Nova Scotia Civic Address File Download Utility

User Documentation

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Introduction

The Nova Scotia Civic Address File Download Utility provides a method for acquiring Nova Scotia Civic Address File (NSCAF) data directly in an ESRI Shapefile format. NSCAF data are often integrated with other datasets and also used as a foundation for addressed based mapping in Nova Scotia. Further information on the NSCAF structure and content is available in the user documentation at http://nscaf1.nsgc.gov.ns.ca/civicmain/docs.aspx.

Previously, data were acquired by contacting the Nova Scotia Geomatics Centre (NSGC) and having staff there prepare data for delivery. The new NSCAF Download Utility provides a more convenient method, and also introduces additional views of the data that are easier to use for tasks such as geocoding.

What's New

Users are now able to save the selected data layers as defaults. The 'Save Selected Options as Defaults' eliminates the need to reselect the different data layers every time data updates are required. This option allows the user to immediately go to the download button and download NSCAF updates.

If the user decides to return to the original NSCAF Download Utility defaults (i.e., NSCAF Roads, NSCAF Points, and the Geographic Area the user is responsible for). Clicking on the Clear Selected Defaults will clear the saved selected options and return to the NSCAF Download Utility default settings.

Currency

Updates are available for download through the NSCAF Download Utility as soon as they are entered into the NSCAF. NSCAF data are provided by municipalities, Transportation and Infrastructure Renewal (TIR), and First Nations communities and are generally input using the online Maintenance Tool that updates the Oracle database directly. While there are currently no time standards for providing NSCAF updates, these groups typically update civic data as part of the process of assigning new civic numbers and street names.

Users

Many government departments and private sector groups utilize NSCAF data. Users typically have Geographic Information System (GIS) software such as ArcGIS or MapInfo and use NSCAF data as a foundation for integrating their own geographic data.

While the NSCAF can provide a list of civic addresses, it is not permitted to be used as an address source to create mailing lists for solicitation purposes. The postal code used in the NSCAF references the physical location rather than the mailing location, and in rural areas, the mailing address is often different from the physical address used in the NSCAF.

Simplified and Geocoding Data Layers

The NSCAF Download Utility introduces the availability of NSCAF data that are preformatted for specific tasks. While the greatest flexibility is provided by applying tailored relational joins to the individual NSCAF tables, the preformatted tables are often more convenient for users applying the NSCAF for geocoding or general mapping applications.

These alternate views still rely on the underlying tables and structure of the NSCAF. When a user requests data layers through the NSCAF Download Utility site, SQL queries are applied to the NSCAF tables to extract a subset of tables and fields and produce the derived tables that are delivered through this site. The fields and joins that are used for these data layers and their association to the NSCAF are illustrated in the entity relationship diagrams in Appendix A.

Other Options - Web Services

Users requiring only address validation or attribute components (i.e. non-geographic data) of the NSCAF can also utilize the NSCAF web services as a source for custom applications that receive attribute data updates or query the NSCAF database. The process for acquiring access to NSCAF web services can be provided by contacting the GIS Service Centre at mailto:geoinfo@gov.ns.ca.

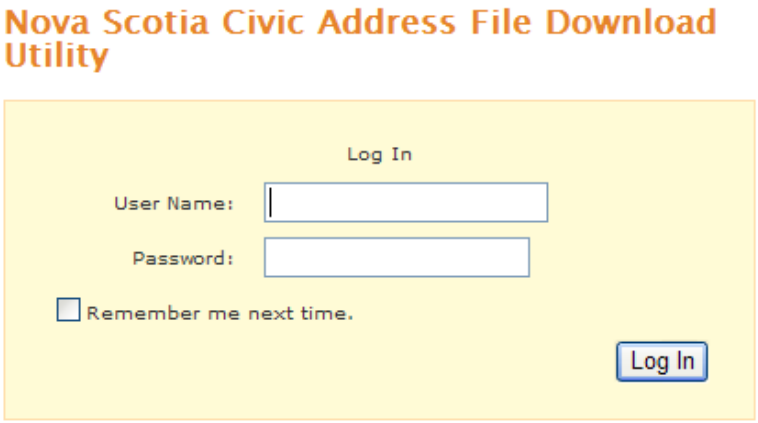
Using the NSCAF Download Utility

The access page provides a straight-forward interface that is divided into two sections - data layers and geographic area. Once the desired layers and areas are selected, the application extracts the data and e-mails a link to allow the data to be downloaded.

Log In and Data Access

To access the data, an Internet connection and a web browser are required. The NSCAF Download Utility site is located at http://nscaf1.nsgc.gov.ns.ca/civicmain. The site functions with Internet Explorer, Firefox, Google Chrome, and other commonly used browsers.

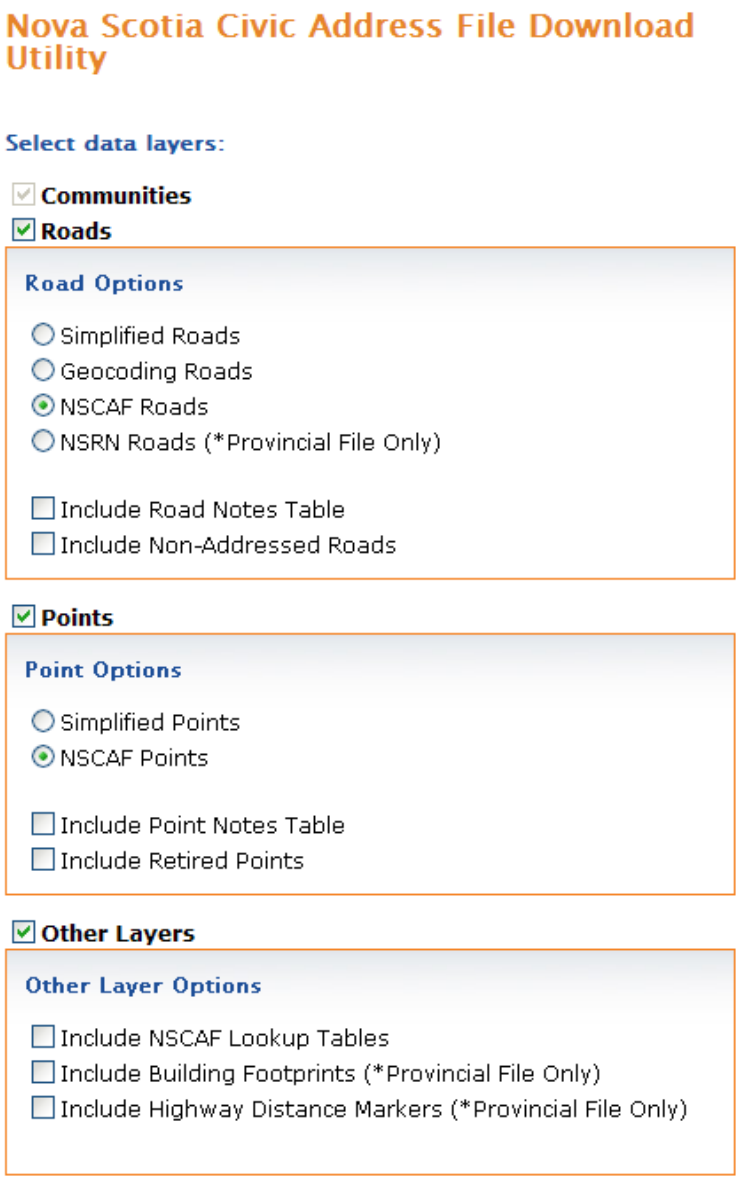
Access is password protected; users requiring a password should contact the GIS Service Centre at mailto:geoinfo@gov.ns.ca; ***current users of the NSCAF Maintenance Tool should be able to use their existing NSCAF account names and passwords***. Project partners and other data providers can normally access the data at no cost; other users may pay and require a data license.



