic information created all of the Cartographic Boundary Files. Please see Appendix F for details on this process.

Positional accuracy

Refers to the absolute and relative accuracy of the positions of geographic features. Absolute accuracy is the closeness of the coordinate values in a dataset to values accepted as or being true. Relative accuracy is the closeness of the relative positions of features to their respective relative positions accepted as or being true. Descriptions of positional accuracy include the quality of the final file or product after all transformations.

The boundaries are derived from the National Geographic Base. The data in the National Geographic Base is stored in double precision. However, the positional accuracy of the features in the National Geographic Base varies. The data storage precision allows features that are next to each other on the ground to be placed in the correct position on the map, relative to each other, without overlap.

The positional accuracy of the Cartographic Boundary Files is based on the positional accuracy of the source material used in its production (the National Geographic Base, the National Atlas GeoBase hydrology Level 0 and the National Topographic Data Base). Please see Appendix G for more information on the roads in the National Geographic Base. The larger water bodies from the 1:50,000 and the 1:250,000 maps from the National Topographic Data Base were used to provide reference information within census metropolitan areas and census agglomerations. The National Atlas (GeoBase hydrology Level 0) hydrography was used outside the census metropolitan areas and census agglomerations. Some of the smaller inland water polygons were removed from the Cartographic Boundary Files. Please see Appendix F for more information on the production process.

Some vertices in the file were removed as a result of line generalization done (based on the Douglas-Peucker algorithm and using ARC/INFO® 8.1) with a weed tolerance of 0.1 metres.

Attribute accuracy

Refers to the accuracy of the quantitative and qualitative information attached to each feature (such as population for an urban area, street name, census subdivision name and code).

The attribute data associated with the polygons in the Cartographic Boundary Files were independently verified against the data in the Query Base and found to be accurate.

Logical consistency

Describes the fidelity of relationships encoded in the data structure of the digital spatial data.

Every polygon was verified to have a unique identifier for the economic region: the ERuid. Every case where a polygon did not have a unique ERuid was examined. Some polygons did not have unique ERuid. All of these economic regions consisted of a set of polygons that were separated by water bodies. For example, two islands, each a polygon, may belong to the same economic region.

Every ERuid in the ER Cartographic Boundary File was verified to be in the Query Base as a ERuid value for the 2001 Census.

The dataset was tested to ensure that the size of the polygons was consistent with the geographic units being represented. Specifically, very small polygons and sliver polygons were examined. Slivers are defined here as very long, thin polygons.

The following criteria was used to detect slivers:

{ (perimeter x perimeter) / area > 1,000 } AND {area < 200,000 metres}

Consistency with other products

The positions of the boundary arcs are generally consistent with those of the Road Network Files and Skeletal Road Network Files. The arcs in the Road Network Files and Skeletal Road Network Files were simplified to remove unnecessary vertices in the straight-line segments (generalized with the option «pointremove»). It is possible for some arcs to differ slightly from those of the National Geographic Base (a few arcs could have been moved by 1 meter).

Hydrography was specially created for the Cartographic Boundary Files to enable thematic mapping local and regional scale data. The hydrography used in the province / territory layer in the Cartographic Boundary Files differs from that used in the Reference Maps. For this reason, minor differences may be noticable between the depiction of hydrography and boundaries.

The hydrography used in the Cartographic Boundary Files was created to be consistent with the roads in the road network files. However, boundary arcs in the Road Network Files (designated by ARC_GROUP of “BO”) are those present in the National Geographic Base. This very detailed information, including boundary arcs that for legal reasons are present in the water, were left as they were depicted in the National Geographic Base. The detailed information was also considered preferable for geocoding with the BLOCKuid information in the Road Network Files. However, when mapping the Cartographic Boundary Files (or the Province / Territory Cartographic Boundary layer) with the road network files, users should consider not mapping the RNF boundary arcs (ARC_GROUP of “BO”) if they do not want these to fall in the water.

The Economic Regions found in this file are consistent with those found in GeoSuite and GeoSearch. The land area for various geographic areas present in GeoSuite may not be consistent with that computed from the Cartographic Boundary Files. This is because the land / water areas in the Cartographic Boundary Files are based on hydrography that was specially generalized and created for thematic mapping.

Completeness

Refers to the degree to which geographic features, their attributes and their relationships are included or omitted in a dataset. It also includes information on selection criteria, definitions used, and other relevant mapping rules.

The number of economic regions as well as their unique identifiers was verified against the information in the Query Base. Comparisons were also made with a set of boundary files derived independently from the national geographic base.

Technical specifications

Each Cartographic Boundary File consists of two layers of data. The boundaries of the standard geographic areas have been re-defined for thematic mapping purposes by integrating them with the shoreline. Supplementary files for the oceans, Great Lakes, St. Lawrence River, Greenland and bordering United States are available upon request. (Please see Appendix H for the technical specifications of supporting files)

File specifications

These are the standard formats in which 2001 Census digital spatial products will be available from Geography Division.

Software formats

All products available on CD-ROM for purchase containing digital boundaries and road network information will be available in the following formats:

- ARC/INFO® interchange format version 8.1
  ASCII export file
  File extension(s): .e00 (spatial and tabular data)
- MapInfo® interchange format version 6.0
  ASCII export files
  File extension(s): .MIF (graphic data), .MID (tabular data)

Installation instructions

Both the ARC/INFO® and MapInfo® are compressed in self-executable WinZip® files (file extension EXE). Users can uncompress these files by executing them in DOS, or selecting them in Windows® and double clicking on the file icon, or executing them in the RUN dialogue in Windows®.

The geographic area names in the Cartographic Boundary Files contain accented characters. These characters can be seen in UNIX and Windows® versions of ARC/INFO® and MapInfo®. (They ware tested on desktop versions of ARC/INFO® 8.1, MapInfo® 6.0 and MapInfo® 4.5. The accents were also visible in ARC/INFO® 8.01 in UNIX.) To preserve accents, ArcToolbox® is recommended for importing files into the desktop version of ARC/INFO® 8.1.

File names and sizes

File names are formatted in order to better indicate to the client the source of data, coverage, geographic area, language and file format of the data.

	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Canada	ger_000b02a_e	11.99	ger_000b02m_e	7.62

Geographic representation

- All files distributed by Geography Division are in the North American Datum of 1983 (NAD 83).
- The files are available in the geographic coordinate system (latitude / longitude).
- To make this file useful (i.e. to calculate distance) it must be projected.

Record layout and item description

Economic Regions record layout:

The following table shows the format of the attributes contained on the boundary files.

Item Name	Width	Output	Type	Decimals
AREA[1]	8	18	F	5
PERIMETER[1]	8	18	F	5
<File Name># [1]	4	5	B	0
<File Name>-ID [1]	4	5	B	0
ERname	90	90	C	-
ERuid	4	4	C	-
PRuid	2	2	C	-

[1] Items included with ARC/INFO® Interchange files only

Item Description:

Item	Description
AREA	Area of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
PERIMETER	Perimeter of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
<File Name>#	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
<File Name>-ID	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
ERname	the economic region name
ERuid	uniquely identifies an economic region (composed of the 2-digit province code and the 2-digit census division code)
PRuid	uniquely identifies a province or territory

8. Census Divisions

Content

The Census Division Cartographic Boundary File for Canada contains the boundaries of all 288 census divisions for the 2001 Census. A Census Division (CD) is an administrative area, which is a component of the **Standard Geographic Classification** and comprised of Census Subdivisions. Census division is the general term for provincially legislated areas (such as county, *municipalité régionale de comté* and regional district) or their equivalents. Census divisions are intermediate geographic areas between the province level and the municipality (census subdivision).

The Census Division Cartogtaphic Boundary File consists of polygons representing the census divisions. Every polygon encoded as a Census Division has a CDuid (a code to uniquely identify each census division) associated with it. The Census Division Cartogtaphic Boundary File is available at the national level only. The Census Division Cartogtaphic Boundary File consists of polygons representing census divisions. There are more polygons than census divisions primarily because of the additional polygons needed to represent islands.

Some Census Division slivers were found on islands. Please see Appendix K for more infomation on this.

A breakdown of the number of Census Divisions and polygons by province / territory are provided below for the Census Division Cartogtaphic Boundary File:

Province / Territory	Census divisions	Polygons	Census divisions in more than one polygon
Canada	288	5 307	87
Newfoundland and Labrador	10	646	9
Prince Edward Island	3	15	3
Nova Scotia	18	162	14
New Brunswick	15	62	7
Quebec	99	438	12
Ontario	49	182	23
Manitoba	23	24	1
Saskatchewan	18	19	1
Alberta	19	19	0
British Columbia	28	413	12
Yukon Territory	1	9	1
North West Territories	2	265	1
Nunavut	3	3 053	3

Data quality

Spatial data quality elements provide information on the fitness-for-use of a spatial database by describing why, when and how the data are created, and how accurate the data are. The elements include an overview describing the purpose and usage, as well as specific quality elements reporting on the lineage, positional accuracy, attribute accuracy, logical consistency and

completeness. This information is provided to users for all spatial data products disseminated for the census.

Lineage

Describes the history of the spatial data, including descriptions of the source material from which the data were derived, and the methods of derivation. It also contains the dates of the source material, and all transformations involved in producing the final digital files or map products.

Aggregating polygons from a layer of geographic information created all of the Cartographic Boundary Files. Please see Appendix F for details on this process.

Positional accuracy

Refers to the absolute and relative accuracy of the positions of geographic features. Absolute accuracy is the closeness of the coordinate values in a dataset to values accepted as or being true. Relative accuracy is the closeness of the relative positions of features to their respective relative positions accepted as or being true. Descriptions of positional accuracy include the quality of the final file or product after all transformations.

The boundaries are derived from the National Geographic Base. The data in the National Geographic Base is stored in double precision. However, the positional accuracy of the features in the National Geographic Base varies. The data storage precision allows features that are next to each other on the ground to be placed in the correct position on the map, relative to each other, without overlap.

The positional accuracy of the Cartographic Boundary Files is based on the positional accuracy of the source material used in its production (the National Geographic Base, the National Atlas GeoBase hydrology Level 0 and the National Topographic DataBase). Please see Appendix G for more information on the roads in the National Geographic Base. The larger water bodies from the 1:50,000 and the 1:250,000 maps from the National Topographic Data Base were used to provide reference information within census metropolitan areas and census agglomerations. The National Atlas (GeoBase hydrology Level 0) hydrography was used outside the census metropolitan areas and census agglomerations. Some of the smaller inland water polygons were removed from the Cartographic Boundary Files. Please see Appendix F for more information on the production process.

Some vertices in the file were removed as a result of line generalization done (based on the Douglas-Peucker algorithm and using ARC/INFO® 8.1) with a weed tolerance of 0.1 metres.

Attribute accuracy

Refers to the accuracy of the quantitative and qualitative information attached to each feature (such as population for an urban area, street name, census subdivision name and code).

The attribute data associated with the polygons in the Cartographic Boundary Files were independently verified against the data in the Query Base and found to be accurate.

Logical consistency

Describes the fidelity of relationships encoded in the data structure of the digital spatial data.

Every polygon was verified to have a unique identifier for the census division: the CDuid. Every case where a polygon did not have a unique CDuid was examined. Some polygons did not have unique CDuid. All of these census divisions consisted of a set of polygons that were separated by water bodies. For example, two islands, each a polygon, may belong to the same census division.

Every CDuid in the CD Cartographic Boundary File was verified to be in the Query Base as a CDuid value for the 2001 Census.

The data set was tested to ensure that the size of the polygons was consistent with the geographic units being represented. Specifically, very small polygons and sliver polygons were examined. Slivers are defined here as very long, thin polygons.

The following criteria was used to detect slivers:

{ (perimeter x perimeter) / area > 1,000 } AND {area < 200,000 metres}

Consistency with other products

The positions of the boundary arcs are generally consistent with those of the Road Network Files and Skeletal Road Network Files. The arcs in the Road Network Files and Skeletal Road Network Files were simplified to remove unnecessary vertices in the straight-line segments (generalized with the option «pointremove»). It is possible for some arcs to differ slightly from those of the National Geographic Base (a few arcs could have been moved by 1 meter).

Hydrography was specially created for the Cartographic Boundary Files to enable thematic mapping at local and regional scales. The hydrography used in the province / territory layer in the Cartographic Boundary Files differs from that used in the Reference Maps. For this reason, minor differences may be noticable between the depiction of hydrography and boundaries.

The hydrography used in the Cartographic Boundary Files was created to be consistent with the roads in the road network files. However, boundary arcs in the Road Network Files (designated by ARC_GROUP of “BO”) are those present in the National Geographic Base. This very detailed information, including boundary arcs that for legal reasons are present in the water, were left as they were depicted in the National Geographic Base. The detailed information was also considered preferable for geocoding with the BLOCKuid information in the Road Network Files. However, when mapping the Cartographic Boundary Files (or the Province / Territory Cartographic Boundary layer) with the road network files, users should consider not mapping the RNF boundary arcs (ARC_GROUP of “BO”) if they do not want these to fall in the water.

The Census Divisions found in this file are consistent with those found in GeoSuite and GeoSearch. The land area for various geographic areas present in GeoSuite may not be consistent with that computed from the Cartographic Boundary Files. This is because the land / water areas in the Cartographic Boundary Files are based on hydrography that was specially generalized and created for thematic mapping.

Completeness

Refers to the degree to which geographic features, their attributes and their relationships are included or omitted in a dataset. It also includes information on selection criteria, definitions used, and other relevant mapping rules.

The number of census divisions as well as their unique identifiers was verified against the information in the Query Base. Comparisons were also made with a set of boundary files derived independently from the national geographic base.

Technical specifications

Each Cartographic Boundary File consists of two layers of data. The boundaries of the standard geographic areas have been re-defined for thematic mapping purposes by integrating them with the shoreline. Supplementary files for the oceans, Great Lakes, St. Lawrence River, Greenland and bordering United States are available upon request. (Please see Appendix H for the technical specifications of supporting files)

File specifications

These are the standard formats in which 2001 Census digital spatial products will be available from Geography Division.

Software formats

All products available on CD-ROM for purchase containing digital boundaries and road network information will be available in the following formats:

- ARC/INFO® interchange format version 8.1
  ASCII export file
  File extension(s): .e00 (spatial and tabular data)
- MapInfo® interchange format version 6.0
  ASCII export files
  File extension(s): .MIF (graphic data), .MID (tabular data)

Installation instructions

Both the ARC/INFO® and MapInfo® are compressed in self-executable WinZip® files (file extension EXE). Users can uncompress these files by executing them in DOS, or selecting them in Windows® and double clicking on the file icon, or executing them in the RUN dialogue in Windows®.

The geographic area names in the Cartographic Boundary Files contain accented characters. These characters can be seen in UNIX and Windows® versions of ARC/INFO® and MapInfo®. (They ware tested on desktop versions of ARC/INFO® 8.1, MapInfo® 6.0 and MapInfo® 4.5. The accents were also visible in ARC/INFO® 8.01 in UNIX.) To preserve accents, ArcToolbox® is recommended for importing files into the desktop version of ARC/INFO® 8.1.

File names and sizes

File names are formatted in order to better indicate to the client the source of data, coverage, geographic area, language and file format of the data.

	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Canada	gcd_000b02a_e	12.90	gcd_000b02m_e	8.68

Geographic representation

- All files distributed by Geography Division are in the North American Datum of 1983 (NAD 83).
- The files are available in the geographic coordinate system (latitude / longitude).
- To make this file useful (i.e. to calculate distance) it must be projected.

Record layout and item description

Census Divisions record layout:

The following table shows the format of the attributes contained on the boundary files.

Item Name	Width	Output	Type	Decimals
AREA[1]	8	18	F	5
PERIMETER[1]	8	18	F	5
<File Name># [1]	4	5	B	0
<File Name>-ID [1]	4	5	B	0
CDname	50	50	C	-
CDtype [2]	3	3	C	-
CDuid	4	4	C	-
PRuid	2	2	C	-

[1] Items included with ARC/INFO® Interchange files only

Item Description:

Item	Description
AREA	Area of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
PERIMETER	Perimeter of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
<File Name>#	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
<File Name>-ID	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
CDname	the official census division name
CDtype	is the type of the census division (see domain)
CDuid	uniquely identifies a census division (SCG code - composed of the 2-digit province code and the 2-digit census division code)
PRuid	uniquely identifies a province or territory

Domain

CDtype: The type associated with the census division.

CD types	
Values	Specifications
CTY	County
CU	Communauté urbaine
DIS	District
DIV	Census Division
DM	District Municipality
MRC	Municipalité régionale de comté (MRC)
RD	Regional District
REG	Region
RM	Regional Municipality
TER	Territory
UC	United Counties

9. Census Consolidated Subdivisions

Content

The Census Consolidated Subdivision Cartographic Boundary File for Canada contains the boundaries of all 2,446 census consolidated subdivisions for the 2001 Census. A census consolidated subdivision (CCS) is a statistical area of aggregated census subdivisions used by the Census of Agriculture. A census consolidated subdivision is a grouping of adjacent census subdivisions. Generally the smaller, more urban census subdivisions (towns, villages, etc.) are combined with the surrounding, larger, more rural census subdivision, in order to create a geographic level between the census subdivision and the census division.

The Census Consolidated Subdivision Cartographic Boundary File consists of polygons representing the census subdivisions. Every polygon encoded as a Census Consolidated Subdivision has a CCSuid (a code to uniquely identify each census consolidated subdivision) associated with it. The Census Consolidated Subdivision Cartographic Boundary File is available for Canada and by province / territory. The national Census Consolidated Subdivision Cartographic Boundary File consists of polygons representing 2446 census consolidated subdivisions. There are more polygons than census consolidated subdivisions primarily because of the additional polygons needed to represent islands.

Some Census Consolidated Subdivision slivers were found on islands. Please see Appendix K for more infomation on this.

A breakdown of the number of census consolidated subdivisions and polygons by province / territory are provided below for the Census Consolidated Subdivision Cartographic Boundary File:

Province / Territory	Census consolidated subdivisions	Polygons	Census consolidated subdivisions in more than one polygon
Canada	2 446	7 572	256
Newfoundland and Labrador	87	727	50
Prince Edward Island	68	105	23
Nova Scotia	43	193	25
New Brunswick	151	199	21
Quebec	1 111	1 468	34
Ontario	318	479	51
Manitoba	127	136	6
Saskatchewan	301	308	6
Alberta	77	77	0
British Columbia	157	553	35
Yukon Territory	1	9	1
North West Territories	2	265	1
Nunavut	3	3 053	3

Data quality

Spatial data quality elements provide information on the fitness-for-use of a spatial database by describing why, when and how the data are created, and how accurate the data are. The elements include an overview describing the purpose and usage, as well as specific quality elements reporting on the lineage, positional accuracy, attribute accuracy, logical consistency and completeness. This information is provided to users for all spatial data products disseminated for the census.

Lineage

Describes the history of the spatial data, including descriptions of the source material from which the data were derived, and the methods of derivation. It also contains the dates of the source material, and all transformations involved in producing the final digital files or map products.

Aggregating polygons from a layer of geographic information created all of the Cartographic Boundary Files. Please see Appendix F for details on this process.

Positional accuracy

Refers to the absolute and relative accuracy of the positions of geographic features. Absolute accuracy is the closeness of the coordinate values in a dataset to values accepted as or being true. Relative accuracy is the closeness of the relative positions of features to their respective relative positions accepted as or being true. Descriptions of positional accuracy include the quality of the final file or product after all transformations.

The boundaries are derived from the National Geographic Base. The data in the National Geographic Base is stored in double precision. However, the positional accuracy of the features in the National Geographic Base varies. The data storage precision allows features that are next to each other on the ground to be placed in the correct position on the map, relative to each other, without overlap.

The positional accuracy of the Cartographic Boundary Files is based on the positional accuracy of the source material used in its production (the National Geographic Base, the National Atlas GeoBase hydrology Level 0 and the National Topographic DataBase). Please see Appendix G for more information on the roads in the National Geographic Base. The larger water bodies from the 1:50,000 and the 1:250,000 maps from the National Topographic Data Base were used to provide reference information within census metropolitan areas and census agglomerations. The National Atlas (GeoBase hydrology Level 0) hydrography was used outside the census metropolitan areas and census agglomerations. Some of the smaller inland water polygons were removed from the Cartographic Boundary Files. Please see Appendix F for more information on the production process.

Some vertices in the file were removed as a result of line generalization done (based on the Douglas-Peucker algorithm and using ARC/INFO® 8.1) with a weed tolerance of 0.1 metres.

Attribute accuracy

Refers to the accuracy of the quantitative and qualitative information attached to each feature (such as population for an urban area, street name, census subdivision name and code).

The attribute data associated with the polygons in the Cartographic Boundary Files were independently verified against the data in the Query Base and found to be accurate.

Logical consistency

Describes the fidelity of relationships encoded in the data structure of the digital spatial data.

Every polygon was verified to have a unique identifier for the census consolidated subdivision : the CCSuid. Every case where a polygon did not have a unique CCSuid was examined. Some polygons did not have unique CCSuid. All of these census consolidated subdivisions consisted of a set of polygons that were separated by water bodies. For example, two islands, each a polygon, may belong to the same census consolidated subdivision.

Every CCSuid in the CCS Cartographic Boundary File was verified to be in the Query Base as a CCSuid value for the 2001 Census.