Note If there is no activity for **30 minutes**, the user will be automatically logged out. This is to help prevent unauthorized access.

Data Layers

Geographic data are projected as UTM in Zone 20 on the NAD83 (CSRS98) datum [NAD_1983_CSRS98_UTM_Zone_20N]. The details of the underlying NSCAF tables are described in the NSCAF Schema Appendix available at http://nscaf1.nsgc.gov.ns.ca/civicmain/docs.aspx. Geometry tables are provided in ESRI shapefile (.shp) format and attribute tables are provided in dBASE (.dbf) format. The attributes and structure are described in the following sections. Online help on data layers and selection of geographic areas is also provided on the NSCAF Download Utility site.



Communities

Community data provide polygons representing the boundaries of each defined area of Nova Scotia and attributes such as the official community name, municipal unit name responsible for the community, and the county name. There is an additional file (GSA_Tab.dbf) that contains supplemental attributes; many are duplicates of the attributes in the geometry file - the most useful attribute in this file is the Mun_Code. Note that the geometry files contain a Mun_ID field - this is provided to allow municipalities to add their own database keys and is not an abbreviation of the municipal unit name.

The GSA_Tab joins to the community geometry table on the GSA_Key field, as shown in the figure in Appendix A and explained in the NSCAF Schema document noted above.

The Communities layer is always provided when data are requested. This provides a context for the geographic extent of the data included in the download.

Roads

Road data provide road centrelines for addressed and non-addressed roads. Addressed roads refer to roads that have a name assigned and are (generally) accessible to traffic. These may not have civic addresses associated with them (e.g. controlled access highways) and may occasionally include roads that are only accessible seasonally or have other restrictions. Data are available with multiple types of attribution, as explained in the sections below.

Supplemental (non-addressed) road data contains features such as tracks, trails, resource roads, and driveways that are not part of the transportation network.

Simplified Roads

This data layer joins a subset of the NSCAF tables and attributes to produce a mappable table of addressed roads with commonly associated attributes. The geometry and most attributes are contained in the Roads_Simplified table; alias road names are provided in a separate attribute table (Alias_Tab) and are joined to the main table on the SegID key field. The Street field is created by concatenating the Prefix, Str_Name, Str_Type, and Str_Dir fields; Str_Type and Str_Dir are used in their abbreviated (e.g. St, Rd, EB, W) form as illustrated in the table below.

Simplified Roads Data Sample

SEGID	FROML	TOL	FROMR	TOR	STREET	ROADCLASS	COMM	MUN	COUNTY	OWNER
350003722	961	1377	962	1378	Windham Hill Rd	LO	Rodney	Cumberland County	Cumberland County	TIR
400007489	194	340	193	339	Victoria St	LO	Rodney	Cumberland County	Cumberland County	TIR
400008465	527	643	528	644	Rodney Rd	LO	Rodney	Cumberland County	Cumberland County	TIR
400018968	1	9	2	10	Old Rodney Rd	LO	Rodney	Cumberland County	Cumberland County	TIR
400019733	2	6	1	5	Black River Rd	LO	Rodney / Springhill	Cumberland County / Springhill	Cumberland County	M

Alias Table Data Sample

SEGID	STRPREFIX	STRNAME	STRSUFFIX	STRDIR
264600016		Sunrise	Trail	
264600044		Route 246		
264600016		Trunk 6		
264600071		Tatamagouche Wentworth	Rd	
264600071		Route 246		

For general road mapping purposes, the Simplified Roads layer is often adequate. Thematically coding the geometry on the RoadClass field, and labelling with the Street field will produce the main layer for a road map of the selected geographic area. Address ranges and community names are also included to allow basic geocoding; however the Geocoding Roads layer provides more flexibility. The tables and attributes used to create the simplified roads layer are shown in the figure in Appendix A.

Geocoding Roads

For range based geocoding of a list of civic addresses, the Geocoding Roads layer has been developed as a reference layer. It joins the same subset of NSCAF tables as the Simplified Roads layer, adds the TYPE_LUT lookup table to expand the street types (e.g. St to Street) and includes the TrafficDir field to identify traffic flow. Instead of concatenating the street naming fields, they are provided as individual fields (e.g. Str_Type, Str_Dir), as shown in the sample below.

Geocoding Roads

SEGID	TRAFFICDIR	ROADCLASS	FROML	TOL	FROMR	TOR	L_PREFIX
264600003	1	LO	2	32	1	33	
264600004	1	AT	75	145	74	132	
264600005	1	LO	1	31	2	30	
264600006	1	LO	1	67	2	66	
264600009	1	LO	1	45	2	46	

L_STRNAME	L_SUFFIX	L_STRDIR	L_COMM	L_MUN	L_COUNTY	R_PREFIX
Lake	Rd		Tatamagouche	Colchester County	Colchester County	
Main	St		Tatamagouche	Colchester County	Colchester County	
Park	St		Tatamagouche	Colchester County	Colchester County	
Blair	Ave		Tatamagouche	Colchester County	Colchester County	
King	St		Tatamagouche	Colchester County	Colchester County	

R_STRNAME	R_SUFFIX	R_STRDIR	R_COMM	R_MUN	R_COUNTY	OWNER
Lake	Rd		Tatamagouche	Colchester County	Colchester County	TIR
Main	St		Tatamagouche	Colchester County	Colchester County	TIR
Park	St		Tatamagouche	Colchester County	Colchester County	TIR
Blair	Ave		Tatamagouche	Colchester County	Colchester County	TIR
King	St		Tatamagouche	Colchester County	Colchester County	TIR

Note that the structure of this layer is also expanded to separate left and right street and community names. This is done to account for the complexity of cases such as Keltic Drive in CBRM where the community name on one side of the road is different from the name on the opposite side, and a similar case in Cumberland County where the community names are different and also the street name is different between the left and right sides of the road (Windham Hill Road, Springhill on

one side and Herrett Road, Rodney on the other). The NSCAF tables and fields used to create this are shown in Appendix A.

Depending on the sophistication of the application used to conduct geocoding, it may be necessary to further modify the attribute structure. For example, if the application is only able to accommodate one community name or street name field per segment, the left / right fields for these attributes may have to be merged or the records duplicated to allow proper geocoding. For applications such as ArcGIS, it is possible to create separate address geocoders for the left and right ranges, and then use both to geocode addresses that accommodate the NSCAF Geocoding structure directly.

NSCAF Roads

The greatest flexibility for working with addressed roads is provided by the NSCAF Roads layer. Working with these tables requires experience in relational databases and knowledge of the schema, as provided in the NSCAF Schema document. Selecting this layer provides the road geometry table, as well as the Seg_Tab, Seg_Link, Addr_Tab, and Str_Tab attribute tables. Using these data typically involves relational joins such as is illustrated in the figure in Appendix A. Note that no lookup tables are included and must be selected separately. Also, the tables contain GSA_Keys, but the tables in the Community layer are required to resolve community names for the NSCAF roads.

NSRN Roads

An alternate view of both addressed roads and non-addressed roads is available as the centreline layer from the Nova Scotia Road Network (NSRN). The geometry and attributes for addressed and non-addressed roads are combined in one shape file for the province. The segmentation of the geometry and the description of the attributes are contained in the Nova Scotia Road Network (NSRN) document at http://nscaf1.nsgc.gov.ns.ca/civicmain/docs.aspx.
The NSRN geometry is the source for the non-addressed roads layer and the various views of the NSCAF Roads. As a result, the geometry will be identical, with the exception of the segmentation. The NSRN has a more detailed segmentation compared to the views of the NSCAF Roads to accommodate situations such as intersections of some non-addressed roads with addressed roads.

The NSRN has companion tables for features such as Blocked Passages, Tolls, and Network Junctions. These are not provided in the NSRN Roads layer available from the NSCAF Download Utility Download site. The version of the NSRN available on this site applies the NSTDB event table to the NSRN geometry to provide NSRN V2 segmentation and attributes.

Include Road Notes Table

The Seg_Note table provides supplemental information on the road segments. The Note field describes known issues with the graphic segment or physical section of road, range issues, access conditions, or any other pertinent information.

The Seg_Note table links to the road geometry and attribute tables on the SegID field. The Seg_Note only contains a record if the Note field is populated.

Include Non-Addressed Roads

The NSRN roads include all road segments such as addressed roads, resource roads, tracks, trails, driveways, rail lines, and other transportation related segments. The other available road layers only include addressed roads (i.e. those with a road name that is recognized by the Emergency Management Office for E911 services).

Requesting the non-addressed roads provides a supplemental graphic reference for these other transportation features that are part of the NSRN. The driveways (NSRN normally includes those longer than 100m) can be helpful to identify access to NSCAF civic points, and resource roads, tracks, and trails can be helpful to show access to more remote areas.

Points

The points layers represent the civic address locations for Nova Scotia. The data associated with these layers show the civic address for the location as well as other information such as the type of feature addressed. Note that in addition to houses, businesses, and other buildings, addresses can be assigned to features such as towers, trail heads, recreational fields, and other locations that may require emergency services. There are two type of attribution available, as explained in the sections below. As well, maintenance activities on the NSCAF result in the occasional removal of civic addresses that are no longer valid; users that synchronize internal data to NSCAF points often find it helpful to download retired points to identify civics that are no longer valid.

Simplified Points

This is the default option for civic points. The attributes are extracted from the NSCAF tables and provided in a standard joined format. A sample is shown below, and the NSCAF tables and fields used to create this view are illustrated in Appendix A.

Simplified Points Data Sample

CIVNID	PNTID	SEGID	PID	CIVICNUM	CIVSUFFIX	UNIT_NUM	POSTALCODE	BU_CODE
4800000	4800001	4800001	25139288	658			B0M 1X0	RSSI
4800001	4800002	4800001	25355900	635			B0M 1X0	RSSI
4800002	4800003	400019733	25139304	6			B0M 1X0	RSSI
4800003	4800004	4800002	25138983	775			B0M 1X0	RSSI
4800004	4800005	4800002	25138983	845			B0M 1X0	RSSI

ADD_LOC	STRPREFIX	STRNAME	STRSUFFIX	STRDIR	GSA_KEY
Building Centroid		Back	Rd		48
Building Centroid		Back	Rd		48
Building Centroid		Black River	Rd		48
Building Centroid		Back	Rd		48
Building Centroid		Back	Rd		48

COMM	MUN_CODE	MUN	CO_CODE	COUNTY
Rodney	CU	Cumberland County	CU	Cumberland County
Rodney	CU	Cumberland County	CU	Cumberland County
Rodney	CU	Cumberland County	CU	Cumberland County
Rodney	CU	Cumberland County	CU	Cumberland County
Rodney	CU	Cumberland County	CU	Cumberland County

For many users, this format is adequate, as it provides the full civic address and type of feature addressed (BU_Code and Add_Loc). Note, however, that there are additional NSCAF fields that are not included such as the municipal IDs, building names, and date fields. Also note that this view only includes the official street name address rather than also including the alias names (e.g. 303 McGee St, Springhill only, rather than also including 303 Trunk 2, Springhill and 303 Glooscap Trail, Springhill).

NSCAF Points

This option provides the most flexibility, since it provides access to all NSCAF civic address attribute tables and fields. This option provides the NSCAF_Points geometry table, as well as the Civn_Tab and Pnt_Tab attribute tables.

Note that these tables are normally used in conjunction with the NSCAF roads and community tables, as well as selected lookup tables. The NSCAF points tables provide the civic number and unit number, but the street name and community name are determined by linking to the other NSCAF tables, usually on the AddrID key field in the Civn_Tab and the GSA_Key field in the Pnt_Tab as shown in the diagram in Appendix A.

Include Point Notes Table

The Pnt_Note table provides supplemental information on the NSCAF points and civic addresses. The Note field commonly describes known issues with the civic address, access issues, or any other pertinent descriptive information.

The Pnt_Note table links to the NSCAF point and civic attribute tables on the PntID field. The Pnt_Note only contains a record if the Note field is populated.

Include Retired Points

Civic addresses are retired by setting the Retired field in the Civn_Tab and other related tables to “Y” and assigning a date to the Date_Ret field. They are not displayed in the online tools, and are not included in the distributed data unless specifically requested. Retired points provide a valuable means of tracking change and to allow databases that are linked to the NSCAF to be updated accordingly.

Other Layers

Supplemental layers are sometimes used in conjunction with the NSCAF. Depending on the application, these may not be required. The content of these other datasets are explained below.

Include NSCAF Lookup Tables

The lookup tables explain the abbreviations and codes used in the main NSCAF attribute tables. There are many lookup tables, but only a small number are typically used. The Type_Lut table expands the abbreviated street types to full names (e.g. Rd to Road, St to Street); Mun_Lut expands the municipal unit code (e.g. TU to Town of Truro, NG to Town of New Glasgow); CO_Lut expands the county abbreviation (e.g. CO to Colchester); BU_Lut expands the abbreviation for the feature assigned to the civic (ITVA to Vacant; SAMVGS to Gas Station). The content of each lookup table is explained in the NSCAF Schema document.