The data set was tested to ensure that the size of the polygons was consistent with the geographic units being represented. Specifically, very small polygons and sliver polygons were examined. Slivers are defined here as very long, thin polygons.

The following criteria was used to detect slivers:

{ (perimeter x perimeter) / area > 1,000 } AND {area < 200,000 meters}

Consistency with other products

The positions of the boundary arcs are generally consistent with those of the Road Network Files and Skeletal Road Network Files. The arcs in the Road Network Files and Skeletal Road Network Files were simplified to remove unnecessary vertices in the straight-line segments (generalized with the option «pointremove»). It is possible for some arcs to differ slightly from those of the National Geographic Base (a few arcs could have been moved by 1 meter).

Hydrography was specially created for the Cartographic Boundary Files to enable thematic mapping at local and regional scales. The hydrography used in the province / territory layer in the Cartographic Boundary Files differs from that used in the Reference Maps. For this reason, minor differences may be noticable between the depiction of hydrography and boundaries.

The hydrography used in the Cartographic Boundary Files was created to be consistent with the roads in the road network files. However, boundary arcs in the Road Network Files (designated by ARC_GROUP of “BO”) are those present in the National Geographic Base. This very detailed information, including boundary arcs that for legal reasons are present in the water, were left as they were depicted in the National Geographic Base. The detailed information was also considered preferable for geocoding with the BLOCKuid information in the Road Network Files. However, when mapping the Cartographic Boundary Files (or the Province / Territory Cartographic Boundary layer) with the road network files, users should consider not mapping the RNF boundary arcs (ARC_GROUP of “BO”) if they do not want these to fall in the water.

The Census Consolidated Subdivisions found in this file are consistent with those found in GeoSuite and GeoSearch. The land area for various geographic areas present in GeoSuite may not be consistent with that computed from the Cartographic Boundary Files. This is because the land /

water areas in the Cartographic Boundary Files are based on hydrography that was specially generalized and created for thematic mapping.

Completeness

Refers to the degree to which geographic features, their attributes and their relationships are included or omitted in a dataset. It also includes information on selection criteria, definitions used, and other relevant mapping rules.

The number of census consolidated subdivisions as well as their unique identifiers was verified against the information in the Query Base. Comparisons were also made with a set of boundary files derived independently from the national geographic base.

Technical specifications

Each Cartographic Boundary File consists of two layers of data. The boundaries of the standard geographic areas have been re-defined for thematic mapping purposes by integrating them with the shoreline. Supplementary files for the oceans, Great Lakes, St. Lawrence River, Greenland and bordering United States are available upon request. (Please see Appendix H for the technical specifications of supporting files)

File specifications

These are the standard formats in which 2001 Census digital spatial products will be available from Geography Division.

Software formats

All products available on CD-ROM for purchase containing digital boundaries and road network information will be available in the following formats:

- ARC/INFO® interchange format version 8.1
  ASCII export file
  File extension(s): .e00 (spatial and tabular data)
- MapInfo® interchange format version 6.0
  ASCII export files
  File extension(s): .MIF (graphic data), .MID (tabular data)

Installation instructions

Both the ARC/INFO® and MapInfo® are compressed in self-executable WinZip® files (file extension EXE). Users can uncompress these files by executing them in DOS, or selecting them in Windows® and double clicking on the file icon, or executing them in the RUN dialogue in Windows®.

The geographic area names in the Cartographic Boundary Files contain accented characters. These characters can be seen in UNIX and Windows® versions of ARC/INFO® and MapInfo®. (They ware tested on desktop versions of ARC/INFO® 8.1, MapInfo® 6.0 and MapInfo® 4.5. The accents were also visible in ARC/INFO® 8.01 in UNIX.) To preserve accents, ArcToolbox® is recommended for importing files into the desktop version of ARC/INFO® 8.1.

File names and sizes

File names are formatted in order to better indicate to the client the source of data, coverage, geographic area, language and file format of the data.

Province / Territory	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Canada	gccs000b02a_e	16.47	gccs000b02m_e	12.31
Newfoundland and Labrador	gccs010b02a_e	2.14	gccs010b02m_e	1.49
Prince Edward Island	gccs011b02a_e	0.24	gccs011b02m_e	0.17
Nova Scotia	gccs012b02a_e	0.73	gccs012b02m_e	0.56
New Brunswick	gccs013b02a_e	0.78	gccs013b02m_e	0.60
Quebec	gccs024b02a_e	2.87	gccs024b02m_e	2.36
Ontario	gccs035b02a_e	3.82	gccs035b02m_e	2.64
Manitoba	gccs046b02a_e	0.51	gccs046b02m_e	0.49
Saskatchewan	gccs047b02a_e	0.61	gccs047b02m_e	0.57
Alberta	gccs048b02a_e	0.58	gccs048b02m_e	0.62
British Columbia	gccs059b02a_e	1.83	gccs059b02m_e	1.47
Yukon Territory	gccs060b02a_e	0.09	gccs060b02m_e	0.08
North West Territories	gccs061b02a_e	0.43	gccs061b02m_e	0.28
Nunavut	gccs062b02a_e	2.74	gccs062b02m_e	1.55

Geographic representation

- All files distributed by Geography Division are in the North American Datum of 1983 (NAD 83).
- The files are available in the geographic coordinate system (latitude / longitude).
- To make this file useful (i.e. to calculate distance) it must be projected.

Record layout and item description

Census consolidated subdivisions record layout:

The following table shows the format of the attributes contained on the boundary files.

Item Name	Width	Output	Type	Decimals
AREA[1]	8	18	F	5
PERIMETER[1]	8	18	F	5
<File Name># [1]	4	5	B	0
<File Name>-ID [1]	4	5	B	0
CCSname	70	70	C	-
CCSuid	7	7	C	-
PRuid	2	2	C	-

[1] Items included with ARC/INFO® Interchange files only

Item Description:

Item	Description
AREA	Area of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
PERIMETER	Perimeter of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
<File Name>#	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
<File Name>-ID	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
CCSname	the name of the Census Consolidated Subdivision
CCSuid	uniquely identifies a Census Consolidated Subdivision (composed of the 2-digit province or territory code, the 2-digit census division code and the 3-digit CCS code)
PRuid	uniquely identifies a province or territory

10. Census subdivisions

Content

The Census Subdivision Cartographic Boundary File for Canada contains the boundaries of all 5,600 census subdivisions for the 2001 Census. A census subdivision is an administrative area, which is a component of the Standard Geographic Classification and comprised of dissemination areas. Census subdivision is the general term for municipalities (as determined by provincial legislation) or areas treated as municipal equivalents for statistical purposes (for example, Indian reserves, Indian settlements and unorganized territories).

The Census Subdivision Cartographic Boundary File consists of polygons representing the census subdivisions. Every polygon encoded as a Census Subdivision has a CSDuid (a code to uniquely identify census subdivisions) associated with it. The Census Subdivision Boundary File is available for Canada and by Province / Territory as well as Census Metropolitan Areas and tracted Census Agglomerations. The national Census Subdivision Boundary File consists of polygons representing census subdivisions. There are more polygons than census subdivisions primarily because of the additional polygons needed to represent islands.

Some Census Subdivision slivers were found on islands. Please see Appendix K for more infomation on this.

A breakdown of the number of census subdivisions and polygons by province / territory are provided below for the Census Subdivision Boundary File:

Province / Territory	Census subdivisions	Polygons	Census subdivisions in more than one polygon
Canada	5 600	11 416	566
Newfoundland and Labrador	381	1 061	63
Prince Edward Island	113	152	26
Nova Scotia	98	262	37
New Brunswick	275	335	29
Quebec	1 476	1 947	91
Ontario	586	892	101
Manitoba	298	360	32
Saskatchewan	1 002	1 136	54
Alberta	452	481	16
British Columbia	816	1 353	98
Yukon Territory	35	43	1
North West Territories	37	309	5
Nunavut	31	3 085	13

Data quality

Spatial data quality elements provide information on the fitness-for-use of a spatial database by describing why, when and how the data are created, and how accurate the data are. The elements include an overview describing the purpose and usage, as well as specific quality elements reporting on the lineage, positional accuracy, attribute accuracy, logical consistency and

completeness. This information is provided to users for all spatial data products disseminated for the census.

Lineage

Describes the history of the spatial data, including descriptions of the source material from which the data were derived, and the methods of derivation. It also contains the dates of the source material, and all transformations involved in producing the final digital files or map products.

Aggregating polygons from a layer of geographic information created all of the Cartographic Boundary Files. Please see Appendix F for details on this process.

Positional accuracy

Refers to the absolute and relative accuracy of the positions of geographic features. Absolute accuracy is the closeness of the coordinate values in a dataset to values accepted as or being true. Relative accuracy is the closeness of the relative positions of features to their respective relative positions accepted as or being true. Descriptions of positional accuracy include the quality of the final file or product after all transformations.

The boundaries are derived from the National Geographic Base. The data in the National Geographic Base is stored in double precision. However, the positional accuracy of the features in the National Geographic Base varies. The data storage precision allows features that are next to each other on the ground to be placed in the correct position on the map, relative to each other, without overlap.

The positional accuracy of the Cartographic Boundary Files is based on the positional accuracy of the source material used in its production (the National Geographic Base, the National Atlas GeoBase hydrology Level 0 and the National Topographic DataBase). Please see AppendixGfor more information on the roads in the National Geographic Base. The larger water bodies from the 1:50,000 and the 1:250,000 maps from the National Topographic Data Base were used to provide reference information within census metropolitan areas and census agglomerations. The National Atlas (GeoBase hydrology Level 0) hydrography was used outside the census metropolitan areas and census agglomerations. Some of the smaller inland water polygons were removed from the Cartographic Boundary Files. Please see Appendix F for more information on the production process.

Some vertices in the file were removed as a result of line generalization done (based on the Douglas-Peucker algorithm and using ARC/INFO® 8.1) with a weed tolerance of 0.1 metres.

Attribute accuracy

Refers to the accuracy of the quantitative and qualitative information attached to each feature (such as population for an urban area, street name, census subdivision name and code).

The attribute data associated with the polygons in the Cartographic Boundary Files were independently verified against the data in the Query Base and found to be accurate.

The CMAuid of 996, 997, 998 and 999 simply indicate that no CMA or CA is present in these areas. These values do not signify anything else and should be considered as representing a null value.

Logical consistency

Describes the fidelity of relationships encoded in the data structure of the digital spatial data.

Every polygon was also verified to have a unique identifier for the census subdivision: the CSDuid. Every case where a polygon did not have a unique CSDuid was examined. Some polygons did not have unique CSDuid. All of these census subdivisions consisted of a set of polygons that were separated by water bodies. For example, two islands, each a polygon, may belong to the same census subdivision.

Every CSDuid in the CSD Cartographic Boundary File was verified to be in the Query Base as a CSDuid value for the 2001 Census.

The data set was tested to ensure that the size of the polygons was consistent with the geographic units being represented. Specifically, very small polygons and sliver polygons were examined. Slivers are defined here as very long, thin polygons.

The following criteria was used to detect slivers:

{ (perimeter x perimeter) / area > 1,000 } AND {area < 200,000 meters}

Consistency with other products

The positions of the boundary arcs are generally consistent with those of the Road Network Files and Skeletal Road Network Files. The arcs in the Road Network Files and Skeletal Road Network Files were simplified to remove unnecessary vertices in the straight-line segments (generalized with the option «pointremove»). It is possible for some arcs to differ slightly from those of the National Geographic Base (a few arcs could have been moved by 1 meter).

Hydrography was specially created for the Cartographic Boundary Files to enable thematic mapping at local and regional scales. The hydrography used in the province / territory layer in the Cartographic Boundary Files differs from that used in the Reference Maps. For this reason, minor differences may be noticable between the depiction of hydrography and boundaries.

The hydrography used in the Cartographic Boundary Files was created to be consistent with the roads in the road network files. However, boundary arcs in the Road Network Files (designated by ARC_GROUP of “BO”) are those present in the National Geographic Base. This very detailed information, including boundary arcs that for legal reasons are present in the water, were left as they were depicted in the National Geographic Base. The detailed information was also considered preferable for geocoding with the BLOCKuid information in the Road Network Files. However, when mapping the Cartographic Boundary Files (or the Province / Territory Cartographic Boundary layer) with the road network files, users should consider not mapping the RNF boundary arcs (ARC_GROUP of “BO”) if they do not want these to fall in the water.

Census subdivisions found in this file are consistent with those found in GeoSuite and GeoSearch. The land area for various geographic areas present in GeoSuite may not be consistent with that computed from the Cartographic Boundary Files. This is because the land / water areas

in the Cartographic Boundary Files are based on hydrography that was specially generalized and created for thematic mapping.

Completeness

Refers to the degree to which geographic features, their attributes and their relationships are included or omitted in a dataset. It also includes information on selection criteria, definitions used, and other relevant mapping rules.

The number of census subdivisions as well as their unique identifiers was verified against the information in the Query Base. Comparisons were also made with a set of boundary files derived independently from the national geographic base.

Technical specifications

Each Cartographic Boundary File consists of two layers of data. The boundaries of the standard geographic areas have been re-defined for thematic mapping purposes by integrating them with the shoreline. Supplementary files for the oceans, Great Lakes, St. Lawrence River, Greenland and bordering United States are available upon request. (Please see Appendix H for the technical specifications of supporting files)

File specifications

These are the standard formats in which 2001 Census digital spatial products will be available from Geography Division.

Software formats

All products available on CD-ROM for purchase containing digital boundaries and road network information will be available in the following formats:

- ARC/INFO® interchange format version 8.1
  ASCII export file
  File extension(s): .e00 (spatial and tabular data)
- MapInfo® interchange format version 6.0
  ASCII export files
  File extension(s): .MIF (graphic data), .MID (tabular data)

Installation instructions

Both the ARC/INFO® and MapInfo® are compressed in self-executable WinZip® files (file extension EXE). Users can uncompress these files by executing them in DOS, or selecting them in Windows® and double clicking on the file icon, or executing them in the RUN dialogue in Windows®.

The geographic area names in the Cartographic Boundary Files contain accented characters. These characters can be seen in UNIX and Windows® versions of ARC/INFO® and MapInfo®. (They ware tested on desktop versions of ARC/INFO® 8.1, MapInfo® 6.0 and MapInfo® 4.5. The accents were also visible in ARC/INFO® 8.01 in UNIX.) To preserve accents, ArcToolbox® is recommended for importing files into the desktop version of ARC/INFO® 8.1.

File names and sizes

File names are formatted in order to better indicate to the client the source of data, coverage, geographic area, language and file format of the data.

Province / Territory and tracted CMAs / CAs	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Canada	gcsd000b02a_e	19.80	gcsd000b02m_e	15.50
Newfoundland and Labrador	gcsd010b02a_e	2.48	gcsd010b02m_e	1.81
St. John's (CMA)	gcsd001b02a_e	0.24	gcsd001b02m_e	0.18
Prince Edward Island	gcsd011b02a_e	0.28	gcsd011b02m_e	0.20
Nova Scotia	gcsd012b02a_e	0.78	gcsd012b02m_e	0.62
Halifax (CMA)	gcsd205b02a_e	0.11	gcsd205b02m_e	0.11
New Brunswick	gcsd013b02a_e	0.92	gcsd013b02m_e	0.62
Moncton (CA)	gcsd305b02a_e	0.08	gcsd305b02m_e	0.08
Saint John (CMA)	gcsd310b02a_e	0.14	gcsd310b02m_e	0.11
Quebec	gcsd024b02a_e	3.38	gcsd024b02m_e	2.86
Chicoutimi – Jonquière (CMA)	gcsd408b02a_e	0.10	gcsd408b02m_e	0.08
Drummondville (CA)	gcsd447b02a_e	0.07	gcsd447b02m_e	0.07
Granby (CA)	gcsd450b02a_e	0.07	gcsd450b02m_e	0.07
Montréal (CMA)	gcsd462b02a_e	0.24	gcsd462b02m_e	0.20
Québec (CMA)	gcsd421b02a_e	0.18	gcsd421b02m_e	0.14
Saint-Jean-sur-Richelieu (CA)	gcsd459b02a_e	0.08	gcsd459b02m_e	0.07
Sherbrooke (CMA)	gcsd433b02a_e	0.09	gcsd433b02m_e	0.08
Trois-Rivières (CMA)	gcsd442b02a_e	0.08	gcsd442b02m_e	0.07
Ontario	gcsd035b02a_e	4.38	gcsd035b02m_e	3.24
Barrie (CA)	gcsd568b02a_e	0.07	gcsd568b02m_e	0.07
Belleville (CA)	gcsd522b02a_e	0.13	gcsd522b02m_e	0.10
Brantford (CA)	gcsd543b02a_e	0.07	gcsd543b02m_e	0.06
Greater Sudbury (CMA)	gcsd580b02a_e	0.07	gcsd580b02m_e	0.07
Guelph (CA)	gcsd550b02a_e	0.07	gcsd550b02m_e	0.07
Hamilton (CMA)	gcsd537b02a_e	0.10	gcsd537b02m_e	0.08
Kingston (CMA)	gcsd521b02a_e	0.32	gcsd521b02m_e	0.21
Kitchener (CMA)	gcsd541b02a_e	0.08	gcsd541b02m_e	0.07
London (CMA)	gcsd555b02a_e	0.12	gcsd555b02m_e	0.10
North Bay (CA)	gcsd575b02a_e	0.10	gcsd575b02m_e	0.08
Oshawa (CMA)	gcsd532b02a_e	0.08	gcsd532b02m_e	0.07
Ottawa – Hull (CMA)	gcsd505b02a_e	0.10	gcsd505b02m_e	0.09
Peterborough (CA)	gcsd529b02a_e	0.08	gcsd529b02m_e	0.08
Sarnia (CA)	gcsd562b02a_e	0.10	gcsd562b02m_e	0.08
Sault Ste. Marie (CA)	gcsd590b02a_e	0.14	gcsd590b02m_e	0.11
St. Catharines – Niagara (CMA)	gcsd539b02a_e	0.15	gcsd539b02m_e	0.12
Thunder Bay (CMA)	gcsd595b02a_e	0.19	gcsd595b02m_e	0.14
Toronto (CMA)	gcsd535b02a_e	0.21	gcsd535b02m_e	0.16
Windsor (CMA)	gcsd559b02a_e	0.20	gcsd559b02m_e	0.15
Manitoba	gcsd046b02a_e	0.68	gcsd046b02m_e	0.64
Winnipeg (CMA)	gcsd602b02a_e	0.11	gcsd602b02m_e	0.09
Saskatchewan	gcsd047b02a_e	1.03	gcsd047b02m_e	0.92
Regina (CMA)	gcsd705b02a_e	0.10	gcsd705b02m_e	0.09

Province / Territory and tracted CMAs / CAs	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Saskatoon (CMA)	gcsd725b02a_e	0.10	gcsd725b02m_e	0.08
Alberta	gcsd048b02a_e	0.92	gcsd048b02m_e	0.96
Calgary (CMA)	gcsd825b02a_e	0.09	gcsd825b02m_e	0.08
Edmonton (CMA)	gcsd835b02a_e	0.15	gcsd835b02m_e	0.14
Lethbridge (CA)	gcsd810b02a_e	0.07	gcsd810b02m_e	0.07
Medicine Hat (CA)	gcsd805b02a_e	0.08	gcsd805b02m_e	0.08
Red Deer (CA)	gcsd830b02a_e	0.07	gcsd830b02m_e	0.06
British Columbia	gcsd059b02a_e	2.45	gcsd059b02m_e	2.04
Abbotsford (CMA)	gcsd932b02a_e	0.07	gcsd932b02m_e	0.07
Kamloops (CA)	gcsd925b02a_e	0.15	gcsd925b02m_e	0.13
Kelowna (CA)	gcsd915b02a_e	0.09	gcsd915b02m_e	0.08
Nanaimo (CA)	gcsd938b02a_e	0.12	gcsd938b02m_e	0.10
Prince George (CA)	gcsd970b02a_e	0.10	gcsd970b02m_e	0.09
Vancouver (CMA)	gcsd933b02a_e	0.15	gcsd933b02m_e	0.12
Victoria (CMA)	gcsd935b02a_e	0.18	gcsd935b02m_e	0.14
Yukon Territory	gcsd060b02a_e	0.12	gcsd060b02m_e	0.11
North West Territories	gcsd061b02a_e	0.45	gcsd061b02m_e	0.30
Nunavut	gcsd062b02a_e	2.76	gcsd062b02m_e	1.56

Geographic representation

- All files distributed by Geography Division are in the North American Datum of 1983 (NAD 83).
- The files are available in the geographic coordinate system (latitude / longitude).
- To make this file useful (i.e. to calculate distance) it must be projected.

Record layout and item description

Census subdivisions record layout:

The following table shows the format of the attributes contained on the boundary files.