Include Building Footprints

The building footprints are not available for all civic addresses, but where available provide a useful visual reference to supplement NSCAF data. These polygon data are primarily extracted from the Nova Scotia Topographic Database (NSTDB) or provided directly by municipalities. Selecting this layer will provide all available entities for Nova Scotia as one layer (Footprints_NS). The limited attribution includes the data collection method and data source. A sample of the data is shown below.

Building Footprints Data Sample

OBJECTID	AGE	METHOD	RESOLUTION	SOURCE
38126	07262006	digitized from hard copy and various	+/- 5m	Municip Annapolis County
38134	10012004	Photogrammetric Compilation	+/- 1m	GeoNet

NOTES	COMMUNITY	PROVKEY	FCODE
		BLFT00219668	BLDG
Collected using NSTDB Specifications		BLFT00006117	BLDG40

NSCAF civic points generally fall within the building footprints. The footprints layer contains many structures that have no civic associated with them, and thus these will have no civic point; there will also be NSCAF civic points with no building footprint for a variety of reasons such as a difference in currency (e.g. newer structures may not yet have a footprint available) or the civic point is not associated with a structure (e.g. trail heads).

Include Highway Distance Markers

The highway distance markers layer identifies the location of signage along 100 series highways that are used as reference points for emergency response and by Transportation and Infrastructure Renewal (TIR). The small white on green signs are usually posted every kilometre and identify the highway number and distance from the start of the highway.

The attributes on these points differs from the NSCAF points, so they are stored separately; a data sample is shown in the table below. The data points are contained in a single layer for the province (highway_distance_markers_Prov) and typically appear in pairs, one for each direction of travel, reflecting the location of the signs along the highways.

Highway Distance Markers Data Sample

OBJECTID	HWY_NUMBER	DIRECTION	KILOMETRE	DISTANCE	AZIMUTH
360	Hwy 104	East	271	0	
434	Hwy 104	West	271	0	
1341	Hwy 105	east	122	1	173
1376	Hwy 105	west	122	2	356
2111	Hwy 101	East	207	0	

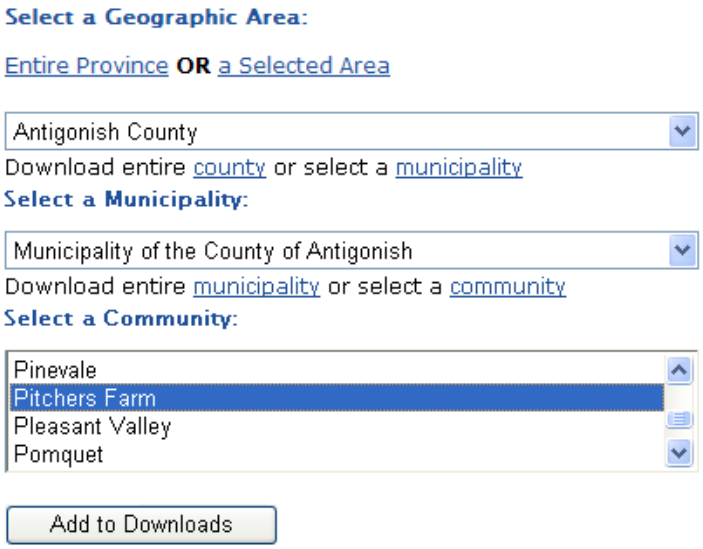
CONDITION	FEAT_NAME	UNFILT_POS	NORTHING	EASTING	POINT_ID
missing	sign	121	5056308.757	621463.706	355
missing	sign	122	5056320.99	621476.157	429
good	sign	124	5124086.254	695239.743	79
good	sign	142	5124102.333	695229.356	114
good		0	4992414.67	370771.699	0

Selecting a Geographic Area

Data can be downloaded for multiple geographic areas from the entire province, counties, municipalities, and down to communities. Nova Scotia is managed and administered at these various levels of geography. There are eighteen counties in the Province, fifty-five municipalities, and 2,299 communities. Since the structure of all tables is consistent between each level of geography, the tables for each area can be merged by the user. However, there is also an option to have the NSCAF Download Utility application merge the tables by selecting the Merge Files option in the Downloads section.

The desired geographic area is selected by progressing through the lists from the province level down to individual communities, as illustrated below. To select a coverage for all of Nova Scotia, click on Entire Province. This adds the selected layers to the Downloads list.

If only a specific area is required, click on Selected Area and a list of counties will open. Progress through in a similar fashion to be able to select a municipality and then a community.

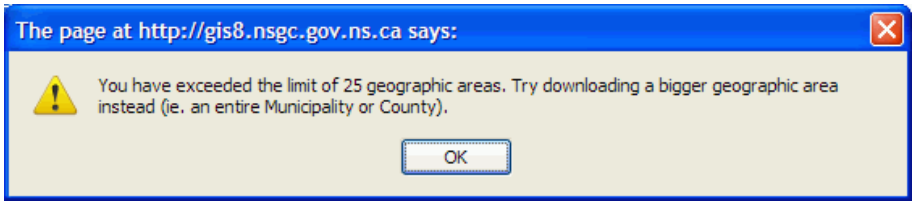


It is not possible to jump directly to the list of communities; the user must progress through the list of counties and municipalities. After clicking on the desired community name, the Add to Downloads button will appear; click on the button to add the selected community to the Downloads list.

Multiple communities can be selected by clicking on the first name then holding down the shift key and clicking on the last community name desired and the entire block will be highlighted. Clicking on community names while holding down the Ctrl key will highlight each individual community. After highlighting the required communities, click on the Add to Downloads button to add them to the Downloads list.

Note that while it is possible to select multiple geographic areas for the selected data layers, the same data layers must be used for all areas. For example, if NSCAF Roads for Antigonish County are selected and added to the Downloads list, it is not possible to go back and unselect NSCAF Roads and select NSCAF Points for Pictou County in the same download. If this is attempted, both Antigonish County and Pictou County will be shown in the Downloads list, but only the last layer selection (in this case NSCAF Points) will be downloaded.

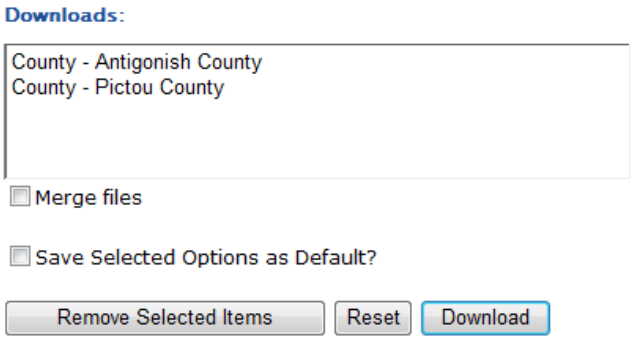
Also note that the maximum number of layers and geographic areas that will be processed is 25; additional layers added to the download list will be ignored. If more data are required, separate requests must be submitted.