Item Name	Width	Output	Type	Decimals
AREA[1]	8	18	F	5
PERIMETER[1]	8	18	F	5
<File Name># [1]	4	5	B	0
<File Name>-ID [1]	4	5	B	0
CSDname	70	70	C	-
CSDtype	3	3	C	-
CSDuid	7	7	C	-
PRuid	2	2	C	-
CMAuid	3	3	C	-
ERuid	4	4	C	-
SACcode	1	1	C	-

[1] Items included with ARC/INFO® Interchange files only

Item Description:

Item	Description
AREA	Area of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
PERIMETER	Perimeter of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
<File Name>#	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
<File Name>-ID	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
CSDname	the official name of the census subdivision
CSDtype	is the type of the census subdivision (see domain)
CSDuid	uniquely identifies a census subdivision (SGC code - composed of the 2-digit province code, the 2-digit census division code and the 3-digit census subdivision code)
PRuid	uniquely identifies a province or territory
CMAuid	uniquely identifies a census metropolitan area or census agglomeration
ERuid	uniquely identifies an Economic Region
SACcode	Statistical Area Classification code (see domain)

Domain

SAC code

The **Statistical Area Classification** (SAC) groups census subdivisions according to whether they are a component of a census metropolitan area, a census agglomeration, a census metropolitan area and census agglomeration influenced zone (strong MIZ, moderate MIZ, weak MIZ or no MIZ), or the territories (Northwest Territories, Yukon Territory and Nunavut). The statistical area classification is used for data dissemination purposes.

Statistical Area Classification (SAC)	
Values	Specifications
1	Census Subdivision within Census Metropolitan Area
2	Census Subdivision within Census Agglomeration, with at least one Census Tract (within Province)
3	Census Subdivision within Census Agglomeration, having no Census Tracts (within Province)
4	Census Subdivision outside of CMA / CA having strong metropolitan influence (within Province)
5	Census Subdivision outside of CMA / CA having moderate metropolitan influence (within Province)
6	Census Subdivision outside of CMA / CA having weak metropolitan influence (within Province)
7	Census Subdivision outside of CMA / CA having no metropolitan influence (within Province)
8	Census Subdivision within a Territory

Please see Appendix L for a list of CSD types and descriptions by province / territory.

11. Census Metropolitan Areas / Census Agglomerations

Content

The Census Metropolitan Areas / Census Agglomerations Cartographic Boundary File for Canada contains the boundaries of all 27 Census Metropolitan Areas and 113 Census Agglomerations for the 2001 Census. A census metropolitan area (CMA) or a census agglomeration (CA) is formed by one or more adjacent municipalities centred on a large urban area (known as the **urban core**). The census population count of the urban core is at least 10,000 to form a census agglomeration and at least 100,000 to form a census metropolitan area. To be included in census metropolitan areas and census agglomerations, other adjacent municipalities must have a high degree of integration with the central urban area, as measured by commuting flows derived from census place of work data.

The Census Metropolitan Area and Census Agglomerations Boundary File consists of polygons representing the census metropolitan areas and census agglomerations. Every polygon encoded as a census metropolitan area or census agglomeration has a CMAuid (a code to uniquely identify census metropolitan areas and census agglomerations) associated with it. The Census Metropolitan Area and Census Agglomerations Boundary File is available at the national level only. The national Census Metropolitan Area and Census Agglomerations Boundary File consists of polygons representing 140 census metropolitan areas and census agglomerations. There are more polygons than census metropolitan areas and census agglomerations primarily because of the additional polygons needed to represent islands.

A breakdown of the number of Census Metropolitan Areas / Census Agglomerations and polygons by province / territory are provided below for the Census Metropolitan Area and Census Agglomerations Boundary File:

Province / Territory	CMA / CAs	Polygons	CMA / CAs in more than one polygon
Canada	140	337	43
Newfoundland and Labrador	5	8	2
Prince Edward Island	2	5	1
Nova Scotia	5	67	3
New Brunswick	6*	12	2*
Quebec	34*	51	5*
Ontario	41*	104	19*
Manitoba	4	5	1
Saskatchewan	9*	9	*
Alberta	12*	13	1*
British Columbia	25	61	9
Yukon Territory	1	1	0
North West Territories	1	1	0
Nunavut	-	-	-

Note: Numbers followed by an "*" include at least one Census Metropolitan Area / Census Agglomeration crossing provincial boundaries. In each of the 5 cases, the Census Metropolitan Area / Census Agglomeration is counted in both provinces.

Breakdown of Census Metropolitan Areas / Agglomerations crossing provincial boundaries:

Provinces	CMAuid	CMA / CA name	CMA / CA type
New Brunswick Quebec	330	Campbellton	Census Agglomeration
Quebec Ontario	502	Hawkesbury	Census Agglomeration
Quebec Ontario	505	Ottawa - Hull	Census Metropolitan Area
Quebec Ontario	515	Pembroke	Census Agglomeration
Saskatchewan Alberta	840	Lloydminster	Census Agglomeration

Data quality

Spatial data quality elements provide information on the fitness-for-use of a spatial database by describing why, when and how the data are created, and how accurate the data are. The elements include an overview describing the purpose and usage, as well as specific quality elements reporting on the lineage, positional accuracy, attribute accuracy, logical consistency and completeness. This information is provided to users for all spatial data products disseminated for the census.

Lineage

Describes the history of the spatial data, including descriptions of the source material from which the data were derived, and the methods of derivation. It also contains the dates of the source material, and all transformations involved in producing the final digital files or map products.

Aggregating polygons from a layer of geographic information created all of the Cartographic Boundary Files. Please see Appendix F for details on this process.

Positional accuracy

Refers to the absolute and relative accuracy of the positions of geographic features. Absolute accuracy is the closeness of the coordinate values in a dataset to values accepted as or being true. Relative accuracy is the closeness of the relative positions of features to their respective relative positions accepted as or being true. Descriptions of positional accuracy include the quality of the final file or product after all transformations.

The boundaries are derived from the National Geographic Base. The data in the National Geographic Base is stored in double precision. However, the positional accuracy of the features in the National Geographic Base varies. The data storage precision allows features that are next to each other on the ground to be placed in the correct position on the map, relative to each other, without overlap.

The positional accuracy of the Cartographic Boundary Files is based on the positional accuracy of the source material used in its production (the National Geographic Base, the National Atlas GeoBase hydrology Level 0 and the National Topographic DataBase). Please see AppendixG for more information on the roads in the National Geographic Base. The larger water bodies from the 1:50,000 and the 1:250,000 maps from the National Topographic Data Base were used to provide reference information within census metropolitan areas and census agglomerations. The National Atlas (GeoBase hydrology Level 0) hydrography was used outside the census metropolitan areas and census agglomerations. Some of the smaller inland water polygons were removed from the Cartographic Boundary Files. Please see Appendix F for more information on the production process.

Some vertices in the file were removed as a result of line generalization done (based on the Douglas-Peucker algorithm and using ARC/INFO® 8.1) with a weed tolerance of 0.1 metres.

Attribute accuracy

Refers to the accuracy of the quantitative and qualitative information attached to each feature (such as population for an urban area, street name, census subdivision name and code).

The attribute data associated with the polygons in the Cartographic Boundary Files were independently verified against the data in the Query Base and found to be accurate.

Logical consistency

Describes the fidelity of relationships encoded in the data structure of the digital spatial data.

Every polygon was verified to have a unique identifier for the census metropolitan area and census agglomeration, the CMAuid. Every case where a polygon did not have a unique CMAuid was examined. Some polygons did not have unique CMAuid. All of these census metropolitan areas and census agglomerations consisted of a set of polygons that were separated by water bodies. For example, two islands, each a polygon, may belong to the same census metropolitan area or census agglomeration.

Every CMAuid in the Census Metropolitan Area / Census Agglomeration Cartographic Boundary File was verified to be in the Query Base as a CMAuid value for the 2001 Census.

The data set was tested to ensure that the size of the polygons was consistent with the geographic units being represented. Specifically, very small polygons and sliver polygons were examined. Slivers are defined here as very long, thin polygons.

The following criteria was used to detect slivers:

{ (perimeter x perimeter) / area > 1,000 } AND {area < 200,000 meters}

Consistency with other products

The positions of the boundary arcs are generally consistent with those of the Road Network Files and Skeletal Road Network Files. The arcs in the Road Network Files and Skeletal Road Network Files were simplified to remove unnecessary vertices in the straight-line segments (generalized with the option «pointremove»). It is possible for some arcs to differ slightly from those of the National Geographic Base (a few arcs could have been moved by 1 meter).

Hydrography was specially created for the Cartographic Boundary Files to enable thematic mapping at medium scales. The hydrography used in the province / territory layer in the Cartographic Boundary Files differs from that used in the Reference Maps. For this reason, minor differences may be noticable between the depiction of hydrography and boundaries.

The hydrography used in the Cartographic Boundary Files was created to be consistent with the roads in the road network files. However, boundary arcs in the Road Network Files (designated by ARC_GROUP of "BO") are those present in the National Geographic Base. This very detailed information, including boundary arcs that for legal reasons are present in the water, were left as they were depicted in the National Geographic Base. The detailed information was also considered preferable for geocoding with the BLOCKuid information in the Road Network Files. However, when mapping the Cartographic Boundary Files (or the Province / Territory Cartographic Boundary layer) with the road network files, users should consider not mapping the RNF boundary arcs (ARC_GROUP of "BO") if they do not want these to fall in the water.

The Census metropolitan areas and census agglomerations found in this file are consistent with those found in GeoSuite and GeoSearch. The land area for various geographic areas present in GeoSuite may not be consistent with that computed from the Cartographic Boundary Files. This is because the land / water areas in the Cartographic Boundary Files are based on hydrography that was specially generalized and created for thematic mapping.

Completeness

Refers to the degree to which geographic features, their attributes and their relationships are included or omitted in a dataset. It also includes information on selection criteria, definitions used, and other relevant mapping rules.

The number of Census Metropolitan Areas and Census Agglomerations as well as their unique identifiers was verified against the information in the Query Base. Comparisons were also made with a set of boundary files derived independently from the national geographic base.

Technical specifications

Each Cartographic Boundary File consists of two layers of data. The boundaries of the standard geographic areas have been re-defined for thematic mapping purposes by integrating them with the shoreline. Supplementary files for the oceans, Great Lakes, St. Lawrence River, Greenland and bordering United States are available upon request. (Please see Appendix H for the technical specifications of supporting files)

File specifications

These are the standard formats in which 2001 Census digital spatial products will be available from Geography Division.

Software formats

All products available on CD-ROM for purchase containing digital boundaries and road network information will be available in the following formats:

- ARC/INFO® interchange format version 8.1
  ASCII export file
  File extension(s): .e00 (spatial and tabular data)
- MapInfo® interchange format version 6.0
  ASCII export files
  File extension(s): .MIF (graphic data), .MID (tabular data)

Installation instructions

Both the ARC/INFO® and MapInfo® are compressed in self-executable WinZip® files (file extension EXE). Users can uncompress these files by executing them in DOS, or selecting them in Windows® and double clicking on the file icon, or executing them in the RUN dialogue in Windows®.

The geographic area names in the Cartographic Boundary Files contain accented characters. These characters can be seen in UNIX and Windows® versions of ARC/INFO® and MapInfo®. (They ware tested on desktop versions of ARC/INFO® 8.1, MapInfo® 6.0 and MapInfo® 4.5. The accents were also visible in ARC/INFO® 8.01 in UNIX.) To preserve accents, ArcToolbox® is recommended for importing files into the desktop version of ARC/INFO® 8.1.

File names and sizes

File names are formatted in order to better indicate to the client the source of data, coverage, geographic area, language and file format of the data.

	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Canada	gcma000b02a_e	3.58	gcma000b02m_e	2.20

Geographic representation

- All files distributed by Geography Division are in the North American Datum of 1983 (NAD 83).
- The files are available in the geographic coordinate system (latitude / longitude).
- To make this file useful (i.e. to calculate distance) it must be projected.

Record layout and item description

Census Metropolitan Areas / Census Agglomerations record layout:

The following table shows the format of the attributes contained on the boundary files.

Item Name	Width	Output	Type	Decimals
AREA[1]	8	18	F	5
PERIMETER[1]	8	18	F	5
<File Name># [1]	4	5	B	0
<File Name>-ID [1]	4	5	B	0
CMAname	25	25	C	-
CMAuid	3	3	C	-
CMAtype	1	1	C	-
PRuid	2	2	C	-

[1] Items included with ARC/INFO® Interchange files only

Item Description:

Item	Description
AREA	Area of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
PERIMETER	Perimeter of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
<File Name>#	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
<File Name>-ID	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
CMAname	the official name of the census metropolitan area or census agglomeration
CMAuid	uniquely identifies a census metropolitan area or census agglomeration
CMAtype	A one-character field identifying whether the unit is a census metropolitan area or a census agglomeration. (see domaine)
PRuid	uniquely identifies a province or territory

Domain

CMAtype: A one-character field identifying whether the unit is a census metropolitan area or a census agglomeration.

CMA / CA type	
Values	Specifications
B	Census Metropolitan Area
D	Census Agglomeration

12. Census Tracts

Content

The Census Tract Cartographic Boundary File for Canada contains the boundaries of all 4,798 census tracts for the 2001 Census. Census tracts (CTs) are small, relatively stable geographic areas that usually have a population of 2,500 to 8,000. They are located in census metropolitan areas and in census agglomerations with an urban core population of 50,000 or more in the previous census.

The Census Tract Cartographic Boundary File consists of polygons representing the census tracts. Every polygon encoded as a census metopolitan area or tracted cenus agglomeration has a CTuid (a code to uniquely identify each census tract) associated with it. Census Tract Boundary Files are available for Canada and by province / territory as well as by tracted Census Metropolitan Area and Census Agglomeration. The national Census Tract Cartographic Boundary File consists of polygons representing 4798 census tracts. There are more polygons than census tracts primarily because of the additional polygons needed to represent islands.

A breakdown of the number of Census Tracts and polygons by province / territory are provided below for the Census Tract Cartographic Boundary File:

Province / Territory	Census tracts	Polygons	Census tracts in more than one polygon
Canada	4 798	4 938	63
Newfoundland and Labrador	45	47	1
Prince Edward Island	-	-	-
Nova Scotia	86	131	9
New Brunswick	71	74	3
Quebec	1 263	1 270	6
Ontario	2 013	2 070	29
Manitoba	165	165	0
Saskatchewan	101	101	0
Alberta	457	457	0
British Columbia	597	623	15
Yukon Territory	-	-	-
North West Territories	-	-	-
Nunavut	-	-	-

Data quality

Spatial data quality elements provide information on the fitness-for-use of a spatial database by describing why, when and how the data are created, and how accurate the data are. The elements include an overview describing the purpose and usage, as well as specific quality elements reporting on the lineage, positional accuracy, attribute accuracy, logical consistency and completeness. This information is provided to users for all spatial data products disseminated for the census.

Lineage

Describes the history of the spatial data, including descriptions of the source material from which the data were derived, and the methods of derivation. It also contains the dates of the source material, and all transformations involved in producing the final digital files or map products.

Aggregating polygons from a layer of geographic information created all of the Cartographic Boundary Files. Please see Appendix F for details on this process.

Positional accuracy

Refers to the absolute and relative accuracy of the positions of geographic features. Absolute accuracy is the closeness of the coordinate values in a dataset to values accepted as or being true. Relative accuracy is the closeness of the relative positions of features to their respective relative positions accepted as or being true. Descriptions of positional accuracy include the quality of the final file or product after all transformations.

The boundaries are derived from the National Geographic Base. The data in the National Geographic Base is stored in double precision. However, the positional accuracy of the features in the National Geographic Base varies. The data storage precision allows features that are next to each other on the ground to be placed in the correct position on the map, relative to each other, without overlap.

The positional accuracy of the Cartographic Boundary Files is based on the positional accuracy of the source material used in its production (the National Geographic Base, the National Atlas GeoBase hydrology Level 0 and the National Topographic DataBase). Please see Appendix G for more information on the roads in the National Geographic Base. The larger water bodies from the 1:50,000 and the 1:250,000 maps from the National Topographic Data Base were used to provide reference information within census metropolitan areas and census agglomerations. The National Atlas (GeoBase hydrology Level 0) hydrography was used outside the census metropolitan areas and census agglomerations. Some of the smaller inland water polygons were removed from the Cartographic Boundary Files. Please see Appendix F for more information on the production process.

Some vertices in the file were removed as a result of line generalization done (based on the Douglas-Peucker algorithm and using ARC/INFO® 8.1) with a weed tolerance of 0.1 metres.

Attribute accuracy

Refers to the accuracy of the quantitative and qualitative information attached to each feature (such as population for an urban area, street name, census subdivision name and code).

The attribute data associated with the polygons in the Cartographic Boundary Files were independently verified against the data in the Query Base and found to be accurate.

The CMAuid of 996, 997, 998 and 999 simply indicate that no CMA or CA is present in these areas. These values do not signify anything else and should be considered as representing a null value.

Logical consistency

Describes the fidelity of relationships encoded in the data structure of the digital spatial data.

Every polygon was verified to have a unique identifier for the census tract: the CTuid. Every case where a polygon did not have a unique CTuid was examined. Some polygons did not have unique CTuid. All of these census tracts consisted of a set of polygons that were separated by water bodies. For example, two islands, each a polygon, may belong to the same census tract.

Every CTuid in the CT Cartographic Boundary File was verified to be in the Query Base as a CTuid value for the 2001 Census.

The data set was tested to ensure that the size of the polygons was consistent with the geographic units being represented. Specifically, very small polygons and sliver polygons were examined. Slivers are defined here as very long, thin polygons.

The following criteria was used to detect slivers:

{ (perimeter x perimeter) / area > 1,000 } AND {area < 200,000 meters}

Consistency with other products

The positions of the boundary arcs are generally consistent with those of the Road Network Files and Skeletal Road Network Files. The arcs in the Road Network Files and Skeletal Road Network Files were simplified to remove unnecessary vertices in the straight-line segments (generalized with the option «pointremove»). It is possible for some arcs to differ slightly from those of the National Geographic Base (a few arcs could have been moved by 1 meter).

Hydrography was specially created for the Cartographic Boundary Files to enable thematic mapping at local and regional scales. The hydrography used in the province / territory layer in the Cartographic Boundary Files differs from that used in the Reference Maps. For this reason, minor differences may be noticable between the depiction of hydrography and boundaries.

The hydrography used in the Cartographic Boundary Files was created to be consistent with the roads in the road network files. However, boundary arcs in the Road Network Files (designated by ARC_GROUP of “BO”) are those present in the National Geographic Base. This very detailed information, including boundary arcs that for legal reasons are present in the water, were left as they were depicted in the National Geographic Base. The detailed information was also considered preferable for geocoding with the BLOCKuid information in the Road Network Files. However, when mapping the Cartographic Boundary Files (or the Province / Territory Cartographic Boundary layer) with the road network files, users should consider not mapping the RNF boundary arcs (ARC_GROUP of “BO”) if they do not want these to fall in the water.

Census tracts found in this file are consistent with those found in GeoSuite and GeoSearch. The land area for various geographic areas present in GeoSuite may not be consistent with that computed from the Cartographic Boundary Files. This is because the land / water areas in the Cartographic Boundary Files are based on hydrography that was specially generalized and created for thematic mapping.

Completeness

Refers to the degree to which geographic features, their attributes and their relationships are included or omitted in a dataset. It also includes information on selection criteria, definitions used, and other relevant mapping rules.

The number of census tracts as well as their unique identifiers was verified against the information in the Query Base. Comparisons were also made with a set of boundary files derived independently from the national geographic base.

Technical specifications

Each Cartographic Boundary File consists of two layers of data. The boundaries of the standard geographic areas have been re-defined for thematic mapping purposes by integrating them with the shoreline. Supplementary files for the oceans, Great Lakes, St. Lawrence River, Greenland and bordering United States are available upon request. (Please see Appendix H for the technical specifications of supporting files)

File specifications

These are the standard formats in which 2001 Census digital spatial products will be available from Geography Division.

Software formats

All products available on CD-ROM for purchase containing digital boundaries and road network information will be available in the following formats:

- ARC/INFO® interchange format version 8.1
  ASCII export file
  File extension(s): .e00 (spatial and tabular data)
- MapInfo® interchange format version 6.0
  ASCII export files
  File extension(s): .MIF (graphic data), .MID (tabular data)

Installation instructions

Both the ARC/INFO® and MapInfo® are compressed in self-executable WinZip® files (file extension EXE). Users can uncompress these files by executing them in DOS, or selecting them in Windows® and double clicking on the file icon, or executing them in the RUN dialogue in Windows®.

File names and sizes

File names are formatted in order to better indicate to the client the source of data, coverage, geographic area, language and file format of the data.

Province / Territory and tracted CMAs / CAs	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Canada	gct_000b02a_e	5.62	gct_000b02m_e	3.90
Newfoundland and Labrador	gct_010b02a_e	0.28	gct_010b02m_e	0.22

Province / Territory and tracted CMAs / CAs	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
St. John's (CMA)	gct_001b02a_e	0.28	gct_001b02m_e	0.22
Prince Edward Island	-	-	-	-
Nova Scotia	gct_012b02a_e	0.29	gct_012b02m_e	0.24
Halifax (CMA)	gct_205b02a_e	0.29	gct_205b02m_e	0.24
New Brunswick	gct_013b02a_e	0.21	gct_013b02m_e	0.18
Moncton (CA)	gct_305b02a_e	0.10	gct_305b02m_e	0.08
Saint John (CMA)	gct_310b02a_e	0.18	gct_310b02m_e	0.15
Quebec	gct_024b02a_e	1.12	gct_024b02m_e	0.80
Chicoutimi – Jonquière (CMA)	gct_408b02a_e	0.13	gct_408b02m_e	0.11
Drummondville (CA)	gct_447b02a_e	0.08	gct_447b02m_e	0.07
Granby (CA)	gct_450b02a_e	0.08	gct_450b02m_e	0.07
Montréal (CMA)	gct_462b02a_e	0.64	gct_462b02m_e	0.45
Québec (CMA)	gct_421b02a_e	0.27	gct_421b02m_e	0.20
Saint-Jean-sur-Richelieu (CA)	gct_459b02a_e	0.10	gct_459b02m_e	0.08
Sherbrooke (CMA)	gct_433b02a_e	0.10	gct_433b02m_e	0.09
Trois-Rivières (CMA)	gct_442b02a_e	0.10	gct_442b02m_e	0.08
Ontario	gct_035b02a_e	2.54	gct_035b02m_e	1.70
Barrie (CA)	gct_568b02a_e	0.09	gct_568b02m_e	0.08
Belleville (CA)	gct_522b02a_e	0.15	gct_522b02m_e	0.12
Brantford (CA)	gct_543b02a_e	0.08	gct_543b02m_e	0.07
Greater Sudbury (CMA)	gct_580b02a_e	0.12	gct_580b02m_e	0.11
Guelph (CA)	gct_550b02a_e	0.08	gct_550b02m_e	0.08
Hamilton (CMA)	gct_537b02a_e	0.21	gct_537b02m_e	0.16
Kingston (CMA)	gct_521b02a_e	0.35	gct_521b02m_e	0.24
Kitchener (CMA)	gct_541b02a_e	0.14	gct_541b02m_e	0.11
London (CMA)	gct_555b02a_e	0.19	gct_555b02m_e	0.15
North Bay (CA)	gct_575b02a_e	0.11	gct_575b02m_e	0.10
Oshawa (CMA)	gct_532b02a_e	0.12	gct_532b02m_e	0.10
Ottawa – Hull (CMA)	gct_505b02a_e	0.26	gct_505b02m_e	0.20
Peterborough (CA)	gct_529b02a_e	0.10	gct_529b02m_e	0.08
Sarnia (CA)	gct_562b02a_e	0.11	gct_562b02m_e	0.09
Sault Ste. Marie (CA)	gct_590b02a_e	0.15	gct_590b02m_e	0.12
St. Catharines – Niagara (CMA)	gct_539b02a_e	0.21	gct_539b02m_e	0.16
Thunder Bay (CMA)	gct_595b02a_e	0.21	gct_595b02m_e	0.15
Toronto (CMA)	gct_535b02a_e	0.78	gct_535b02m_e	0.54
Windsor (CMA)	gct_559b02a_e	0.24	gct_559b02m_e	0.18
Manitoba	gct_046b02a_e	0.20	gct_046b02m_e	0.14
Winnipeg (CMA)	gct_602b02a_e	0.20	gct_602b02m_e	0.14
Saskatchewan	gct_047b02a_e	0.17	gct_047b02m_e	0.13
Regina (CMA)	gct_705b02a_e	0.12	gct_705b02m_e	0.10
Saskatoon (CMA)	gct_725b02a_e	0.11	gct_725b02m_e	0.10
Alberta	gct_048b02a_e	0.51	gct_048b02m_e	0.37
Calgary (CMA)	gct_825b02a_e	0.24	gct_825b02m_e	0.18
Edmonton (CMA)	gct_835b02a_e	0.26	gct_835b02m_e	0.21
Lethbridge (CA)	gct_810b02a_e	0.08	gct_810b02m_e	0.08
Medicine Hat (CA)	gct_805b02a_e	0.10	gct_805b02m_e	0.08

Province / Territory and tracted CMAs / CAs	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Red Deer (CA)	gct_830b02a_e	0.08	gct_830b02m_e	0.07
British Columbia	gct_059b02a_e	0.79	gct_059b02m_e	0.54
Abbotsford (CMA)	gct_932b02a_e	0.10	gct_932b02m_e	0.09
Kamloops (CA)	gct_925b02a_e	0.14	gct_925b02m_e	0.12
Kelowna (CA)	gct_915b02a_e	0.11	gct_915b02m_e	0.10
Nanaimo (CA)	gct_938b02a_e	0.13	gct_938b02m_e	0.10
Prince George (CA)	gct_970b02a_e	0.12	gct_970b02m_e	0.10
Vancouver (CMA)	gct_933b02a_e	0.35	gct_933b02m_e	0.24
Victoria (CMA)	gct_935b02a_e	0.21	gct_935b02m_e	0.16
Yukon Territory	-	-	-	-
North West Territories	-	-	-	-
Nunavut	-	-	-	-

Geographic representation

- All files distributed by Geography Division are in the North American Datum of 1983 (NAD 83).
- The files are available in the geographic coordinate system (latitude / longitude).
- To make this file useful (i.e. to calculate distance) it must be projected.

Record layout and item description

Census tract record layout:

The following table shows the format of the attributes contained on the boundary files.

Item Name	Width	Output	Type	Decimals
AREA[1]	8	18	F	5
PERIMETER[1]	8	18	F	5
<File Name># [1]	4	5	B	0
<File Name>-ID [1]	4	5	B	0
CTname	7	7	C	-
CTuid	10	10	C	-
CMAuid	3	3	C	-
PRuid	2	2	C	-

[1] Items included with ARC/INFO® Interchange files only

Item Description:

Item	Description
AREA	Area of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
PERIMETER	Perimeter of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
<File Name>#	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
<File Name>-ID	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
CTname	is the numeric name of the census tract, consisting of 4 digits, a decimal point and two digits. CTs having numbers greater than NNNN.00 are CT splits.
Ctuid	uniquely identifies a census tract (composed of the CMAuid and the CTname)
CMAuid	uniquely identifies a census metropolitan area or census agglomeration
PRuid	uniquely identifies a province or territory

13. Urban Areas

Content

The Urban Areas Cartographic Boundary File for Canada contains the boundaries of all 913 urban areas for the 2001 Census. An urban area has a minimum population concentration of 1,000 persons and a **population density** of at least 400 persons per square kilometre, based on the current census population count. All territory outside urban areas is classified as rural. Taken together, urban and **rural areas** cover all of Canada.

The urban areas were delineated based on the 2001 Census population data. The revised Urban Area Cartographic Boundary File was created from the block level data, by which urban areas are delineated, using population as a part of the criteria.

The Urban Area boundary files were created to be used for shading the more urbanized areas when mapping other boundaries available as Cartographic Boundary Files. This file is only meant for shading polygons to support other heirarchical boundaries.

A breakdown of the number of urban areas and polygons by province / territory are provided below for the Urban Areas Cartographic Boundary File

Province / Territory	Urban areas	Polygons	Urban areas in more than one polygon
Canada	913	1 072	62
Newfoundland and Labrador	36	36	0
Prince Edward Island	7	9	1
Nova Scotia	39	47	6
New Brunswick	34*	38	2*
Quebec	229*	250	8*
Ontario	258*	299	22*
Manitoba	42*	45	3*
Saskatchewan	65*	67	2*
Alberta	108*	109	1*
British Columbia	93	165	17
Yukon Territory	1	1	0
North West Territories	3	3	0
Nunavut	3	3	0

Note: Numbers followed by an "*" include at least one urban area crossing provincial boundaries. In each of the five cases, the urban area is counted in both provinces.

Breakdown of Urban Areas crossing provincial boundaries:

Province	UAuid	UA name
New Brunswick Quebec	0122	Campbellton
Quebec Ontario	0365	Hawkesbury
Quebec Ontario	0616	Ottawa - Hull
Manitoba Saskatchewan	0282	Flin Flon
Saskatchewan Alberta	0478	Lloydminster

Data quality

Spatial data quality elements provide information on the fitness-for-use of a spatial database by describing why, when and how the data are created, and how accurate the data are. The elements include an overview describing the purpose and usage, as well as specific quality elements reporting on the lineage, positional accuracy, attribute accuracy, logical consistency and completeness. This information is provided to users for all spatial data products disseminated for the census.

Lineage

Describes the history of the spatial data, including descriptions of the source material from which the data were derived, and the methods of derivation. It also contains the dates of the source material, and all transformations involved in producing the final digital files or map products.

Aggregating polygons from a layer of geographic information created all of the Cartographic Boundary Files. Please see Appendix F for details on this process.

Positional accuracy

Refers to the absolute and relative accuracy of the positions of geographic features. Absolute accuracy is the closeness of the coordinate values in a dataset to values accepted as or being true. Relative accuracy is the closeness of the relative positions of features to their respective relative positions accepted as or being true. Descriptions of positional accuracy include the quality of the final file or product after all transformations.

The boundaries are derived from the National Geographic Base. The data in the National Geographic Base is stored in double precision. However, the positional accuracy of the features in the National Geographic Base varies. The data storage precision allows features that are next to each other on the ground to be placed in the correct position on the map, relative to each other, without overlap.

The positional accuracy of the Cartographic Boundary Files is based on the positional accuracy of the source material used in its production (the National Geographic Base, the National Atlas GeoBase hydrology Level 0 and the National Topographic Data Base). Please see Appendix G

for more information on the roads in the National Geographic Base. The larger water bodies from the 1:50,000 and the 1:250,000 maps from the National Topographic Data Base were used to provide reference information within census metropolitan areas and census agglomerations. The National Atlas (GeoBase hydrology Level 0) hydrography was used outside the census metropolitan areas and census agglomerations. Some of the smaller inland water polygons were removed from the Cartographic Boundary Files. Please see Appendix F for more information on the production process.

Some vertices in the file were removed as a result of line generalization done (based on the Douglas-Peucker algorithm and using ARC/INFO® 8.1) with a weed tolerance of 0.1 metres.)

Attribute accuracy

Refers to the accuracy of the quantitative and qualitative information attached to each feature (such as population for an urban area, street name, census subdivision name and code).

The attribute data associated with the polygons in the Cartographic Boundary Files were independently verified against the data in the Query Base and found to be accurate.

Logical consistency

Describes the fidelity of relationships encoded in the data structure of the digital spatial data.

Every polygon was verified to have a unique identifier for the urban area: the UAuid. Every case where a polygon did not have a unique UAuid was examined. Some polygons did not have unique UAuid. All of these urban areas consisted of a set of polygons that were separated by water bodies. For example, two islands, each a polygon, may belong to the same urban area.

Every UAuid in the Urban Area Cartographic Boundary File was verified to be in the Query Base as a UAuid value for the 2001 Census.

The data set was tested to ensure that the size of the polygons was consistent with the geographic units being represented. Specifically, very small polygons and sliver polygons were examined. Slivers are defined here as very long, thin polygons.

The following criteria was used to detect slivers:

{ (perimeter x perimeter) / area > 1,000 } AND {area < 200,000 meters}

Consistency with other products

The positions of the boundary arcs are generally consistent with those of the Road Network Files and Skeletal Road Network Files. The arcs in the Road Network Files and Skeletal Road Network Files were simplified to remove unnecessary vertices in the straight-line segments (generalized with the option «pointremove»). It is possible for some arcs to differ slightly from those of the National Geographic Base (a few arcs could have been moved by 1 meter).

Hydrography was specially created for the Cartographic Boundary Files to enable thematic mapping at local and regional scales. The hydrography used in the province / territory layer in the Cartographic Boundary Files differs from that used in the Reference Maps. For this reason, minor differences may be noticable between the depiction of hydrography and boundaries.

The hydrography used in the Cartographic Boundary Files was created to be consistent with the roads in the road network files. However, boundary arcs in the Road Network Files (designated by ARC_GROUP of "BO") are those present in the National Geographic Base. This very detailed information, including boundary arcs that for legal reasons are present in the water, were left as they were depicted in the National Geographic Base. The detailed information was also considered preferable for geocoding with the BLOCKuid information in the Road Network Files. However, when mapping the Cartographic Boundary Files (or the Province / Territory Cartographic Boundary layer) with the road network files, users should consider not mapping the RNF boundary arcs (ARC_GROUP of "BO") if they do not want these to fall in the water.

The urban areas found in this file are consistent with those found in GeoSuite and GeoSearch. The land area for various geographic areas present in GeoSuite may not be consistent with that computed from the Cartographic Boundary Files. This is because the land / water areas in the Cartographic Boundary Files are based on hydrography that was specially generalized and created for thematic mapping.

Completeness

Refers to the degree to which geographic features, their attributes and their relationships are included or omitted in a dataset. It also includes information on selection criteria, definitions used, and other relevant mapping rules.

The number of urban areas as well as their unique identifiers was verified against the information in the Query Base. Comparisons were also made with a set of boundary files derived independently from the national geographic base.

Technical specifications

Each Cartographic Boundary File consists of two layers of data. The boundaries of the standard geographic areas have been re-defined for thematic mapping purposes by integrating them with the shoreline. Supplementary files for the oceans, Great Lakes, St. Lawrence River, Greenland and bordering United States are available upon request. (Please see Appendix H for the technical specifications of supporting files)

File specifications

These are the standard formats in which 2001 Census digital spatial products will be available from Geography Division.

Software formats

All products available on CD-ROM for purchase containing digital boundaries and road network information will be available in the following formats:

- ARC/INFO® interchange format version 8.1
  ASCII export file
  File extension(s): .e00 (spatial and tabular data)
- MapInfo® interchange format version 6.0
  ASCII export files
  File extension(s): .MIF (graphic data), .MID (tabular data)

Installation instructions

Both the ARC/INFO® and MapInfo® are compressed in self-executable WinZip® files (file extension EXE). Users can uncompress these files by executing them in DOS, or selecting them in Windows® and double clicking on the file icon, or executing them in the RUN dialogue in Windows®.

The geographic area names in the Cartographic Boundary Files contain accented characters. These characters can be seen in UNIX and Windows® versions of ARC/INFO® and MapInfo®. (They ware tested on desktop versions of ARC/INFO® 8.1, MapInfo® 6.0 and MapInfo® 4.5. The accents were also visible in ARC/INFO® 8.01 in UNIX.) To preserve accents, Arc Toolbox™ is recommended for importing files into the desktop version of ARC/INFO® 8.1.

File names and sizes

File names are formatted in order to better indicate to the client the source of data, coverage, geographic area, language and file format of the data.

	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Canada	gua_000b02a_e	3.12	gua_000b02m_e	1.85

Geographic representation

- All files distributed by Geography Division are in the North American Datum of 1983 (NAD 83).
- The files are available in the geographic coordinate system (latitude / longitude).
- To make this file useful (i.e. to calculate distance) it must be projected.

Record layout and item description

Urban Areas record layout:

The following table shows the format of the attributes contained on the boundary files.

Item Name	Width	Output	Type	Decimals
AREA[1]	8	18	F	5
PERIMETER[1]	8	18	F	5
<File Name># [1]	4	5	B	0
<File Name>-ID [1]	4	5	B	0
UAname	100	100	C	-
UAuid	4	4	C	-
UAtype	1	1	C	-
PRuid	2	2	C	-

[1] Items included with ARC/INFO® Interchange files only

Item Description:

Item	Description
AREA	Area of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
PERIMETER	Perimeter of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
<File Name>#	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
<File Name>-ID	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
UAname	the name of the urban area
UAuid	uniquely identifies an urban area
UAtype	is a one-character field indicating the type of Urban Area (see domaine)
PRuid	uniquely identifies a province or territory

Domain

UAtype: A one-character field identifying whether the unit is a census metropolitan area or a census agglomeration.

Urban Area type	
Values	Specifications
1	urban core
2	urban fringe
4	urban outside metropolitan area
6	secondary urban core

14. Designated Places and Designated Places Parts

Content

The Designated Places Cartographic Boundary File for Canada contains the boundaries of all 1,261 dissemination areas for the 2001 Census. A designated place is normally a small community or settlement that does not meet the criteria established by Statistics Canada to be a census subdivision (an area with municipal status) or an urban area. Designated places are created by provinces and territories, in cooperation with Statistics Canada, to provide data for submunicipal areas. The Designated Places Parts Cartographic Boundary File for Canada contains the boundaries of all 1,261 dissemination areas and their Census Subdivision components for the 2001 Census.

The DPL boundary file consists of polygons representing the designated places. Every polygon encoded as a designated place within Canada has a DPLuid (a code to uniquely identify each designated place) associated with it. The DPL parts boundary file consists of polygons representing census subdivisions within each designated place and is identified uniquely by a DPL_CSDuid. The DPL and DPL parts boundary files are packaged together and available at the national level. The national DPL boundary file consists of polygons representing 1,261 DPLs. There are more polygons than DPLs primarily because of the additional polygons needed to represent islands.

A breakdown of the number of Designated Places and polygons by province / territory are provided below for the DPL cartographic boundary file:

Province / Territory	Designated places	Polygons	Designated places with more than one polygon
Canada	1 261	1 355	43
Newfoundland and Labrador	182	184	2
Prince Edward Island	-	-	-
Nova Scotia	59	61	2
New Brunswick	172	175	3
Quebec	78	78	
Ontario	81	97	5
Manitoba	51	57	4
Saskatchewan	158	163	5
Alberta	260	265	5
British Columbia	219	273	16
Yukon Territory	1	2	1
North West Territories	-	-	-
Nunavut	-	-	-

A breakdown of the number of Designated Places census subdivision components and polygons by province / territory are provided below for the DPL Parts cartographic boundary file:

Province / Territory	Designated place parts	Polygons	Designated place parts with more than one polygon
Canada	1 362	1 392	26
Newfoundland and Labrador	213	216	3
Prince Edward Island	-	-	-
Nova Scotia	62	62	0
New Brunswick	197	199	2
Quebec	78	78	0
Ontario	89*	91	2
Manitoba	52	59	5
Saskatchewan	159	164	5
Alberta	265	270	5
British Columbia	246*	251	3
Yukon Territory	1	2	1
North West Territories	-	-	-
Nunavut	-	-	-

Data quality

Spatial data quality elements provide information on the fitness-for-use of a spatial database by describing why, when and how the data are created, and how accurate the data are. The elements include an overview describing the purpose and usage, as well as specific quality elements reporting on the lineage, positional accuracy, attribute accuracy, logical consistency and completeness. This information is provided to users for all spatial data products disseminated for the census.

Lineage

Describes the history of the spatial data, including descriptions of the source material from which the data were derived, and the methods of derivation. It also contains the dates of the source material, and all transformations involved in producing the final digital files or map products.

Aggregating polygons from a layer of geographic information created all of the Cartographic Boundary Files. Please see Appendix F for details on this process. In addition to aggregating DPLs from the base layer, the Census Subdivision file was incorporated with the DPL file. The DPLuid was concatenated with the CSDuid and the resulting was dissolved to create the basic DPL_CSD file. The attributes for each DPL and census subdivision were then linked to the final file.

Positional accuracy

Refers to the absolute and relative accuracy of the positions of geographic features. Absolute accuracy is the closeness of the coordinate values in a dataset to values accepted as or being true. Relative accuracy is the closeness of the relative positions of features to their respective relative positions accepted as or being true. Descriptions of positional accuracy include the quality of the final file or product after all transformations.

The boundaries are derived from the National Geographic Base. The data in the National Geographic Base is stored in double precision. However, the positional accuracy of the features in the National Geographic Base varies. The data storage precision allows features that are next to each other on the ground to be placed in the correct position on the map, relative to each other, without overlap.

The positional accuracy of the Cartographic Boundary Files is based on the positional accuracy of the source material used in its production (the National Geographic Base, the National Atlas GeoBase hydrology Level 0 and the National Topographic DataBase). Please see Appendix G for more information on the roads in the National Geographic Base. The larger water bodies from the 1:50,000 and the 1:250,000 maps from the National Topographic Data Base were used to provide reference information within census metropolitan areas and census agglomerations. The National Atlas (GeoBase hydrology Level 0) hydrography was used outside the census metropolitan areas and census agglomerations. Some of the smaller inland water polygons were removed from the Cartographic Boundary Files. Please see Appendix F for more information on the production process.

Some vertices in the file were removed as a result of line generalization done (based on the Douglas-Peucker algorithm and using ARC/INFO® 8.1) with a weed tolerance of 0.1 metres.

Attribute accuracy

Refers to the accuracy of the quantitative and qualitative information attached to each feature (such as population for an urban area, street name, census subdivision name and code).

The attribute data associated with the polygons in the Cartographic Boundary Files were independently verified against the data in the Query Base and found to be accurate.

Logical consistency

Describes the fidelity of relationships encoded in the data structure of the digital spatial data.

Every polygon was verified to have a unique identifier for the DPL: the DPLuid. Every case where a polygon did not have a unique DPLuid was examined. Some polygons did not have unique DPLuid. All of these DPLs consisted of a set of polygons that were separated by water bodies. For example, two islands, each a polygon, may belong to the same DPL. The same applies for the DPL parts file in which each polygon was verified to have a unique DPL_CSDuid. Some polygons did not have unique DPL_CSDuids for the same above-mentioned cases.

Every DPLuid and DPL_CSDuid in the Designated Place and Designated Places parts Cartographic Boundary Files were verified to be in the Query Base as a DPLuid and DPL_CSDuid value for the 2001 Census.

The data set was tested to ensure that the size of the polygons was consistent with the geographic units being represented. Specifically, very small polygons and sliver polygons were examined. Slivers are defined here as very long, thin polygons.

The following criteria was used to detect slivers:

{ (perimeter x perimeter) / area > 1,000 } AND {area < 200,000 meters}

Consistency with other products

The positions of the boundary arcs are generally consistent with those of the Road Network Files and Skeletal Road Network Files. The arcs in the Road Network Files and Skeletal Road Network Files were simplified to remove unnecessary vertices in the straight-line segments (generalized with the option «pointremove»). It is possible for some arcs to differ slightly from those of the National Geographic Base (a few arcs could have been moved by 1 meter).