Submitting the Download Request

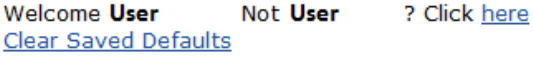
After the data are selected and listed in the Downloads list, the list can be modified by clicking on entries and clicking the Remove Selected Items button to remove selected entries; the entire list can be removed by clicking the Reset button.

The Merge Files option combines the geography of the selected data layers. For example, if Simplified Roads for Antigonish County and Pictou County were selected, then this option would provide the road geometry as one layer containing both counties and the road name alias attribute table would contain both counties.

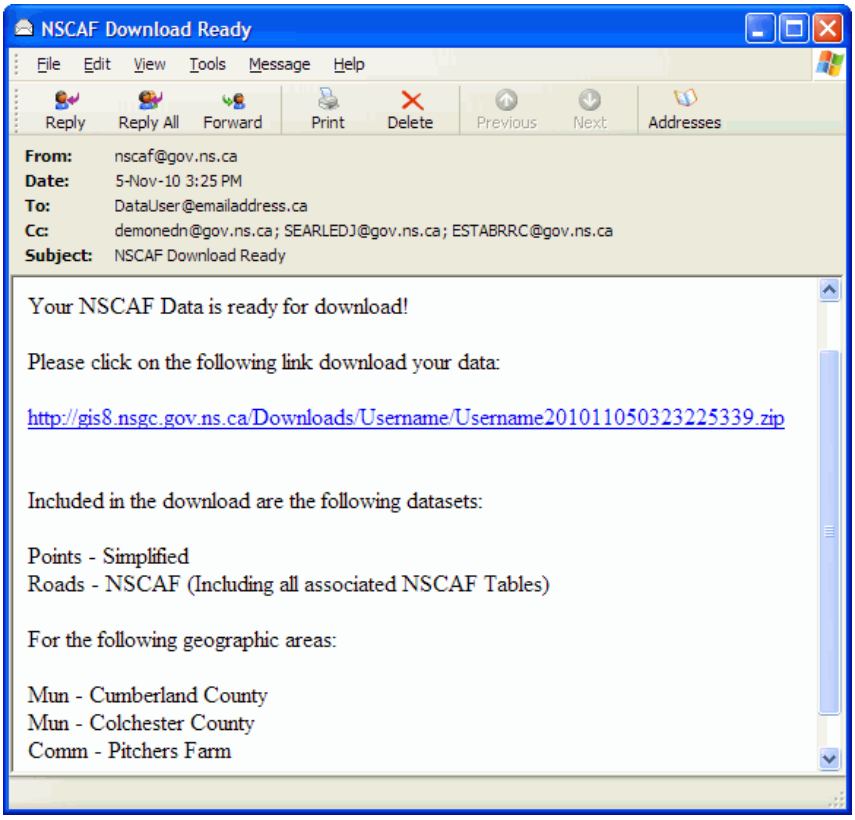


The Save Selected Options as Default option allows the selected data layer options to override the NSCAF Download Utility's original default settings. For example, if Simplified Roads, Simplified Points, and include NSCAF Lookup Table options are selected and saved as defaults. The following logins into the NSCAF Download Utility will not require the user to reselect these data layers. The user will be able to bypass the data layer option selection process and immediately go to the download button. If at any time the user decides to save another combination of data layer options and make it the default. The Save Selected Options as Default check box should be checked before downloading the data.

To clear the saved options as defaults and return to the NSCAF Download Utility original settings (i.e. NSCAF Roads, NSCAF Points, and the Geographic Area the user works in). Click on the Clear Saved Defaults button.



After the list is reviewed and modified as required, click the Download button to submit the request. The requested data are extracted from the NSCAF Oracle database and packaged as a compressed file (.zip). An e-mail is then sent to the user with a link to the .zip file, as shown below.

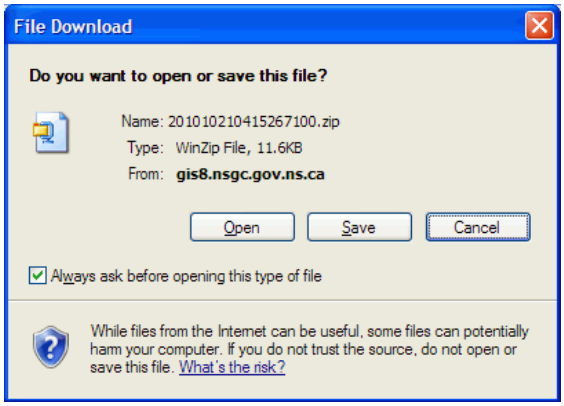


The e-mail address used for sending the link is the one registered by the user when the NSCAF account was created. The application will identify what e-mail address was used; if it is not correct, contact the GIS Service Centre at mailto:geoinfo@gov.ns.ca to have the account information updated.

Downloading the Data

The request is typically processed in minutes. Larger tables, such as the NSRN for the Province may take up to an hour before a notification e-mail is received. The e-mail notification lists the requested layers and geographic areas, and a link to the data.

Click on the link and the default web browser (e.g. Internet Explorer) will open and a dialog will appear allowing the user to determine where the file will be stored on the local computer.



After downloading is complete, navigate to where the file is stored and double click on the .zip file to extract the data layers. The .zip file may be password protected; the password will be the same as was used to log in to the NSCAF Download Utility Download site.

File Naming Convention

Files exported from the NSCAF for distribution are typically named using the standard NSCAF file names, with a suffix identifying the geographic area contained in the files; look-up tables have no suffixes. The derived data series (e.g. simplified points, geocoding roads) and tables for retired entities have an initial suffix describing the type of data. The format is described below.

NSCAF Table Nomenclature for Export - Geographic Identifiers

Geographic Area	Exported Table Name Area Suffix	Sample	Description
Community	_NNNN	nscaf_gsa_2651	Up to four digit community key (GSA_Key). See GSA_TAB_Prov.dbf for valid keys.
Municipality	_cc	nscaf_roads_SW	Two character municipal code (Mun_Code). See Mun_LUT.dbf for valid codes.
County	_cc	CIVN_TAB_GU	Two character county code (Co_Code). See Co_LUT.dbf for valid codes.
Province	_Prov	SEG_TAB_Prov	Provincial suffix.