Hydrography was specially created for the Cartographic Boundary Files to enable thematic mapping at local and regional scales. The hydrography used in the province / territory layer in the Cartographic Boundary Files differs from that used in the Reference Maps. For this reason, minor differences may be noticable between the depiction of hydrography and boundaries.

The hydrography used in the Cartographic Boundary Files was created to be consistent with the roads in the road network files. However, boundary arcs in the Road Network Files (designated by ARC_GROUP of "BO") are those present in the National Geographic Base. This very detailed information, including boundary arcs that for legal reasons are present in the water, were left as they were depicted in the National Geographic Base. The detailed information was also considered preferable for geocoding with the BLOCKuid information in the Road Network Files. However, when mapping the Cartographic Boundary Files (or the Province / Territory Cartographic Boundary layer) with the road network files, users should consider not mapping the RNF boundary arcs (ARC_GROUP of "BO") if they do not want these to fall in the water.

The designated places and designated places census subdivision parts found in this file are consistent with those found in GeoSuite and GeoSearch. The land area for various geographic areas present in GeoSuite may not be consistent with that computed from the Cartographic Boundary Files. This is because the land / water areas in the Cartographic Boundary Files are based on hydrography that was specially generalized and created for thematic mapping.

Completeness

Refers to the degree to which geographic features, their attributes and their relationships are included or omitted in a dataset. It also includes information on selection criteria, definitions used, and other relevant mapping rules.

The number of designated places as well as their unique identifiers was verified against the information in the Query Base. Comparisons were also made with a set of boundary files derived independently from the national geographic base.

Technical specifications

Each Cartographic Boundary File consists of two layers of data. The boundaries of the standard geographic areas have been re-defined for thematic mapping purposes by integrating them with the shoreline. Supplementary files for the oceans, Great Lakes, St. Lawrence River, Greenland and bordering United States are available upon request. (Please see Appendix H for the technical specifications of supporting files)

File specifications

These are the standard formats in which 2001 Census digital spatial products will be available from Geography Division.

Software formats

All products available on CD-ROM for purchase containing digital boundaries and road network information will be available in the following formats:

- ARC/INFO® interchange format version 8.1
  ASCII export file
  File extension(s): .e00 (spatial and tabular data)
- MapInfo® interchange format version 6.0
  ASCII export files
  File extension(s): .MIF (graphic data), .MID (tabular data)

Installation instructions

Both the ARC/INFO® and MapInfo® are compressed in self-executable WinZip® files (file extension EXE). Users can uncompress these files by executing them in DOS, or selecting them in Windows® and double clicking on the file icon, or executing them in the RUN dialogue in Windows®.

The geographic area names in the Cartographic Boundary Files contain accented characters. These characters can be seen in UNIX and Windows® versions of ARC/INFO® and MapInfo®. (They ware tested on desktop versions of ARC/INFO® 8.1, MapInfo® 6.0 and MapInfo® 4.5. The accents were also visible in ARC/INFO® 8.01 in UNIX.) To preserve accents, ArcToolbox® is recommended for importing files into the desktop version of ARC/INFO® 8.1.

File names and sizes

File names are formatted in order to better indicate to the client the source of data, coverage, geographic area, language and file format of the data.

	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Canada (DPL)	gdpl000b02a_e	2.48	gdpl000b02m_e	1.45
Canada (DPL_CSD)	gdpp000b02a_e	2.27	gdpp000b02m_e	1.34

Geographic representation

- All files distributed by Geography Division are in the North American Datum of 1983 (NAD 83).
- The files are available in the geographic coordinate system (latitude / longitude).
- To make this file useful (i.e. to calculate distance) it must be projected.

Record layout and item description

Designated Places record layout:

The following table shows the format of the attributes contained on the boundary files.

Item Name	Width	Output	Type	Decimals
AREA[1]	8	18	F	5
PERIMETER[1]	8	18	F	5
<File Name># [1]	4	5	B	0
<File Name>-ID [1]	4	5	B	0
DPLname	70	70	C	-
DPLtype	3	3	C	-
DPLuid	6	6	C	-
PRuid	2	2	C	-

[1] Items included with ARC/INFO® Interchange files only

Item Description:

Item	Description
AREA	Area of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
PERIMETER	Perimeter of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
<File Name>#	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
<File Name>-ID	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
DPLname	the name of the designated place
DPLtype	a three-character field indicating the DPL type (see domain)
DPLuid	uniquely identifies a designated place (composed of 2-digit province code and 4-digit DPL code)
PRuid	uniquely identifies a province or territory

Designated Places census subdivision parts record layout:

The following table shows the format of the attributes contained on the boundary files.

Item Name	Width	Output	Type	Decimals
AREA[1]	8	18	F	5
PERIMETER[1]	8	18	F	5
<File Name># [1]	4	5	B	0
<File Name>-ID [1]	4	5	B	0
DPLname	70	70	C	-
DPLtype	3	3	C	-
DPL_CSDuid	11	11	C	-
PRuid	2	2	C	-
CSDname	70	70	C	-
CSDtype	3	3	C	-

[1] Items included with ARC/INFO® Interchange files only

Item Description:

Item	Description
AREA	Area of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
PERIMETER	Perimeter of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
<File Name>#	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
<File Name>-ID	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
DPLname	the name of the designated place
DPLtype	a three-character field indicating the DPL type (see domain)
DPL_CSDuid	uniquely identifies a designated place (composed of 2-digit province code, 2-digit CD code, 3-digit CSD code and 4-digit DPL code)
PRuid	uniquely identifies a province or territory
CSDname	the official name of the census subdivision
CSDtype	is the type of the census subdivision (see domain)

Domain

DPLtype is a three-character field indicating the Designated Place type.

Designated Place Types		
Values	Specifications	Province / Territory*
DPL	Designated Place	Newfoundland and Labrador
CFA	Class IV Area	Nova Scotia
LSD	Local Service District	New Brunswick
MDI	Municipalité dissoute	Quebec
DMU	Dissolved Municipailty	Ontario
LSB	Local Service Board	Ontario
NCM	Northern Community	Manitoba
OHM	Organized Hamlet	Saskatchewan
UNP	Unincorporated Place	Alberta, British Columbia
MET	Métis Settlement	Alberta
IST	Island Trust	British Columbia
SE	Aboriginal Settlement	Yukon

*Currently there are no designated places for Prince Edward Island, Northwest Territories and Nunavut.

15. Glossary

Adjusted Counts
Adjusted counts refer to previous census population and dwelling counts that have been adjusted (i.e., recompiled) to reflect current census boundaries (such as when a boundary change occurs between two censuses).

Block
A block is an area bounded on all sides by roads and / or boundaries of standard geographic areas. Blocks cover all the territory of Canada. The block is the smallest geographic area for which population and dwelling counts are disseminated.

Block-face
A block-face is one side of a street between two consecutive features intersecting that street. The features can be other streets, boundaries of standard geographic areas, or limits of map tiles.

Block-faces are used for generating block-face representative points, which in turn are used for geocoding and census data extraction when the street and address information is available.

Cartographic Boundary Files
Cartographic Boundary Files (CBF) contain boundaries of standard geographic areas, along with shorelines and lakes, at a level of detail appropriate for small-scale mapping.

Census Agricultural Region
Census agricultural regions (CAR) are composed of groups of adjacent census divisions. In Saskatchewan, census agricultural regions are made up of groups of adjacent census consolidated subdivisions, but these groups do not necessarily respect census division boundaries.

Census Consolidated Subdivision
A census consolidated subdivision (CCS) is a grouping of adjacent census subdivisions. Generally, the smaller, more urban census subdivisions (towns, villages, etc.) are combined with the surrounding larger, more rural census subdivision, in order to create a geographic level between the census subdivision and the census division.

Census Division
Census division (CD) is the general term for provincially legislated areas (such as county, *municipalité régionale de comté* and regional district) or their equivalents. Census divisions are intermediate geographic areas between the province level and the municipality (census subdivision).

Census Metropolitan Area and Census Agglomeration
A census metropolitan area (CMA) or a census agglomeration (CA) is formed by one or more adjacent municipalities centred on a large urban area (known as the **urban core**). The census population count of the urban core must be at least 10,000 to form a census agglomeration and at least 100,000 to form a census metropolitan area. To be included in the CMA or CA, other adjacent municipalities must have a high degree of integration with the central urban area, as measured by commuting flows derived from census place of work data.

If the population of the urban core of a CA declines below 10,000, the CA is retired. However, once an area becomes a CMA, it is retained as a CMA even if the population of its urban core

population declines below 100,000. The urban areas that are located in the CMA or CA but are not contiguous to the urban core are called the **urban fringe**. Rural areas in the CMA or CA are called the **rural fringe**.

When a CA has an urban core of at least 50,000 based on census counts, it is subdivided into **census tracts**. Census tracts are maintained for the CA even if the population of the urban core subsequently falls below 50,000. All CMAs are subdivided into census tracts.

Census Metropolitan Area and Census Agglomeration Influenced Zone
The census **m**etropolitan area and census agglomeration **i**nfluenced **z**one (MIZ) is a concept that geographically differentiates the area of Canada outside census metropolitan areas (CMAs) and census agglomerations (CAs). Census subdivisions outside CMAs and CAs are assigned to one of four categories according to the degree of influence (strong, moderate, weak or no influence) that the CMAs and / or CAs have on them.

Census subdivisions (CSDs) are assigned to a MIZ category based on the percentage of their resident employed labour force that has a place of work in the urban core(s) of CMAs or CAs. CSDs with the same degree of influence tend to be clustered. The zones they form around CMAs and CAs progress through the categories from "strong" to "no" influence as distance from the CMAs and CAs increases.

Census Subdivision
Census subdivision (CSD) is the general term for municipalities (as determined by provincial legislation) or areas deemed to be their equivalents (for example, Indian reserves, Indian settlements and unorganized territories) used for statistical reporting purposes.

Census Tract
Census tracts (CTs) are small, relatively stable geographic areas that usually have a population of 2,500 to 8,000. They are located in census metropolitan areas (CMAs) and in census agglomerations (CAs) with an urban core population of 50,000 or more in the previous census.

A committee of local specialists (for example, planners, educators and health and social workers) initially delineates CTs in conjunction with Statistics Canada. Once a CMA or CA has been subdivided into census tracts, the census tracts are maintained even if the urban core population subsequently declines below 50,000.

Coordinate System
A coordinate system is a reference system based on mathematical rules for specifying positions (locations) on the surface of the earth. The coordinate values can be spherical (latitude and longitude) or planar (such as the Universal Transverse Mercator).

The Cartographic Boundary Files, the Road Network Files and the representative points are disseminated in latitude / longitude coordinates.

Datum
A datum is a geodetic reference system that specifies the size and shape of the earth, and the base point from which the latitude and longitude of all other points on the earth's surface are referenced.

The spatial data disseminated for the 2001 Census are based on the North American Datum of 1983 (NAD83).

Designated Place
A designated place (DPL) is normally a small community or settlement that does not meet the criteria established by Statistics Canada to be a census subdivision (an area with municipal status) or an urban area.

Designated places are created by provinces and territories, in co-operation with Statistics Canada, to provide data for submunicipal areas.

Dissemination Area
The dissemination area (DA) is a small, relatively stable geographic unit composed of one or more blocks. It is the smallest standard geographic area for which all census data are disseminated. DAs cover all the territory of Canada.

Economic Region
An economic region (ER) is a grouping of complete **census divisions** (with one exception in Ontario) created as a standard geographic unit for analysis of regional economic activity.

Ecumene
Ecumene is a term used by geographers to mean inhabited land. It generally refers to land where people have made their permanent home, and to all work areas that are considered occupied and used for agricultural or any other economic purposes. Thus, there can be various types of ecumenes, each having its own unique characteristics (population ecumene, agricultural ecumene, industrial ecumene, etc.).

Enumeration Area
An enumeration area (EA) is the geographic area canvassed by one census representative. An EA is composed of one or more adjacent blocks. EAs cover all the territory of Canada.

Enumeration areas are only used for census data collection. The dissemination area (DA) replaces the EA as a basic unit for dissemination.

Federal Electoral District
A federal electoral district (FED) is an area represented by a member of the House of Commons. The federal electoral district boundaries used for the 2001 Census are based on the 1996 Representation Order.

Geocoding
Geocoding is the process of assigning geographic identifiers (codes) to map features and data records. The resulting geocodes permit data to be linked geographically.

Households and postal codes are linked to block-face representative points when the street and address information is available; otherwise, they are linked to block representative points.

Geographic Code
A geographic code is a unique number used to identify and access standard geographic areas for the purposes of data storage, retrieval and display.

Geographic Reference Date
The geographic reference date is a date determined by Statistics Canada for the purpose of finalizing the geographic framework for which census data will be collected, tabulated and reported. For the 2001 Census, the geographic reference date is January 1, 2001.

Land Area
Land area is the area in square kilometres of the land-based portions of standard geographic areas.

The land area measurements are unofficial and are provided for the sole purpose of calculating population density.

Locality
Locality (LOC) refers to the historical place names of former census subdivisions (municipalities), former designated places and former urban areas, as well as to the names of other entities, such as neighbourhoods, post offices, communities and unincorporated places.

Map Projection
A map projection is the process of transforming and representing positions from the earth's three-dimensional curved surface to a two-dimensional (flat) surface. The process is accomplished by a direct geometric projection or by a mathematically derived transformation.

The Lambert Conformal Conic map projection is widely used for general maps of Canada at small scales and is the most common map projection used at Statistics Canada.

National Geographic Base
The National Geographic Base (NGB) is a new database that contains roads and boundaries of standard geographic areas in one integrated layer with other physical and cultural features (such as hydrography, railroads and power transmission lines) stored as separate layers.

The NGB is an internal maintenance database that is not disseminated. It supports a wide range of census operations, such as geocoding, updating the road network and address ranges, supporting the block program and delineating the boundaries of standard geographic areas (including the automated delineation of enumeration areas, urban areas and dissemination areas). As well, the NGB is the source for generating many geography products for the 2001 Census, such as reference maps and Cartographic Boundary Files.

Place Name
Place name (PN) refers to the set of names that includes current census subdivisions (municipalities), current designated places and current urban areas, as well as the names of localities.

Population Density
Population density is the number of persons per square kilometre.

Postal Code
The postal code is a six-character code defined and maintained by Canada Post Corporation for the purpose of sorting and delivering mail.

Province or Territory
Province and territory refer to the major political units of Canada. From a statistical point of view, province and territory are basic areas for which data are tabulated. Canada is divided into ten provinces and three territories.

Reference Map
A reference map shows the location of the geographic areas for which census data are tabulated and disseminated. The maps display the boundaries, names and codes of standard geographic areas, as well as major cultural and physical features, such as roads, railroads, coastlines, rivers and lakes.

Representative Point
A representative point is a single point that represents a linear or areal feature. The point is centrally located along the linear feature or centrally within the areal feature.

Representative points are generated for block-faces, blocks, enumeration areas, dissemination areas, census subdivisions and designated places. The block-face and block representative points support the geocoding of households and postal codes.

Road Network Files
The Road Network Files (RNFs) provide national coverage of roads, province / territory boundaries and other visible features such as hydrography, as well as attribute information (for example, street names and address ranges for streets with assigned addresses). The RNFs replace the Street Network Files (SNFs), which were a similar product previously available only for the large urban centres of Canada.

Rural Area
Rural areas include all territory lying outside urban areas. Taken together, urban and rural areas cover all of Canada.

Rural population includes all population living in the rural fringes of census metropolitan areas (CMAs) and census agglomerations (CAs), as well as population living in rural areas outside CMAs and CAs.

Spatial Data Quality Elements
Spatial data quality elements provide information on the fitness-for-use of a spatial database by describing why, when and how the data are created, and how accurate the data are. The elements include an overview describing the purpose and usage, as well as specific quality elements reporting on the lineage, positional accuracy, attribute accuracy, logical consistency and completeness. This information is provided to users for all spatial data products disseminated for the census.

Standard Geographical Classification
The Standard Geographical Classification (SGC) is Statistics Canada's official classification for three types of geographic areas: **provinces** and **territories**, **census divisions** (CDs) and **census subdivisions** (CSDs). The SGC provides unique numeric identification (codes) for these hierarchically related geographic areas.

Statistical Area Classification
The Statistical Area Classification (SAC) groups census subdivisions according to whether they are a component of a census metropolitan area, a census agglomeration, a census metropolitan

area and census agglomeration influenced zone (strong MIZ, moderate MIZ, weak MIZ or no MIZ), or the territories (Northwest Territories, Yukon Territory and Nunavut). The SAC is used for data dissemination purposes.

Thematic Map
A thematic map shows the spatial distribution of one or more specific data themes for standard geographic areas. The map may be qualitative in nature (e.g., predominant farm types) or quantitative (e.g., percentage population change).

Urban Area
An urban area (UA) has a minimum population concentration of 1,000 persons and a population density of at least 400 persons per square kilometre, based on the current census population count. All territory outside urban areas is classified as rural. Taken together, urban and rural areas cover all of Canada.

Urban population includes all population living in the urban cores, secondary urban cores and urban fringes of census metropolitan areas (CMAs) and census agglomerations (CAs), as well as the population living in urban areas outside CMAs and CAs.

Urban Core, Urban Fringe and Rural Fringe
Urban core, urban fringe and rural fringe distinguish between central and peripheral urban and rural areas within a census metropolitan area (CMA) or census agglomeration (CA).

Urban core is a large urban area around which a CMA or a CA is delineated. The urban core must have a population (based on the previous census) of at least 100,000 persons in the case of a CMA, or between 10,000 and 99,999 persons in the case of a CA.

Urban fringe includes all small urban areas (with less than 10,000 population) that are located within a CMA or CA but are not contiguous with the urban core of the CMA or CA.

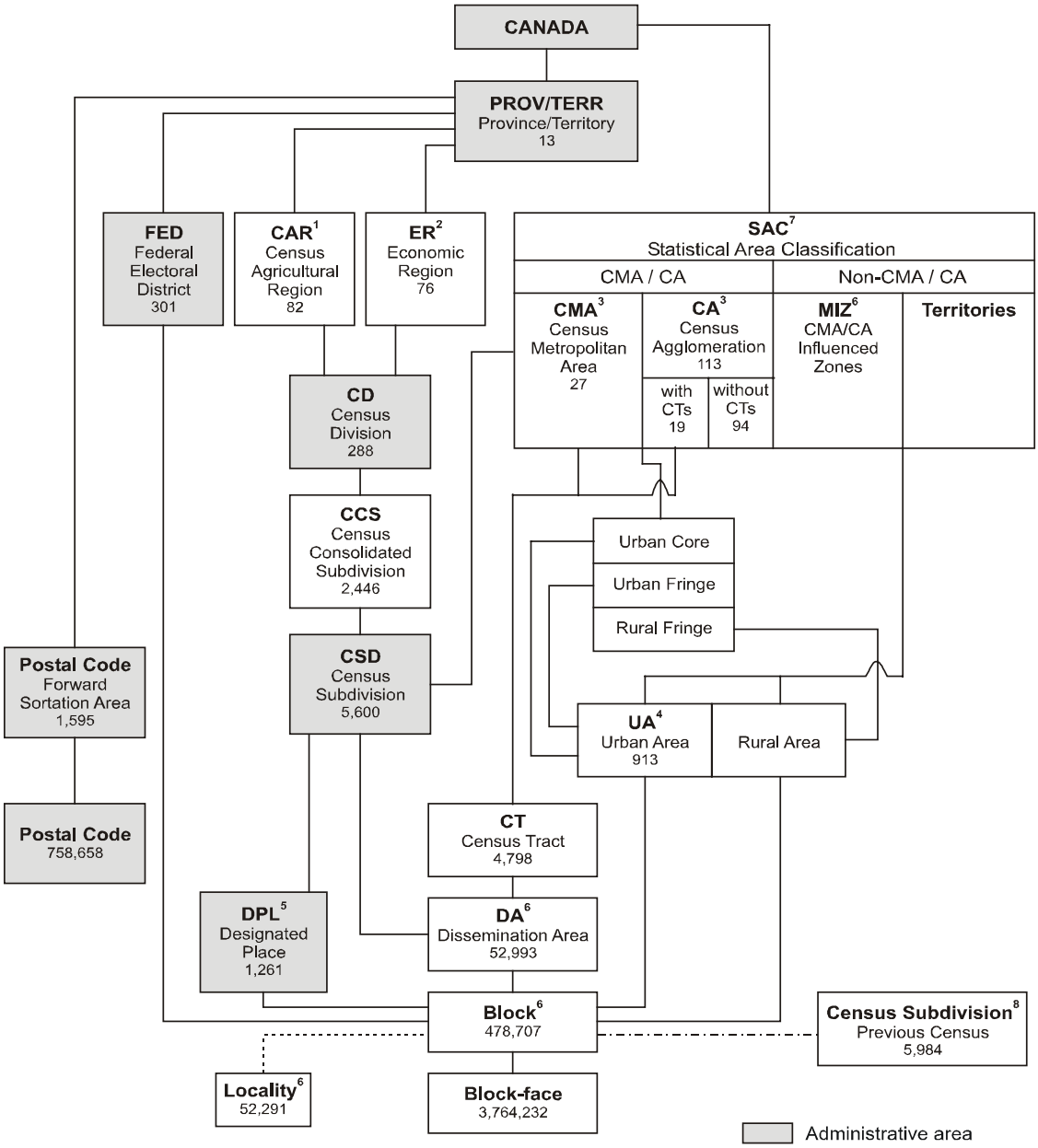
Rural fringe comprises all territory that is located within a CMA or CA but is not classified as an urban core or an urban fringe.