NSCAF Table Nomenclature for Export - Data Series Suffixes

Data Series	Exported Table Name Series Suffix	Sample	Description
NSCAF	(none)	-	NSCAF series only use a geographic identifier - no additional suffix is used.
Simplified Structure	_simplified	roads_simplified	Simplified entities are pre-joined and have only a select number of attributes.
Geocoding Centrelines	_geocoding	roads_geocoding	Used for road tables, providing pre-joined format for use in geocoding civic address data.
Retired Entities	_retired	nscaf_point_retired	Separate table containing retired geographic objects.
NSRN	_DISTRIB	NSRN_DISTRIB	NSRN roads are distributed in a single set of tables for the province, and thus have no geographic identifier.
Merged	(none)	-	When the Merged option is selected, the tables will have no geographic or series suffix.

Appendix A

Entity Relationship Diagrams for NSCAF Download Utility Data Layers

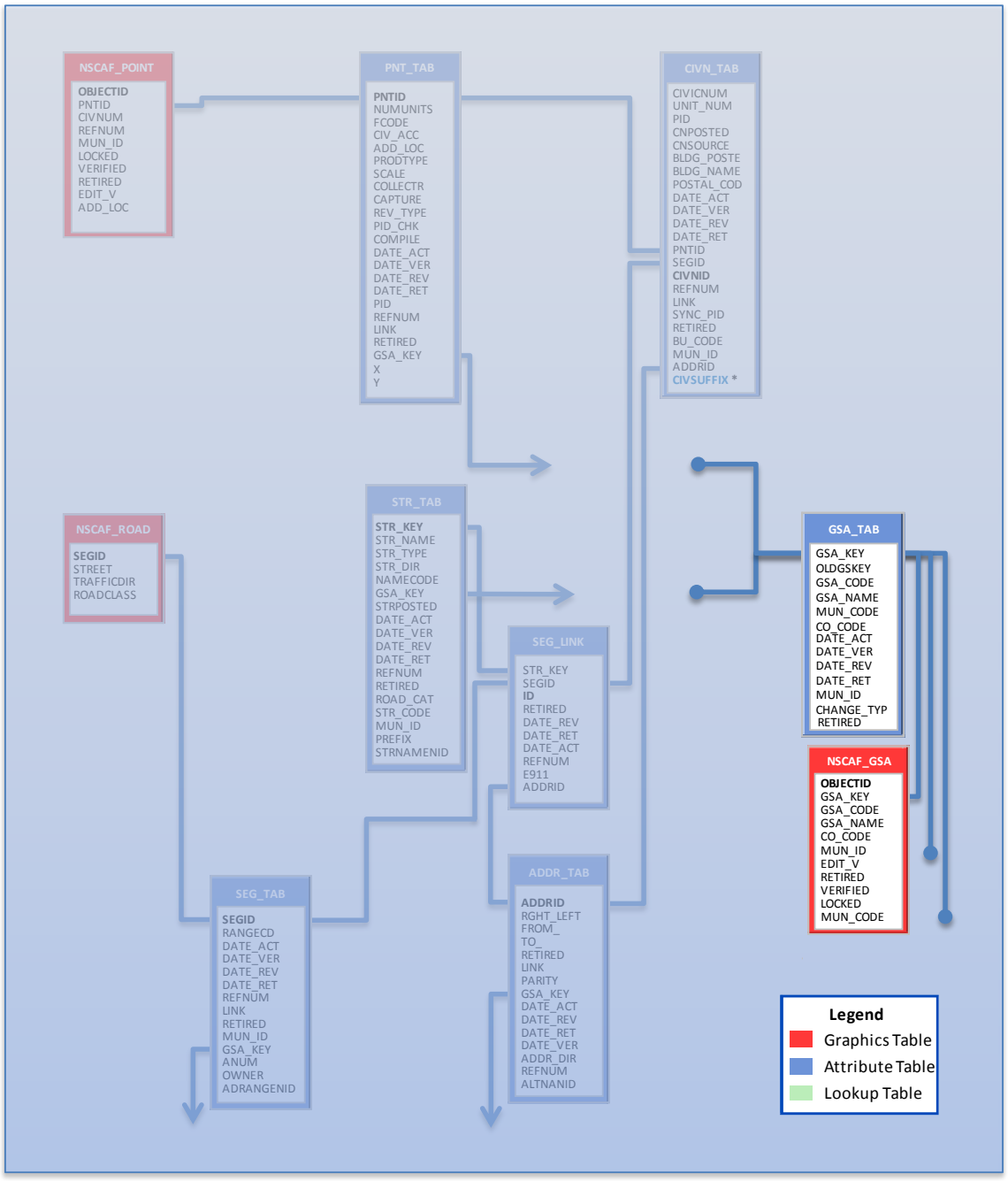


Figure A. 1 Community Data Layer – Entity Relationship Diagram
*A new field (CIVSUFFIX) is added to the CIVN_TAB.