Urban Population Size Group
Urban population size group refers to the classification used in standard tabulations where **urban areas** are distributed according to the following predetermined size groups, based on the current census population.

1,000	–	2,499
2,500	–	4,999
5,000	–	9,999
10,000	–	24,999
25,000	–	49,999
50,000	–	99,999
100,000	–	249,999
250,000	–	499,999
500,000	–	999,999
1,000,000 and over		

Tabulations are not limited to these predetermined population size groups; the census database has the capability of tabulating data according to any user-defined population size group.

Appendix A: Hierarchy of Standard Geographic Units for Dissemination, 2001 Census



[1] Census agricultural regions in Saskatchewan are composed of census consolidated subdivisions.
[2] Economic regions in Ontario are composed of municipalities (census subdivisions).
[3] One CMA and four CAs cross provincial boundaries.
[4] Five UAs cross provincial boundaries.
[5] Designated places do not cover the total area of CSDs. Eighty-four DPLs cross CSD boundaries, of which 12 also cross CD boundaries.
[6] Census **m**etropolitan area and census agglomeration **i**nfluenced **z**ones (MIZ), dissemination area, block, and locality are new concepts for the 2001 Census.
[7] The Statistical Area Classification (SAC) is a new geographic classification that allocates each CSD according to whether it is a component of a CMA, CA, a census metropolitan area and census agglomeration influenced zone (MIZ), or the territories outside the CAs of Whitehorse and Yellowknife.
[8] For the 2001 Census only, a best fit linkage is created between the 1996 CSDs and 2001 blocks to facilitate historical data retrieval. See the definition of Census Subdivision – Previous Census.

Appendix B: Geographic Units by Province and Territory, 2001 Census

Geographic Unit	Canada 1996	Canada 2001	Nfld. Lab.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
Federal electoral district (1996 Representation Order)	295*	301	7	4	11	10	75	103	14	14	26	34	1	1	1
Economic region	74	76	4	1	5	5	17	11	8	6	8	8	1	1	1
Census agricultural region	78	82	3	3	5	4	14	5	12	20	8	8	–	–	–
Census division	288	288	10	3	18	15	99	49	23	18	19	28	1	2	3
Census consolidated subdivision	2,607	2,446	87	68	43	151	1,111	318	127	301	77	157	1	2	3
Census subdivision	–	5,600	381	113	98	275	1,476	586	298	1,002	452	816	35	37	31
1996 Census	5,984	–	381	113	110	283	1,599	947	298	970	467	713	35	68	N/A
Dissolutions (January 2, 1996 to January 1, 2001)	910	–	–	–	14	12	232	529	3	18	18	83	1	–	N/A
Incorporations (January 2, 1996 to January 1, 2001)	–	526	–	–	2	4	109	168	3	50	3	186	1	–	N/A
Designated place	828	1,261	182	–	59	172	78	81	51	158	260	219	1	–	–
Census metropolitan area	25	27	1	–	1	1	6	11	1	2	2	3	–	–	–
Census agglomeration	112	113	4	2	4	5	28	30	3	7	10	22	1	1	–
With census tracts	18	19	–	–	–	1	3	8	–	–	3	4	–	–	–
Without census tracts	94	94	4	2	4	4	25	22	3	7	7	18	1	1	–
Census tract	4,223	4,798	45	–	86	71	1,263	2,013	165	101	457	597	–	–	–
Urban area	929	913	36	7	39	34	229	258	42	65	108	93	1	3	3
Locality	N/A	52,291	2,428	964	3,920	3,445	12,448	10,889	2,339	3,868	3,466	7,699	362	173	290
Dissemination area	N/A	52,993	1,231	225	1,397	1,349	12,153	18,596	2,235	2,937	5,143	7,463	117	92	55
Enumeration area	49,361	42,851	1,204	225	1,337	1,216	9,133	14,753	1,805	2,697	4,129	6,088	117	92	55
Block	N/A	478,707	8,331	2,831	15,161	13,929	108,760	128,327	30,567	56,040	60,061	53,147	674	745	134
Block-face	817,734	3,764,232	80,162	19,854	168,840	136,311	865,600	955,847	200,569	377,776	435,604	499,365	10,644	12,304	1,356
Forward sortation area	1,477	1,595	33	7	74	110	398	518	64	47	147	188	3	3	3
Postal code	680,910	758,658	7,900	2,856	23,354	55,104	188,427	254,757	23,250	21,184	70,672	109,753	884	487	30

* Federal electoral districts (1987 Representation Order)

Note: Underlined numbers indicate that those census metropolitan areas, census agglomerations and urban areas crossing provincial boundaries are counted in both provinces.

Appendix C: Unique identifiers consistent with other Geography products

Unique Identifiers:

Unique identifiers are codes that uniquely identify a geographic area within Canada. Data from different files (but, for the same geographic area) can be joined or related based on the unique identifier. For example, the data in GeoSuite can be mapped on the CSD Cartographic Boundary File using the CSDuid as the field by which the two data sets can be related. Similarly, the BLOCKuid in the Road Network Files can be used to request data extractions as part of the Geocoding.

The following are the unique identifiers for Geographic Areas:

Geographic Area	Unique Identifier Code	Code Composition	Notes
Province / Territory	PRuid	2 digit province code	This is stored as the PR_CODE in the PR_QRY table in the query base
Federal Electoral District	FEDuid	(2 digit province code) + (3 digit federal electoral district code)	This is stored as the FED_UID in the FED_QRY table in the query base.
Census Metropolitan Area / Census Agglomeration	CMAuid	3 digit CMA / CA code Where there are no CMA / CA this code is NULL	This is derived from the MET_NMET_CODE in the MET_C_QRY table in the query base, where MET_NMET_CODE <=995
Census Tract	CTuid	(3 digit CMA / CA code) + (4 digit decimal point 2 digit CT Name) Where there are Census Tract Residuals this code is NULL	This is stored as the CT_UID in the CT_QRY table in the query base. Please note that on Eshelf the decimal is implied.
Urban Area	UAuid	4 digit Urban Area code Where there are Rural Residuals this code is NULL	This is stored as the UA_RA_CODE in the UA_C_QRY table in the query base.
Economic Region	ERuid	(2 digit province code) + (2 digit economic region code)	This is stored as the ER_UID in the ER_QRY table in the query base.
Census Division	CDuid	(2 digit province code) + (2 digit Census division code)	This is stored as the CD_UID in the CD_QRY table in the query base.
Census Subdivision	CSDuid	(2 digit province code) + (2 digit Census division code) + (3 digit Census subdivision code)	This is stored as the CSD_UID in the CSD_QRY table in the query base.
Census Agricultural Region	CARuid	(2 digit province code) + (2 digit Census Agricultural Region code)	This is not stored on the query base
Census Consolidated Subdivision	CCSuid	(2 digit province code) + (2 digit Census division	This is stored as the CCS_UID in the CCS_QRY table in the query

		code) + (3 digit Census consolidated subdivision code)	base.
Designated Place	DPLuid	(2 digit province code) + (4 digit designated place code) Where there are no Designated Places this code is NULL	This is stored as the DPL_UID in the DPL_QRY table in the query base.
Designated Place Census Subdivision Parts	DPL_CSDuid	(2 digit province code) + (2 digit Census Division code) + (3 digit Census Subdivision code)+ (4 digit designated place code) Where there are no Designated Places this code is NULL	This is stored as the DPL_CSD_UID in the DPL_CSD_QRY table in the query base.
Dissemination Area	DAuid	(2 digit province code) + (2 digit Census division code) + (4 digit dissemination area code)	This is stored as the DA_UID in the DA_QRY table in the query base.
Block Unique Identifier (Dissemination)	BLOCKuid	(first 4 digits of the CSDUID) + (4 digit DACODE) + (last 2 digits of the CBCODE)	This is a derived variable from the CSDUID, DACODE and CBCODE on the road_geo.pat. This is available in the CB_QRY table in the query base and is called CB_DISS_UID.
Arc Unique Identifier	ARC_ID	10 digit arc code	This is stored as the RB_UID on the road_geo.aat
Polygon Unique Identifier	POLY_ID	10 digit polygon code	This is stored as the BB_UID on the road_geo.pat

Appendix D: Spatial file naming conventions

For the 2001 Census, spatial products disseminated to clients will have file names harmonized to the Spatial File Naming Convention. The File geography, file type, language and software type and date stamp will be imbedded within the name. Standardizing the names of the files should facilitate the storage of compressed files, all having the extension *.exe.

These file-naming conventions are based primarily on the naming conventions used for 1996 DCF / DBF. The naming conventions were expanded to include Road Network Files, Skeletal Road Network Files, population **ecumene** and other boundary files. The naming conventions were also expanded to include the dissemination year of the file to allow for versioning, as well as indicate the file format.

Each file name is 13 characters in length, which meets the requirements of ARC/INFO®'s and MapInfo®'s limitations for file name sizes. All alphabetic characters are in lower case to maintain consistency.

First Character: geographic representation of file
- g if coordinate system is Latitude / Longitude
- l if projection is Lambert Conformal Conic

Next three characters: primary geographic boundary of file

Geographic Area (CBF) / Product	English File	French file
National / Provincial	pr_	pr_
Federal Electoral District	fed	cef
Economic Region	er_	re_
Census Division	cd_	dr_
Census Subdivision	csd	sdr
Census Agricultural Region	car	rar
Consolidated Census Subdivision	ccs	sru
Census Metropolitan Area / Census Agglomeration	cma	rmr
Census Tract	ct_	sr_
Urban Area	ua_	ru_
Designated Places	dpl	ld_
Designated Places with CSD parts	dpp	ldp
Dissemination Area	da_	ad_
Population Ecumene	ecu	ecu
Agriculture Ecumene	eca	eca
Road Network File	rnf	frr
Skeletal Road Network File	srn	fsr
Supporting Hydrography: interior lakes and double line rivers	hy_	hy_
Great Lakes	gl_	gl_
St. Lawrence river and gulf	sl_	sl_
Altantic Ocean with St-Pierre - Miquelon	atl	atl
Arctic Ocean	arc	arc

Pacific Ocean	pac	pac
Bordering continental US and Alaska	usa	eu_
Greenland	grl	grl

Next three Numbers: **geographic code** of coverage

If National coverage	**Else if provincial cut**		**Else if cut by CMA / CA**	
000	010	Newfoundland and Labrador	001	St. John's
	011	Prince Edward Island	.	
	012	Nova Scotia	.	
	013	New Brunswick	.	
	024	Québec	505	Ottawa-Hull
	035	Ontario	(etc.)	
	046	Manitoba		
	047	Saskatchewan		
	048	Alberta		
	059	British Columbia		
	060	Yukon		
	061	Northwest Territories		
	062	Nunavut		

Next character: file type (based on 1996 codes)

a if digital boundary file (for Dissemination Warehouse only) (DBF in 1996)
b if Cartographic Boundary File, detailed coverage for large-scale mapping
d if Digital Boundary File without shoreline
e Ecumene
f Cartographic Boundary File , generalized for desktop mapping, based on the file in GeoGratis site
h Additional Cartographic International Boundary coverage and Hydrographic Coverage of Great lakes, St. Lawrence River and surrounding ocean
r Road Network Files (RNF and SRNF)

Following two numbers: dissemination year (date stamp for versioning)

01 if disseminated in 2001
02 if disseminated in 2002
03 if disseminated in 2003
etc.

Next character: file format

a ARC/INFO® ArcGIS interchange file (e00)
m MapInfo® interchange file (mid & mif)

Final two characters: language

_e English
_f French

Examples of the use of the File Naming Conventions

Ex. 1:	CSD cartographic boundary file for Ontario with English attributes in MapInfo® interchange format	gcsd035b02m_e.exe ghy_035h02m_e.exe ggl_000h02m_e.exe gsl_000h02m_e.exe gusa000h02m.e.exe	Boundary file for Ontario Interior lakes/rivers file for Ontario Great Lakes file St. Lawrence file Bordering US boundary file
Ex. 2:	CT cartographic boundary file for Ottawa-Hull with French attributes in ARC/INFO® interchange format	gsr_505b02a_f.exe ghy_505h02a_f.exe	Boundary layer for Ottawa CMA Interior lakes/rivers layer for Ottawa CMA
Ex. 3:	Road Netowork File for St. John's, NF with English attributes in MapInfo® interchange format	grnf001r02m_e.exe ghy_001h02m_e.exe galt000h02m_e.exe	Road file Interior lakes/rivers file for St. John's CMA Atlantic Ocean file

Appendix E: Geographic units by CMA and CA

Geographic Area	Census Subdivisions	Census Tracts	Dissemination Areas[2]
Canada	5 600	4 798	52 993
Newfoundland and Labrador	381	45	1 231
St. John's (CMA)	13	45	258
Prince Edward Island	113		225
Nova Scotia	98	86	1 397
Halifax (CMA)	4	86	561
New Brunswick	275	71	1 349
Moncton (CA)	13	25	208
Saint John (CMA)	17	46	205
Quebec	1 476	1 263	12 153
Chicoutimi-Jonquière (CMA)	10	36	282
Drummondville (CA)	6	15	103
Granby (CA)	3	17	72
Montréal (CMA)	109	862	5 871
Québec (CMA)	45	165	1 136
Saint-Jean-sur-Richelieu (CA)	5	35	97
Sherbrooke (CMA)	15	39	236
Trois-Rivières (CMA)	10	37	240
Ontario	586	2 013	18 596
Barrie (CA)	3	28	190
Belleville (CA)	2	33	150
Brantford (CA)	1	19	155
Greater Sudbury (CMA)	3	42	241
Guelph (CA)	2	23	179
Hamilton (CMA)	3	172	1 110
Kingston (CMA)	4	40	239
Kitchener (CMA)	5	91	670
London (CMA)	7	101	711
North Bay (CA)	5	21	115
Oshawa (CMA)	3	68	475
Ottawa-Hull (CMA)	13	237	1 711
Peterborough (CA)	6	25	173
Sarnia (CA)	4	24	165
Sault Ste. Marie (CA)	6	23	160
St. Catharines-Niagara (CMA)	10	91	680
Thunder Bay (CMA)	8	33	236
Toronto (CMA)	24	932	7 047
Windsor (CMA)	5	67	475
Manitoba	298	165	2 235
Winnipeg (CMA)	11	165	1 208
Saskatchewan	1 002	101	2 937
Regina (CMA)	17	50	367

[2] Please see Appendix I.

Saskatoon (CMA)	24	51	393
Alberta	452	457	5 143
Calgary (CMA)	9	193	1 460
Edmonton (CMA)	35	211	1 395
Lethbridge (CA)	1	21	119
Medicine Hat (CA)	3	16	118
Red Deer (CA)	1	16	114
British Columbia	816	597	7 463
Abbotsford (CMA)	5	35	213
Kamloops (CA)	8	26	159
Kelowna (CA)	9	35	244
Nanaimo (CA)	9	19	127
Prince George (CA)	6	27	165
Vancouver (CMA)	39	387	3 333
Victoria (CMA)	23	68	566
Yukon	35		117
Northwest Territories	37		92
Nunavut	31		55

Appendix F: Lineage

The following steps were taken to create the Cartographic Boundary Files:

Step 1 Creation of the hydrography layer

The hydrography layer was created by integrating National Atlas (GeoBase hydrology Level 0) hydrography outside of census metropolitan areas and census agglomerations and NTDB 1:50,000 and 1:250,000 scale hydrography within census metropolitan areas and census agglomerations. No linear features are included in this layer – the layer consists only of polygons. Canals and other man-made hydrographic features are not included in the inland lakes and double line rivers file.

In census metropolitan area and census agglomeration areas, all polygons less than 100,000 m^2 were removed. From the National Atlas hydrography outside of census metropolitan area and census agglomeration regions, all polygons less than 4,000,000 m^2 were removed.

Smaller water polygons were also removed in high-density areas of the hydrographic coverage, such as the Canadian Shield. Only the detail of the hydrography considered necessary to depict the boundaries was maintained in the hydrography layer. Large double line rivers meeting the oceans were closed off to form interior water. The interior lakes and double line rivers were then extracted to form a separate hydrographic layer and shoreline layers.

Step 2 Creation of the basic boundary layer

A basic boundary layer (without hydrography) was created from the National Geographic Base. This digital file consisted of polygons with identification codes for dissemination areas, designated places, urban areas and federal electoral districts. These four identification codes were chosen because all of the Cartographic Boundary Files could be created by aggregation the dissemination area, designated place, urban area or federal electoral district polygons.

Step 3 Creation of the basic boundary layer with shoreline

Boundaries of the basic boundary layer were integrated with the shoreline layer to create the basic boundary layer with shoreline for the Cartographic Boundary Files. In this layer, the boundaries of standard geographic areas were re-defined using the shoreline. This was done to enable users of the boundary files to map data with a realistic outline.

The boundaries in the base layer were cartographically generalized to reduce the size of the files. The arcs were generalized in order to remove unwanted vertices. The only vertices removed were on straight line arcs between nodes. The generalization was performed with a weed tolerance of 0.1 metres. The generalization (based on the Douglas-Peucker algorithm using ARC/INFO® 8.1) reduced the size of the file considerably. A few arcs could have moved about 1 metre because of editing to the Road Network Files.

This layer was verified to ensure all the polygons necessary to distinguish dissemination areas, designated places and federal electoral districts were present in the layer. The verification was done against the boundary information on the National Geographic Base as well as information held in the ORACLE tables of the Query Base.

The final file was then verified against the Road Network File to ensure that road arcs do not fall into water bodies. Where discrepancies were found between road and water, the

hydrography was corrected. The hydrography to support the road file was integrated with the provincial boundary file to meet the MapInfo® limitation of 1,000,000 vertices per polygon.

Step 4: Creation of the boundaries for the Cartographic Boundary Files

Individual boundary files were created by aggregating polygons in the ***Basic Boundary Layer with Shoreline.*** Aggregating polygons that formed individual dissemination areas created dissemination area boundary files. Any boundaries that were not needed to distinguish dissemination areas were removed from the file. The designated places boundary files and the federal electoral district boundary files were also created in the same way from the Basic Boundary Layer with Shoreline.

Aggregating polygons from the dissemination area boundary files created all other boundary files.

The following diagrams illustrate the process for aggregating dissemination area boundary polygons to the other geographic areas. In this example, dissemination areas are aggregated to create census tracts (CTs).

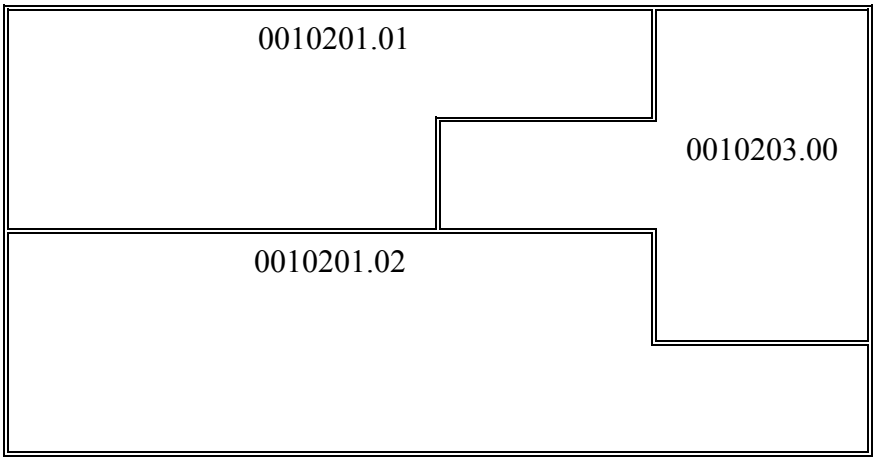
This first diagram depicts a portion of the Dissemination Area Cartographic Boundary File. Each polygon represents one dissemination area with its unique DA code assigned to the appropriate polygon:

10503001	10503002	10503003	10503004
10503008	10503007	10503006	10503005
10503009	10503010	10503011	10503012
10503016	10503015	10503014	10503013

Using the DAuid as a link to the Query Base, the appropriate CTuid is identified and assigned to each dissemination area polygon. The diagram below shows the enumeration area polygons with the appropriate CTuid below the DAuid.

10503001 0010201.01	10503002 0010201.01	10503003 0010201.01	10503004 0010203.00
10503008 0010201.01	10503007 0010201.01	10503006 0010203.00	10503005 0010203.00
10503009 0010201.02	10503010 0010201.02	10503011 0010201.02	10503012 0010203.00
10503016 0010201.02	10503015 0010201.02	10503014 0010201.02	10503013 0010201.02

The dissemination area boundaries common to neighboring dissemination areas within the same census tract are "dissolved" or eliminated. The resulting census tract boundary file is depicted below.



This same procedure was used to produce the Cartographic Boundary Files for the census subdivisions. That is, aggregating the dissemination area polygons created census subdivisions. The Province / Territory, Census Division, Census Consolidated Subdivision, Economic Region, Census Metropolitan area and Census Agglomeration boundary files were created by aggregating the Census Subdivision Cartographic Boundary Files in a similar fashion.