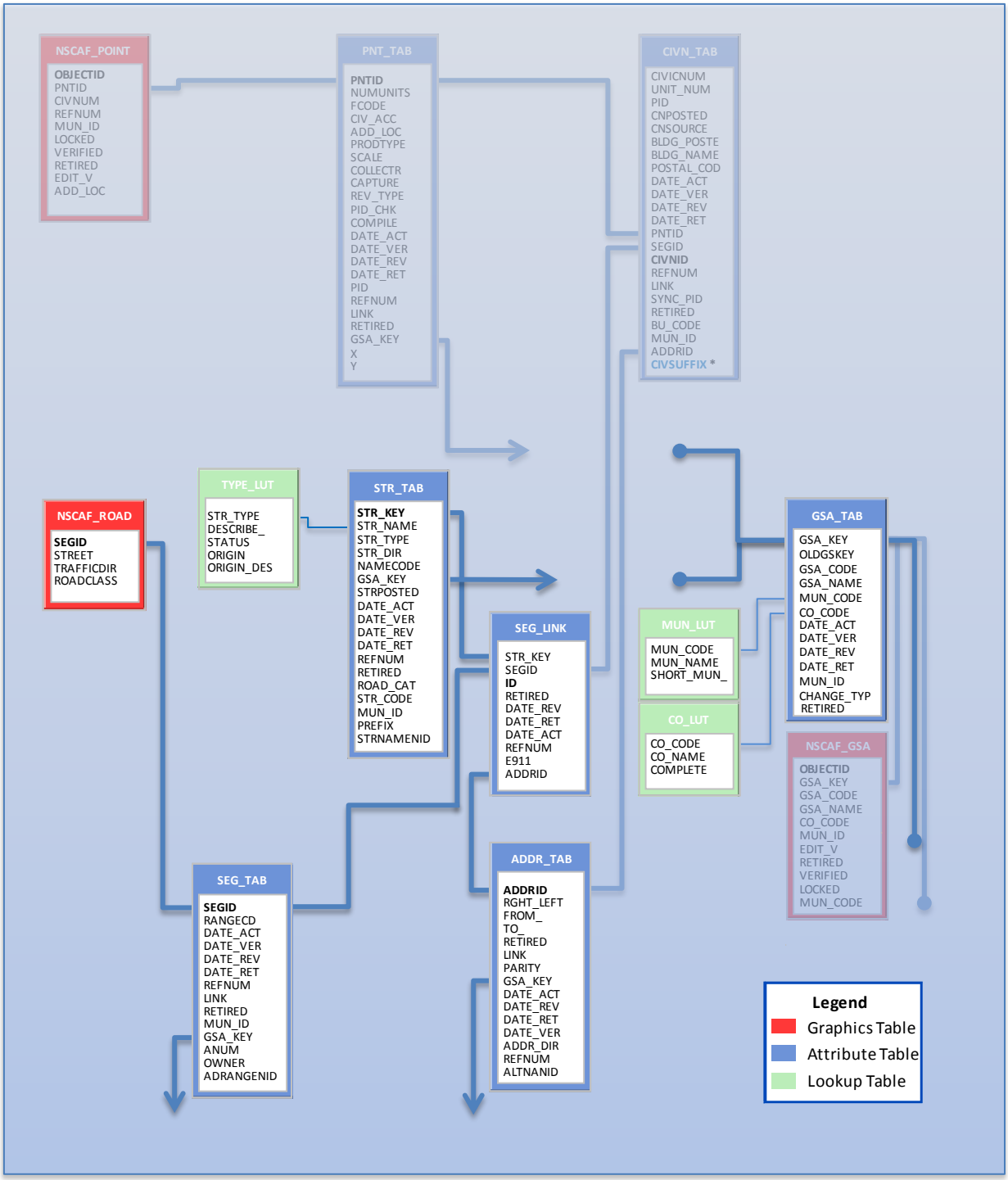


Figure A. 2 Geocoding Roads - Entity Relationship Diagram

*A new field (CIVSUFFIX) is added to the CIVN_TAB. For more details refer to NSCAF Schema Appendix.

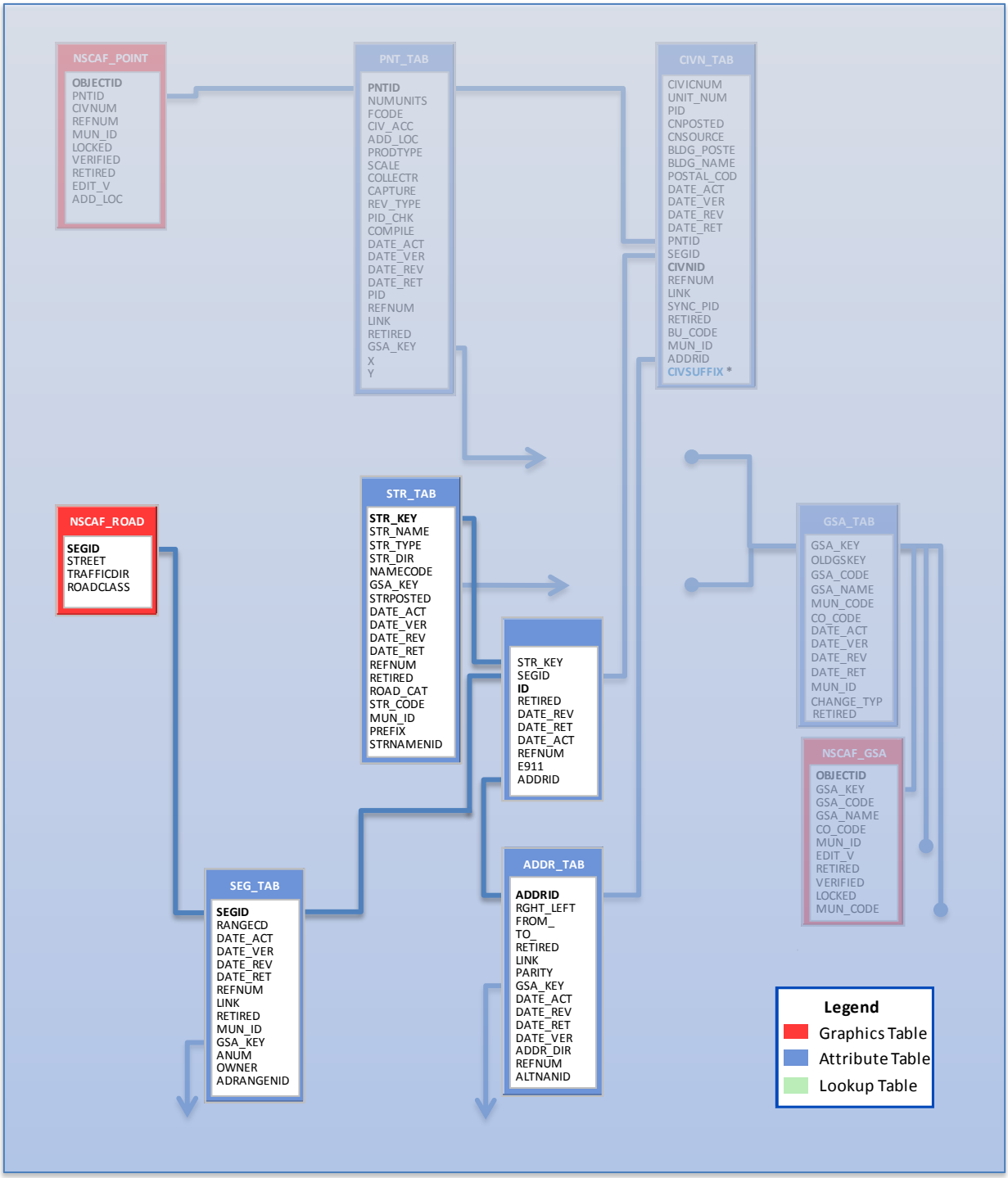


Figure A. 3 NSCAF Roads - Entity Relationship Diagram

*A new field (CIVSUFFIX) is added to the CIVN_TAB. For more details refer to NSCAF Schema Appendix.