A slightly different process was used for creating the Designated Places Parts Cartographic Boundary File and the Urban Area boundary file. The processes for creating these are described in sections 14 and 13 respectively.

Step 5: Attribute information for the Cartographic Boundary Files

Additional information such as the name of each boundary unit was included in the boundary files. This information was derived from the Query Base. For example, for the Designated Places boundary files, the DPL name and the DPL Type were included as attributes of the DPL polygons.

The files were transformed from Lambert Conformal Conic projection into latitude / longitude coordinates.

Finally, the files were verified, translated into French and English versions and appropriately labeled.

Appendix G: Positional accuracy of the road network on the National Geographic Base

Geographic area boundaries were created on the National Geographic Base based on the road network information. Polygon attributes for geographic areas were updated for the 2001 census on the National Geographic Base road network layer. The geographic area boundaries were based on maps and other information from the census data collection processes or were created automatically by a computer program called Geographic Area Delineation System (GArDS)[3].

The positional accuracy of the Cartographic Boundary File is similar to that of the National Geographic Base. Arcs in the Cartographic Boundary File may be shifted by about a meter as a result of editing. The Cartographic Boundary Files were checked for topological errors including collapsed polygons. Any errors found were corrected.

Roads on the National Geographic Base

The positional accuracy of roads on the National Geographic Base varies with the source materials used during creation of the base. An attempt was made to geometrically adjust all roads such that they were in the same position as roads on the NTDB (1:50 000 and 1:250 000) or DCW, which were used for reference purposes. It is therefore expected that these geometrically matched arcs will have a positional accuracy similar to the corresponding reference data used during creation of the database. It should be noted that the reference source selected for different geographic areas depended on a variety of factors such as population size, geographic location (urban or rural) and the availability of NTDB / DCW data in Elections Canada / Statistics Canada holdings and was done on a NTS tile-by-tile basis. For example, in major urban centres 1:50 000 NTDB data was generally used as the reference data. As a result, in these areas, roads that were geometrically matched will have a positional accuracy similar to roads on 1:50 000 NTDB data. In areas that used 1:250 000 NTDB and DCW reference data the positional accuracy of roads are approximately that of the source data.

The positional accuracy of arcs that could not be matched because they were not present on the reference data is, however, completely unknown. These arcs were digitized from paper maps annotated by field staff. Although highly valuable and accurate in their attribute information and their relative position in relation to other features, the absolute positional accuracy of these roads is of unknown quality.

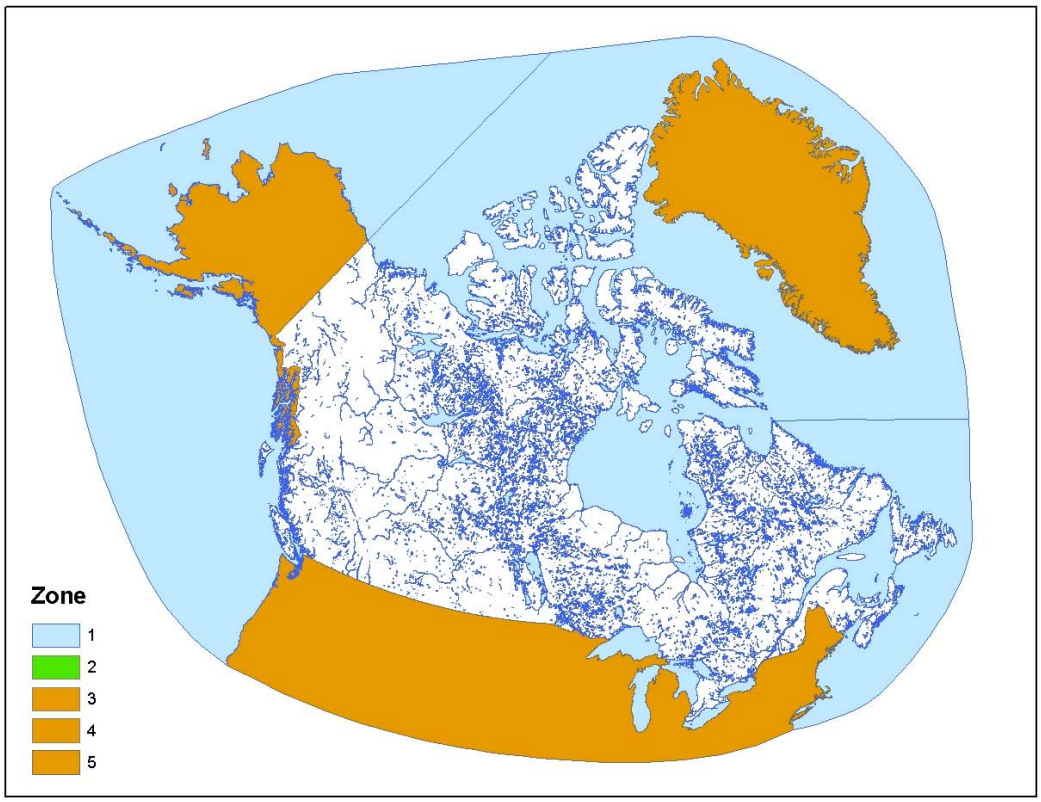
Other corrections have been made to the National Geographic Base from updated map sheets supplied by local participants for Census and Electoral programs. The positional accuracy of these updates is also of unknown quality. In addition to federal, provincial, and municipal government sources, portions of the National Geographic Base may contain information obtained in part from maps and other materials prepared by private companies. Thus, the National Geographic Base is **not** suitable for high-precision measurement applications such as engineering problems, property transfers, or other uses that might require highly accurate measurements of the earth's surface.

[3] GArDS aggregates small geographic areas (in this case, blocks) according to a set of delineating or design criteria to produce a set of desired geographic areas. The design criteria are assigned penalty weights. The solution with the lowest total penalty weight is accepted, which is an aggregate of the penalty weights of all the combined criteria for all geographic areas.

Quality controls were employed throughout the production process to ensure boundaries were in their correct position relative to the roads on the base.

Appendix H: Supplementary hydrography coverage

The supplementary hydrography coverages are provided to allow for the mapping of interior water, oceans, Great Lakes, St. Lawrence River and land outside the Canadian land mass. These coverages contain some of the oceans surrounding Canada as well as the parts of the United States of America, part of Greenland and the islands of St-Pierre and Miquelon. These hydrography coverages would enable the shading of land and water appropriately. The following diagram illustrates the extent of the supplementary hydrography (surrounding United States, Greenland, Atlantic, Arctic and Pacific Oceans, Great Lakes, St. Lawrence River and interior water layers):



Record layout and item description

Supplementary interior hydrography record layout:

Item Name	Width	Output	Type	Decimals
AREA[1]	8	18	F	5
PERIMETER[1]	8	18	F	5
<File name> # [1]	4	5	B	0
<File name>-ID [1]	4	5	B	0
PRuid	2	2	C	0
ZONE	1	1	I	-

[1] Items included with ARC/INFO® Export files only.

Item Description

Item	Description
AREA	Area of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
PERIMETER	Perimeter of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
<File name> #	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
<File name>-ID	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
PRuid	uniquely identifies a province or territory
ZONE	value of "1" for water "0" for Canada (land), "3" for surrounding continental United States, "4" for France (St-Pierre-Miquelon) and "5" for Greenland.

File names and sizes for interior water: interior lakes and doubles rivers feature
File names are formatted in order to better indicate to the client the source of data, coverage, geographic area, language and file format of the data.

Province / Territory and tracted CMAs / CAs	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Canada – CT coverage	gct_000h02a_e	9.37	gct_000h02m_e	5.78
Canada – CMA / CA coverage	gcma000h02a_e	15.74	gcma000h02m_e	9.45
Canada – DPL / DPL parts coverage	gdpl000h02a_e	0.65	gdpl000h02m_e	0.31
Canada – UA coverage	gua_000h02a_e	3.01	gua_000h02m_e	1.80
Canada – full coverage	ghy_000h02a_e	33.42	ghy_000h02m_e	20.20
Newfoundland and Labrador	ghy_010h02a_e	1.26	ghy_010h02m_e	0.75
Newfoundland and Labrador - CT	gct_010h02a_e	0.20	gct_010h02m_e	0.14
St. John's (CMA)	ghy_001h02a_e	0.20	ghy_001h02m_e	0.14
Prince Edward Island	ghy_011h02a_e	0.08	ghy_011h02m_e	0.07
Nova Scotia	ghy_012h02a_e	1.66	ghy_012h02m_e	0.99
Nova Scotia - CT	gct_012h02a_e	1.16	gct_012h02m_e	0.69
Halifax (CMA)	ghy_205h02a_e	1.16	ghy_205h02m_e	0.69
New Brunswick	ghy_013h02a_e	1.20	ghy_013h02m_e	0.78
New Brunswick - CT	gct_013h02a_e	0.60	gct_013h02m_e	0.40
Moncton (CA)	ghy_305h02a_e	0.16	ghy_305h02m_e	0.12
Saint John (CMA)	ghy_310h02a_e	0.51	ghy_310h02m_e	0.34
Quebec	ghy_024h02a_e	8.28	ghy_024h02m_e	5.18
Quebec - CT	gct_024h02a_e	0.60	gct_024h02m_e	1.23
Chicoutimi – Jonquière (CMA)	ghy_408h02a_e	0.39	ghy_408h02m_e	0.26
Drummondville (CA)	ghy_447h02a_e	0.10	ghy_447h02m_e	0.08
Granby (CA)	ghy_450h02a_e	0.10	ghy_450h02m_e	0.08
Montréal (CMA)	ghy_462h02a_e	0.56	ghy_462h02m_e	0.47
Québec (CMA)	ghy_421h02a_e	0.37	ghy_421h02m_e	0.25
Saint-Jean-sur-Richelieu (CA)	ghy_459h02a_e	0.08	ghy_459h02m_e	0.08
Sherbrooke (CMA)	ghy_433h02a_e	0.09	ghy_433h02m_e	0.08
Trois-Rivières (CMA)	ghy_442h02a_e	0.16	ghy_442h02m_e	0.12
Ontario	ghy_035h02a_e	8.20	ghy_035h02m_e	4.75

Province / Territory and tracted CMAs / CAs	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Ontario - CT	gct_035h02a_e	3.30	gct_035h02m_e	2.02
Barrie (CA)	ghy_568h02a_e	0.11	ghy_568h02m_e	0.09
Belleville (CA)	ghy_522h02a_e	0.17	ghy_522h02m_e	0.13
Brantford (CA)	ghy_543h02a_e	0.08	ghy_543h02m_e	0.07
Greater Sudbury (CMA)	ghy_580h02a_e	0.66	ghy_580h02m_e	0.43
Guelph (CA)	ghy_550h02a_e	0.10	ghy_550h02m_e	0.09
Hamilton (CMA)	ghy_537h02a_e	0.14	ghy_537h02m_e	0.10
Kingston (CMA)	ghy_521h02a_e	0.78	ghy_521h02m_e	0.49
Kitchener (CMA)	ghy_541h02a_e	0.22	ghy_541h02m_e	0.15
London (CMA)	ghy_555h02a_e	0.18	ghy_555h02m_e	0.13
North Bay (CA)	ghy_575h02a_e	0.26	ghy_575h02m_e	0.17
Oshawa (CMA)	ghy_532h02a_e	0.08	ghy_532h02m_e	0.07
Ottawa – Hull (CMA)	ghy_505h02a_e	0.34	ghy_505h02m_e	0.23
Peterborough (CA)	ghy_529h02a_e	0.29	ghy_529h02m_e	0.20
Sarnia (CA)	ghy_562h02a_e	0.11	ghy_562h02m_e	0.09
Sault Ste. Marie (CA)	ghy_590h02a_e	0.10	ghy_590h02m_e	0.08
St. Catharines – Niagara (CMA)	ghy_539h02a_e	0.16	ghy_539h02m_e	0.12
Thunder Bay (CMA)	ghy_595h02a_e	0.18	ghy_595h02m_e	0.13
Toronto (CMA)	ghy_535h02a_e	0.45	ghy_535h02m_e	0.30
Windsor (CMA)	ghy_559h02a_e	0.08	ghy_559h02m_e	0.07
Manitoba	ghy_046h02a_e	2.01	ghy_046h02m_e	1.29
Manitoba - CT	gct_046h02a_e	0.35	gct_046h02m_e	0.28
Winnipeg (CMA)	ghy_602h02a_e	0.36	ghy_602h02m_e	0.28
Saskatchewan	ghy_047h02a_e	1.81	ghy_047h02m_e	1.10
Saskatchewan - CT	gct_047h02a_e	0.54	gct_047h02m_e	0.34
Regina (CMA)	ghy_705h02a_e	0.20	ghy_705h02m_e	0.14
Saskatoon (CMA)	ghy_725h02a_e	0.41	ghy_725h02m_e	0.26
Alberta	ghy_048h02a_e	1.57	ghy_048h02m_e	0.93
Alberta - CT	gct_048h02a_e	0.85	gct_048h02m_e	0.51
Calgary (CMA)	ghy_825h02a_e	0.29	ghy_825h02m_e	0.19
Edmonton (CMA)	ghy_835h02a_e	0.42	ghy_835h02m_e	0.26
Lethbridge (CA)	ghy_810h02a_e	0.08	ghy_810h02m_e	0.07
Medicine Hat (CA)	ghy_805h02a_e	0.26	ghy_805h02m_e	0.17
Red Deer (CA)	ghy_830h02a_e	0.07	ghy_830h02m_e	0.06
British Columbia	ghy_059h02a_e	3.49	ghy_059h02m_e	2.10
British Columbia - CT	gct_059h02a_e	1.08	gct_059h02m_e	0.67
Abbotsford (CMA)	ghy_932h02a_e	0.13	ghy_932h02m_e	0.10
Kamloops (CA)	ghy_925h02a_e	0.32	ghy_925h02m_e	0.21
Kelowna (CA)	ghy_915h02a_e	0.20	ghy_915h02m_e	0.14
Nanaimo (CA)	ghy_938h02a_e	0.12	ghy_938h02m_e	0.09
Prince George (CA)	ghy_970h02a_e	0.35	ghy_970h02m_e	0.23
Vancouver (CMA)	ghy_933h02a_e	0.26	ghy_933h02m_e	0.19
Victoria (CMA)	ghy_935h02a_e	0.08	ghy_935h02m_e	0.07
Yukon Territory	ghy_060h02a_e	0.24	ghy_060h02m_e	0.16
North West Territories	ghy_061h02a_e	1.81	ghy_061h02m_e	1.07
Nunavut	ghy_062h02a_e	2.52	ghy_062h02m_e	1.50

Record layout and item description

Supplementary hydrography coverage record layout:

Item Name	Width	Output	Type	Decimals
AREA[1]	8	18	F	5
PERIMETER[1]	8	18	F	5
<File name> # [1]	4	5	B	0
<File name>-ID [1]	4	5	B	0
ZONE	1	1	I	-

[1] Items included with ARC/INFO® Export files only.

Item Description

Item	Description
AREA	Area of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
PERIMETER	Perimeter of the polygon - maintained by ARC/INFO® (item not included in MapInfo® files)
<File name> #	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
<File name>-ID	maintained by ARC/INFO® for internal processing (item not included in MapInfo® files)
ZONE	value of "1" for water "0" for Canada (land), "3" for surrounding continental United States, "4" for France (St-Pierre-Miquelon) and "5" for Greenland.

File names and sizes for surrounding (extra) files:

File names are formatted in order to better indicate to the client the source of data, coverage, geographic area, language and file format of the data.

	ARC/INFO®		MapInfo®	
	File name	File size (MB)	File name	File size (MB)
Great Lakes	ggl_000h02a_e	2.57	ggl_000h02m_e	1.57
St. Lawrence river and gulf	gsl_000h02a_e	1.95	gsl_000h02m_e	1.19
Altantic Ocean with St-Pierre - Miquelon	gatl000h02a_e	2.13	gatl000h02m_e	1.71
Arctic Ocean	garc000h02a_e	3.31	garc000h02m_e	2.14
Pacific Ocean	gpac000h02a_e	2.06	gpac000h02m_e	1.23
Bordering continental United States and Alaska	gusa000h02a_e	1.56	gusa000h02m_e	0.93
Greenland	ggrl000h02a_e	0.18	ggrl000h02m_e	0.14

Appendix I: Notes on the Dissemination Area Cartographic Boundary File

Dissemination Areas not included on DA CBF: zero population and land area

Some dissemination areas with no associated population and no land area were not included in the Cartographic Boundary File. These dissemination areas were created because the intersection of higher level boundaries necessitating the creation of a dissemination area. The following dissemination areas have no associated population or land area:

10010366	10040064	13150095	59150949	59170448	59190128
10010368	11030048	35510031	59150950	59190082	59210039
10040059	13150035	35510052	59152771	59190127	59210040
59290077					

Dissemination Areas not included on DA CBF: zero population and minimal land area

Other DAs with no population and having minimal land area are not found on the DA CBF product. These dissemination areas have land area of less than 10 square kilometers according to the Query Base. The following is a list these dissemination areas:

10010190	10080106	35510006	59152772	59170026	59190111
10010367	12170001	35510012	59152773	59170447	59210156
10010370	13020033	35570241	59153337	59170529	59250106
10010373	13150036	35580247	59170004	59170540	59250109
10040038	35070090	35580284	59170015	59190083	59270027
59290062					

Land-based DAs associated with Ships and Oil Rigs

There are Dissemination Areas which were equivalent to Enumeration Areas which are exclusively ships or oil rigs. They have zero land area. Those having population were included on the CBF, while those not having population were left out of the product. Some Ship and Oil Rig Enumeration Areas are a part of a larger DA having land area, and thus are not exclusively ships or oil rigs but are listed here.

Land based dissemination areas to which some Ships or Oil Rigs census data are assigned:

10010191	12090356	24661919	35200834	35570188
10010294	13010055	24661920	35240430	35580315
10010301	13010103	35060239	35260569	59153181
12090355	24230875	35200832	35570139	59170312

DAs associated with Ships and Oil Rigs

The following are Ship and Oil Rig dissemination areas on the dissemination area Cartographic Boundary File:

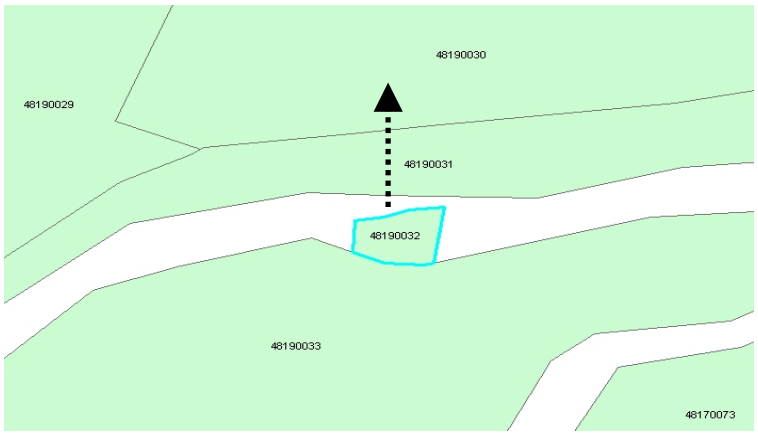
10010369	12040024	12090554	12170139	35280150

10010481	12090546	12090555	24010017	35400046
10030036	12090548	12090556	24090034	35410001
11020113	12090549	12090557	24950024	35420052
11020114	12090550	12090558	35070028	35430534
12010028	12090551	12090559	35140093	35430535
12010029	12090552	12090560	35280140	35490072
12040023	12090553	12140038	35280149	59430056
59470051				

Note the following DAs

The following DA is attributed to an oil rig, however it has a small amount of land area attributed to it because of small off-shore islands: 10010376

One DA, which is a known boundary error on the National Geographic Base and DA Cartographic Boundary File. DA 48190032, Peace River Correctional Institution, is incorrectly located in the Peace River and should be on the north shore within DA 48190030 (see below).



Appendix J: Notes on Designated Places and Designated Places Census Subdivision parts Cartographic Boundary Files

One DPL is incorrectly represented on the DPL boundary file (Red Sucker Lake, DPLuid 460042). The two islands on which this DPL is located are missing on the hydrology layer. Consequently, DPL 460042 has zero land area.