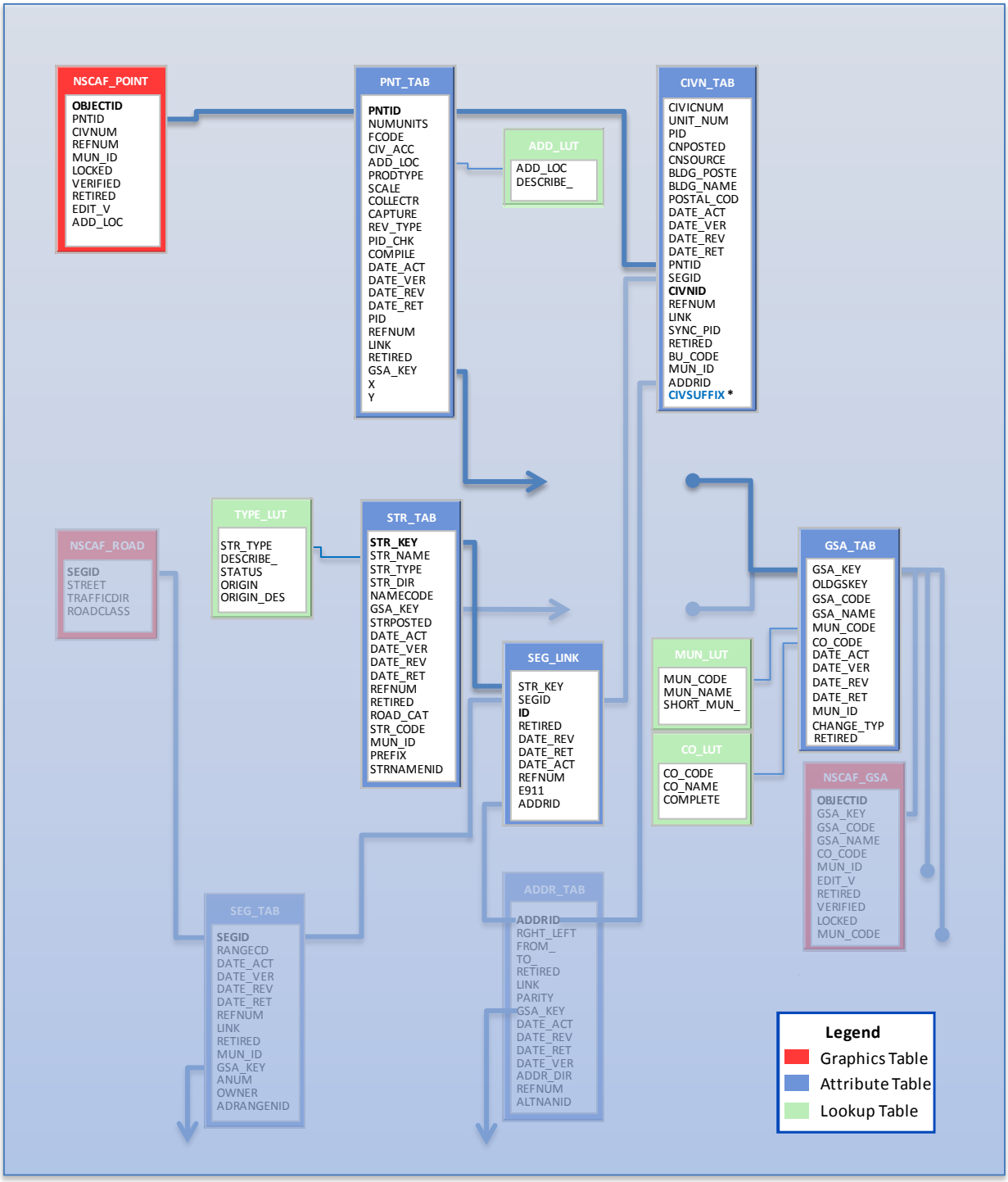


Figure A. 4 Simplified Points - Entity Relationship Diagram
*A new field (CIVSUFFIX) is added to the CIVN_TAB. For more details refer to NSCAF Schema Appendix.

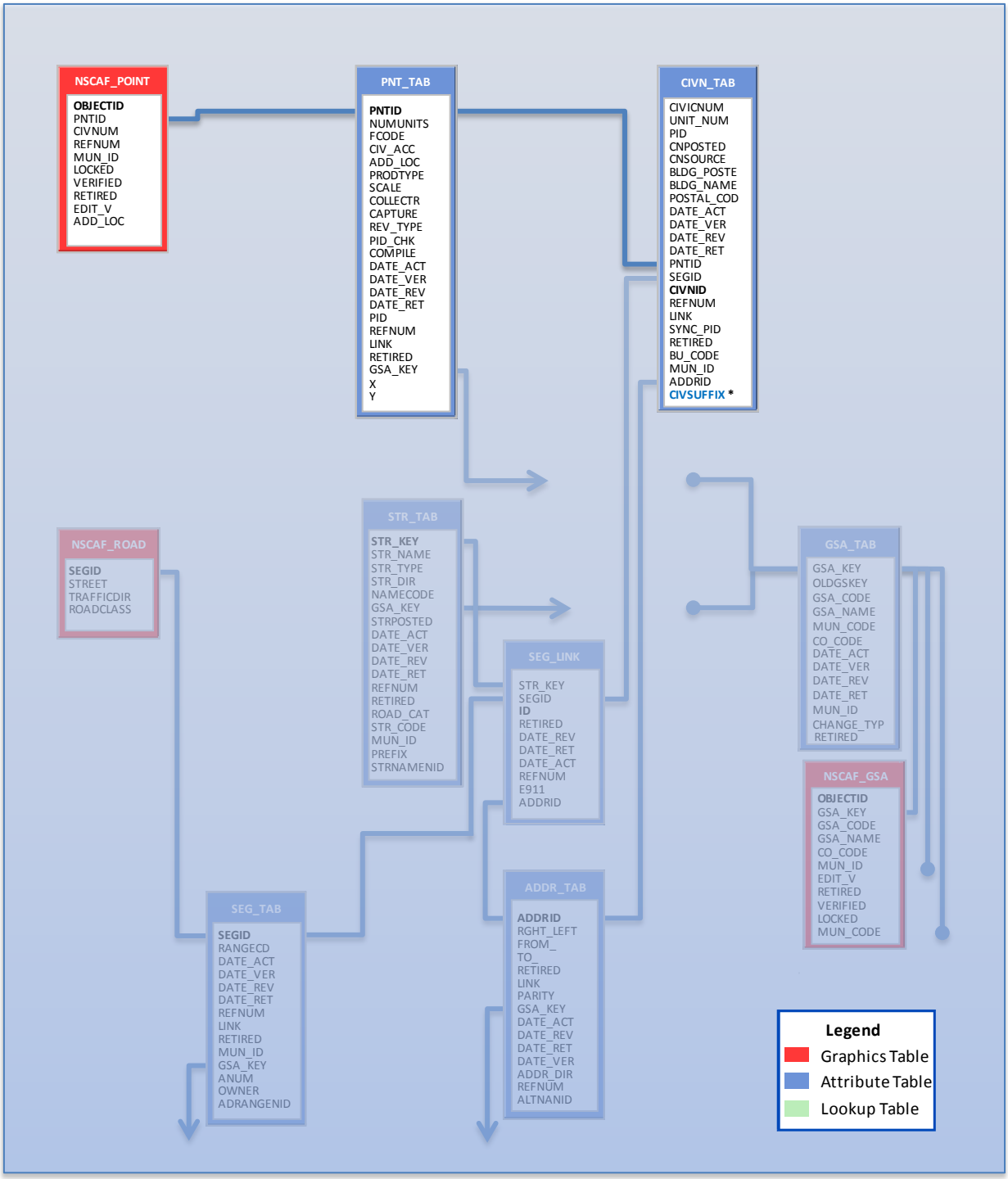


Figure A. 5 NSCAF Points - Entity Relationship Diagram

*A new field (CIVSUFFIX) is added to the CIVN_TAB. For more details refer to NSCAF Schema Appendix.