Some DPL_CSDs are located fully in water or have land area of less than 1 km^2 according to the Query Base. These are created by the intersection of CSD boundaries and DPL boundaries. These do not have any associated population data and they are not found on the DPL_CSD CBF. The following is a list these DPL_CSD parts:

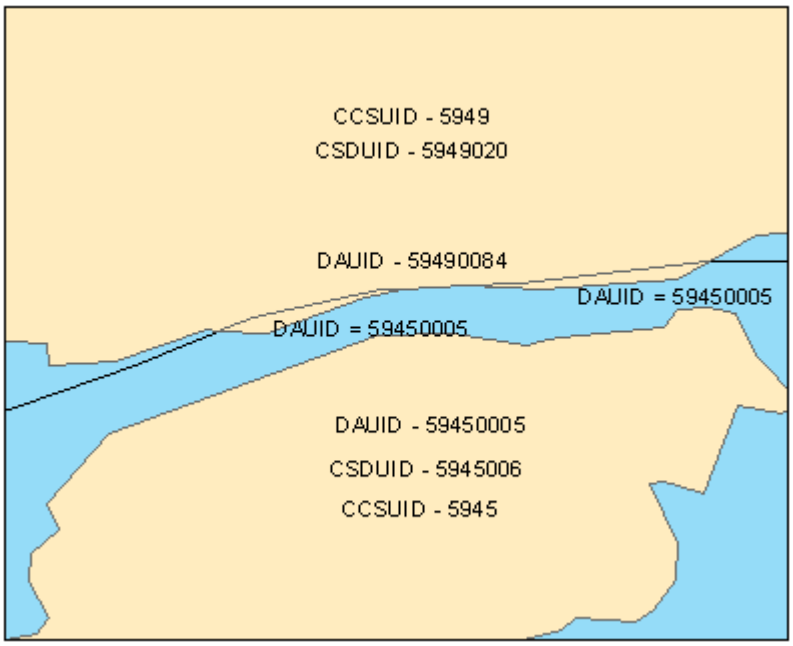
35510170001	59170440010	59170540010
59190430010	59190490010	59290260005

Appendix K: Notes on Dissemination Areaa, Census Subdivisions, Census Consolidated Subdivisions, Census Divisions and Federal Electoral Districts Cartographic Boundary Files with slivers on islands

Some slivers on islands in the Dissemination Areas, Census Subdivisions, Census Consolidated Subdivisions, Census Divisions and Federal Electoral Districts Cartographic Boundary Files were created by the overlaying of the boundary layer with the hydrography layer. The boundary layer was created from the National Geographic Base at a scale of 1:50,000, 1:250,000 and 1:1,000,000 (DCW). The hydrogaphy layer was created from the National Topographic Data Base at a scale of 1:50,000 and 1:250,000 and the GeoBase hydrology Level 0 at a scale of 1:1,000,000). The National Topographic Data Base hydrography was used within the Census Metropolitan Area and Agglomeration Area. The GeoBase hydrology Level 0 hydrography provided was information for the rest of the country.

Some verification was done to ensure that no slivers were created by the overlay of boundary layers and the hydrography source. Special attention was given to the overlay between the boundary layer and the GeoBase hydrology Level 0 (outside CMA/CA) because of the different scale.

The figure 3 illustrates two Dissemination Area, one Census Subdivision and one Census Consolidated Subdivision slivers created by the overlay of the boundary layer and the GeoBase hydrology Level 0.



In this case the GeoBase hydrology Level 0 is overlapping the boundary layer in the National Geographic Base.

The slivers found on the Dissemination Areas Cartographic Boundary file:

59250007 59430036 59430044 59450005 (3 slivers) 59470026 (2 slivers)

The slivers found on the Census Subdivisions Cartographic Boundary file:

5943037 5945006 5947012 5947016

The slivers found on the Census Consolidated Subdivisions Cartographic Boundary file:

5943037 5945006 5947016

The slivers found on the Census Divisions Cartographic Boundary file:

5943 5945 5947

The sliver found on the Federal Electoral Districts Cartographic Boundary file:

59028

Appendix L: Census Subdivision Types by Province and Territory, 2001 Census

Census Subdivision Type		Total	Nfld. Lab.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
		5,600	381	113	98	275	1,476	586	298	1,002	452	816	35	37	31
C	City – Cité	148	3	2	–	7	2	51	8	14	15	44	1	1	–
CC	Chartered Community	2	–	–	–	–	–	–	–	–	–	–	–	2	–
CM	County (Municipality)	28	–	–	–	–	–	–	–	–	28	–	–	–	–
COM	Community	33	–	33	–	–	–	–	–	–	–	–	–	–	–
CT	Canton (Municipalité de)	66	–	–	–	–	66	–	–	–	–	–	–	–	–
CU	Cantons unis (Municipalité de)	7	–	–	–	–	7	–	–	–	–	–	–	–	–
DM	District Municipality	53	–	–	–	–	–	–	–	–	–	53	–	–	–
HAM	Hamlet	36	–	–	–	–	–	–	–	–	–	–	2	10	24
ID	Improvement District	8	–	–	–	–	–	–	–	–	8	–	–	–	–
IGD	Indian Government District	2	–	–	–	–	–	–	–	–	–	2	–	–	–
IM	Island Municipality	1	–	–	–	–	–	–	–	–	–	1	–	–	–
LGD	Local Government District	2	–	–	–	–	–	–	2	–	–	–	–	–	–
LOT	Township and Royalty	67	–	67	–	–	–	–	–	–	–	–	–	–	–
M	Municipalité	590	–	–	–	–	590	–	–	–	–	–	–	–	–
MD	Municipal District	48	–	–	12	–	–	–	–	–	36	–	–	–	–
NH	Northern Hamlet	9	–	–	–	–	–	–	–	9	–	–	–	–	–
NL	Nisga'a Land	1	–	–	–	–	–	–	–	–	–	1	–	–	–
NV	Northern Village	13	–	–	–	–	–	–	–	13	–	–	–	–	–
NVL	Nisga'a Village	5	–	–	–	–	–	–	–	–	–	5	–	–	–
P	Paroisse (Municipalité de)	265	–	–	–	–	265	–	–	–	–	–	–	–	–
PAR	Parish	152	–	–	–	152	–	–	–	–	–	–	–	–	–
R	Indian Reserve – Réserve indienne	1,047	1	4	24	19	31	145	78	169	88	487	4	2	–
RC	Rural Community	1	–	–	–	1	–	–	–	–	–	–	–	–	–

Continued on next page

Census Subdivision Type (Cont'd)		Total	Nfld. Lab.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
RDA	Regional District Electoral Area	165	–	–	–	–	–	–	–	–	–	165	–	–	–
RG	Region	1	1	–	–	–	–	–	–	–	–	–	–	–	–
RGM	Regional Municipality	4	–	–	3	–	–	–	–	–	1	–	–	–	–
RM	Rural Municipality	417	–	–	–	–	–	–	120	297	–	–	–	–	–
RV	Resort Village	43	–	–	–	–	–	–	–	43	–	–	–	–	–
S-E	Indian Settlement – Établissement indien	28	–	–	–	–	5	6	4	1	4	3	5	–	–
SA	Special Area	3	–	–	–	–	–	–	–	–	3	–	–	–	–
SCM	Subdivision of County Municipality	28	–	–	28	–	–	–	–	–	–	–	–	–	–
SET	Settlement	31	–	–	–	–	–	–	–	–	–	–	13	15	3
SM	Specialized Municipality	2	–	–	–	–	–	–	–	–	2	–	–	–	–
SUN	Subdivision of Unorganized	90	90	–	–	–	–	–	–	–	–	–	–	–	–
SV	Summer Village	52	–	–	–	–	–	–	–	–	52	–	–	–	–
T	Town	794	286	7	31	27	–	111	52	147	110	15	3	4	1
TI	Terre inuite	10	–	–	–	–	10	–	–	–	–	–	–	–	–
TL	Teslin Land	1	–	–	–	–	–	–	–	–	–	–	1	–	–
TP	Township	245	–	–	–	–	–	245	–	–	–	–	–	–	–
TR	Terres réservées	9	–	–	–	–	9	–	–	–	–	–	–	–	–
UNO	Unorganized – Non organisé	147	–	–	–	–	110	17	11	2	–	–	2	2	3
V	Ville	271	–	–	–	–	271	–	–	–	–	–	–	–	–
VC	Village cri	8	–	–	–	–	8	–	–	–	–	–	–	–	–
VK	Village naskapi	1	–	–	–	–	1	–	–	–	–	–	–	–	–
VL	Village	647	–	–	–	69	87	11	23	307	105	40	4	1	–
VN	Village nordique	14	–	–	–	–	14	–	–	–	–	–	–	–	–

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Geography products and services

This section provides brief descriptions of Geography products and services related to the 2001 Census. For additional details, consult the nearest Statistics Canada Regional Reference Centre.

1. Reference Maps

Reference maps show the location of the geographic areas for which census data are tabulated and disseminated. The maps display the boundaries, names and codes of standard geographic areas, as well as major cultural and physical features, such as roads, railroads, coastlines, rivers and lakes. Over 5,600 reference maps are available for the 2001 Census. Given the diversity in size of these geographic areas, different map scales and map coverages are required to show the appropriate level of detail. Descriptions of each series are provided with the individual catalogue entries below.

National Reference Maps

92F0172XCB Reference Maps – Complete Set, 2001 Census
92F0144XIB Census Divisions, 2001
92F0144XIB Economic Regions and Census Divisions, 2001
92F0144XIB Census Metropolitan Areas and Census Agglomerations, 2001
92F0144XIB Statistical Area Classification, 2001 Census Subdivisions
92F0152XPE Federal Electoral Districts (1996 Representation Order) Reference Map

92F0149XPB Census Division and Census Subdivision Reference Maps

The set of Census Division and Census Subdivision Reference Maps covers all of Canada, by province and territory. The maps show the boundaries, names and codes of census divisions (such as counties and regional districts) and census subdivisions (such as cities, towns, villages, other local municipal entities, townships and Indian reserves). The maps also show the boundaries of census metropolitan areas and census agglomerations. There are 22 maps that vary in scale (ranging from 1:310,000 to 1:3,500,000).

92F0145XPB Census Tract Reference Maps, by Census Metropolitan Area or Census Agglomeration

The series of Census Tract Reference Maps covers all 27 census metropolitan areas (CMAs) and the 19 census agglomerations (CAs) with census tracts. The maps show the boundaries and names of census tracts and census subdivisions, as well as the urban core, urban fringe and rural fringe within the CMAs or CAs. The maps include background information such as rivers, lakes, railroad tracks and provincial boundaries, and other significant features. There are 85 maps in the series, with one to four maps covering each CMA or CA. The map scales range from 1:25,000 to 1:2,000,000, and the maximum map dimensions are approximately 91 cm by 101 cm (36 inches by 40 inches).

92F0146XPB Dissemination Area Reference Maps, by Census Tract, for Census Metropolitan Areas and Census Agglomerations.

The set of Dissemination Area Reference Maps by Census Tract covers all 27 census metropolitan areas (CMAs) and the 19 census agglomerations (CAs) that are part of the census tract program. Each map in the set covers one census tract (CT) and shows the boundaries and codes of dissemination areas within that CT. The maps also show census tract, census subdivision, and census metropolitan area or census agglomeration boundaries on a background of detailed street networks and other visible features such as rivers, lakes and railroad tracks.

There are approximately 4,800 maps in this set—generally one map per census tract. The dimensions of each map are approximately 27 cm by 43 cm (11 inches by 17 inches).

92F0147XPB Dissemination Area Reference Maps, by non-tracted Census Agglomeration
The set of Dissemination Area Reference Maps by Non-tracted Census Agglomeration covers the smaller census agglomerations that are not part of the census tract program. Each map in the set covers one census agglomeration (CA) and shows the boundaries and codes of dissemination areas within that CA. The maps also show the boundaries of census subdivisions (municipalities), as well as urban areas, and representative points for designated places. The maps include background information such as rivers, lakes, railroad tracks and provincial boundaries, and other significant features.

There are approximately 100 maps in this set—generally one map per census agglomeration (The maps vary in scale and size; the maximum map dimensions are approximately 91 cm by 101 cm (36 inches by 40 inches).

92F0148XPB Dissemination Area Reference Maps, by Census Division, for Areas Outside Census Metropolitan Areas and Census Agglomerations The set of Dissemination Area Reference Maps by Census Division covers areas outside census metropolitan areas (CMAs) and census agglomerations (CAs). Each map in the set covers one census division (CD) and shows the boundaries and codes of dissemination areas within that CD. The maps also show the boundaries of census subdivisions, census metropolitan areas and census agglomerations, as well as urban areas and representative points for designated places. The maps include background information such as rivers, lakes, railroad tracks and provincial boundaries, and other significant features.

2. Geographic Data Products
Geographic data products are those that contain 2001 Census population and dwelling counts.

93-360-XPB National Overview Tables, 2001 Census
The National Overview tables provide population and dwelling counts established by the 2001 Census of Canada. The levels of geography covered are Canada, provinces and territories, and other geographic areas including census subdivisions (municipalities), census metropolitan areas and census agglomerations. For selected geographies, the tables provide percentage change in the population and dwellings between 1996 and 2001. Data are also provided for land area and population density. Geographic Boundaries are those in effect on January 1, 2001.

92F0150XCB GeoSuite, 2001 Census
GeoSuite is a tool for data retrieval, query and tabular output, with software and data on a CD-ROM. GeoSuite allows users to explore the links between all standard levels of geography and to determine geographic codes, names, and population and dwelling counts. GeoSuite includes a dissemination area (DA) reference map listing that facilitates identification of appropriate DA reference maps.

92F0086XCB Postal Codes Counts
Note: Postal code products for the 2001 Census are currently under review. The planned release for these products is in the fourth quarter of 2002. Until that time, postal codes products containing 1996 Census data will continue to be available.

Postal Code Counts, 1996 Census contains population and dwelling counts for all six character postal codes reported by respondents. The population and dwelling counts are provided by individual postal code, by forward sortation area (FSA - the first three character of the six-character postal code) and by province or territory. The data are provided with Windows-based software that enables users to perform simple data manipulations such as searching the data set for specific postal codes, importing groups of postal codes for which counts are required and exporting groupings of postal codes. Documentation and reference material are contained in electronic form on the CD-ROM.

3. Spatial Information Products

Spatial information provides the shape and location of geographic features. The boundaries, road network and other features of standard geographic areas are available in digital form for mapping and geographic information system (GIS) applications. These products include Cartographic Boundary Files (CBFs), Road Network Files (RNFs) and Skeletal Road Network Files (SRNFs).

Cartographic Boundary Files (CBFs), 2001 Census

Cartographic Boundary Files (CBFs) contain the boundaries of standard geographic areas together with the shoreline around Canada and the larger inland lakes, all integrated in a single layer. The coordinates are latitude / longitude and are based on the North American Datum of 1983 (NAD83). The Cartographic Boundary Files for 2001 replace the Digital Cartographic Files produced for the 1996 Census.

Cartographic Boundary Files can be used with Census of Population, Census of Agriculture or other Statistics Canada data for data analysis and thematic mapping (with appropriate software). Geographic codes provide the linkage between the statistical data and the geographic area boundaries. CBFs can also be used to create new geographic areas by aggregating standard geographic areas, and for other data manipulations available with the user's software. The CBFs can be used with the Road Network Files and Skeletal Road Network Files, which provide additional geographic context for mapping applications.

92F0160XCE Provinces and Territories Cartographic Boundary File
92F0163XCE Federal Electoral Districts (1996 Representation Order) Cartographic Boundary File
92F0161XCE Census Divisions and Economic Regions Cartographic Boundary File
92F0167XCE Census Consolidated Subdivisions Cartographic Boundary Files
92F0162XCE Census Subdivisions Cartographic Boundary Files
92F0165XCE Designated Places Cartographic Boundary File
92F0166XCE Census Metropolitan Areas / Census Agglomerations Cartographic Boundary File
92F0168XCE Census Tracts Cartographic Boundary Files
92F0164XCE Urban Areas Cartographic Boundary File
92F0169XCE Dissemination Areas Cartographic Boundary Files

92F0159XCE Population Ecumene Census Division Boundary File, 2001 Census

The Population Ecumene Census Division Boundary File contains a generalized population ecumene based on 2001 Census population density data with at least one ecumene polygon for every census division (CD). It can be used to produce small-scale thematic maps of statistical data.

For the 2001 Census, a population ecumene was defined based on population density criteria at the block level. The resulting detailed population ecumene polygons were generalized and small, non-contiguous ecumene pockets were aggregated to ensure visibility for small-scale thematic mapping at the census division level (see Figure 9). When ecumene boundaries are used for dot and choropleth mapping, they give a more accurate depiction of the spatial distribution of data within standard geographic areas.

The Population Ecumene Census Division Boundary File is available as a standard package for Canada free on the Internet or it can be purchased on CD-ROM through the nearest regional office. This file is not a Cartographic Boundary File and it has its own reference guide.

92F0039XDE Forward Sortation Areas Boundary File
Note: Postal code products for the 2001 Census are currently under review. The planned release for these products is in the fourth quarter of 2002. Until that time, postal code products containing 1996 Census data will continue to be available.

The **1996 Census Forward Sortation Areas Digital Cartographic File** is available as a standard package for Canada. It depicts forward sortation area (FSA) boundaries derived from postal codes captured from the 1996 Census questionnaires. Through analysis of the postal codes reported by census households, a single FSA was assigned to each enumeration area (most often the FSA reported by the largest number of census households). FSA polygons were formed by grouping enumeration areas. Therefore, the Census based FSA boundaries are not equivalent to FSA boundaries in use by Canada Post, but are representations created from enumeration areas.

92F0157XCE Road Network Files (RNF), 2001 Census
Road Network Files (RNFs) contain a road layer for the entire country and a province / territory boundary layer. The road layer includes roads, with road names and address ranges (arc attributes), and geographic codes to identify blocks, census subdivisions, census metropolitan areas / census agglomerations, and provinces / territories (polygon attributes). Address ranges are mainly available in the large urban centres of Canada. The province / territory boundary layer incorporates hydrography (the shoreline around Canada and the larger inland lakes) with the boundaries and the geographic codes. The digital coordinates are in latitude / longitude and are based on the North American Datum of 1983 (NAD83).

Road Network Files are available for Canada, for individual provinces and territories, and for census metropolitan areas (CMAs) and those census agglomerations (CAs) with census tracts.

92F0158XCE Skeletal Road Network Files (SRNF), 2001 Census
The Skeletal Road Network Files contain selected roads (with road names, but no addresses) that are derived from Road Network Files (Catalogue No. 92F0157XCE). The selected roads are ranked according to four levels of detail (see Figure ?). The different levels of detail are suitable for mapping at small to medium scales. The SRNF can be used to provide some cartographic reference features when producing thematic maps with the Cartographic Boundary Files. The positional accuracy of the SRNF does not support cadastral, surveying or engineering applications. The SRNF does not include hydrography.

The Skeletal Road Network Files are available for Canada, provinces and territories, and census metropolitan areas (CMAs) and tracted census agglomerations (CAs).

4. Attribute Information Products

Attribute information products are those that give descriptive information about the features. The attribute files include Postal Code Conversion File (PCCF) and Postal Code by Federal Ridings File (PCFRF).

92F0027XCB Postal Code Conversion File (PCCF)
The Postal Code Conversion File (PCCF) provides a link between six-character postal code and standard 1996 Census geographic areas (such as enumeration areas, municipalities, census tracts). It also provides the x,y (latitude / longitude) coordinates for a point representing the approximate location of the postal code to support mapping.

The PCCF is available as standard packages for Canada, the provinces and territories, census metropolitan areas (CMAs) and some census agglomerations (CAs). A reference guide is included.

92F0027UCB Postal Code Conversion File (PCCF) – Update
The Postal Code Conversion File (PCCF) is updated with new postal codes on a semi-annual basis and is available in January and July. Clients must purchase the Postal Code Conversion File at the initial price; then subsequent updated files (92F0027UDB) may be purchased at the update or subscription rate. The update rate is a flat rate that in most cases is much lower than the initial purchase price. An additional 25% discount on updates is given to PCCF update subscribers. The subscription requires clients to pay in advance for at least one updated file per year until the PCCF reflecting the geography of the 2001 Census is released.

The PCCF Updates are available as standard packages for Canada and the provinces and territories. A reference guide is included.

92F0028XDB Postal Codes by Federal Ridings (1996 Representation Order) File
The Postal Codes by Federal Ridings File (PCFRF) provides a link between the six character postal codes and the federal electoral districts (1996 Representation Order). A federal electoral district (FED), commonly referred to as a federal riding, is an area represented by a Member of Parliament in the House of Commons.

The PCFRF is intended as a tool for use with administrative files containing postal codes. By using the postal code as a link, data from administrative files may be organised and / or tabulated by federal riding. This PCFRF allows a link of more than 680,000 postal code records to the 301 federal electoral districts.

The PCFRFs are available as standard packages for Canada and five regions. A reference guide is included.

92F0028XDB Postal Codes by Federal Ridings (1996 Representation Order) File (PCFRF) – Update
The Postal Code by Federal Ridings File (PCFRF) is updated with new postal codes on a semi-annual basis and is available in January and July. Updates released in July provide new postal codes effective January of the release year. Updates released in January provide new postal codes in use in July of the previous year. Clients who purchase the PCFRF (92F0028XDB) at the initial price may then purchase subsequent updated files (92F0028UDB) at the update rate (see Table 13 for details).

The PCFRF Updates are available as standard packages for Canada and five regions.

5. Geographic Services

A variety of services is available, including custom mapping, custom data extraction (geocoding) and the development of custom geography products.

97C0006 Geography Custom Service
If standard geography products do not satisfy a client's needs, the Geography Custom Service is available to produce non-standard geographic products. Examples include alternative packaging of geographic files, special data retrievals, manipulations or merges using any of the geography computer files (postal codes, attribute files, boundary files and road network files). Contact the nearest regional office for details.

97C0005 Custom Area Creation Service (formerly Geocoding Service)
The Custom Area Creation Service (formerly called Geocoding Service) allows users to define their own geographic areas of study (user-defined areas or aggregations of standard census geographic areas) for census data tabulations. This custom geography is produced from the aggregation of blocks, or

where necessary, block-faces within the road network file coverage. The custom area files thus created are then passed to Census for data tabulation. Contact the nearest regional office for details.

97C0007 Geography Custom Mapping
Thematic maps and other maps, specially designed to meet customer needs, can be produced. Contact the nearest regional office for details.

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