

# Cartographic Resources and GIS Data for Geomatics Engineering

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Spatial and Numeric Data Services (SANDS)

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## SPATIAL & NUMERIC DATA SERVICES

[Home](#)

[Applications](#)

[Thematic Data Catalogue](#)

Current UCalgary students, faculty and staff may book appointments for Spatial and Numeric Data Services. Please email [maps@ucalgary.ca](mailto:maps@ucalgary.ca) for assistance.  
See [Libraries and Cultural Resources COVID-19](#) page for updates.

# Spatial & Numeric Data Services

Providing access to cartographic materials, GIS and statistical data and software. We can assist with finding resources both within and outside our collection

CLOSED

## What services are offered?



### Data & Statistics

Spatial and Numeric Data Services, Data and Statistics collects and provides access to aggregate data and Statistics Canada licensed microdata files.

[View research guide](#)



### GIS & Spatial Data

Spatial and data resources in our collection and freely available.

[View research Guide](#)



### Maps

Our collection has over 200,000 print maps. Coverage is worldwide with emphasis on Calgary, Alberta, and Canada. Maps vary in scale, date, and theme. Major sets include the National Topographic Series (NTS) for Canada, Alberta resources, and City of Calgary topographic and community district series.

[View research guide](#)

[Digital historic maps](#)



### Air Photos

The collection includes about one million air photos, with Calgary and southern Alberta as the primary focus. There is less inclusive coverage for northern Alberta and other provinces and territories. Air photos are taken at various scales and years; Calgary coverage starts in 1924.

Please note: as of May 22 2018, SANDS will no longer circulate air photos. Scanners are available; please bring a data drive to transport files.

[Search air photo sets](#)

[View research guide](#)

# Mapping Applications

Index of various web mapping applications produced by Spatial and Numeric Data Services (SANDS)

▼ GIS

▲ Imagery

▲ Map



Fire Insurance Plans - Calgary,  
Alberta

1911 to 1970's



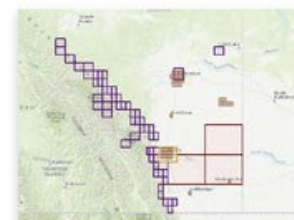
International Map of the World  
- Canada Set

1:1,000,000 Topographic  
Series



Land and Vegetation Maps -  
Alberta

1964 to 1990s  
(restricted access)



National Topographic System  
of Maps  
Alberta

1907 to 1969, Various Scales



Topographic Maps, By  
Sections  
Calgary, Alberta

1960s to 1980s



Township Plans - Calgary,  
Alberta

1883 to 1919



Sectional Maps - Canadian  
Prairies

1 to 3 Mile

PLAN OF  
TOWNSHIP N<sup>o</sup> 24  
RANGE 1 WEST OF FIFTH MERIDIAN

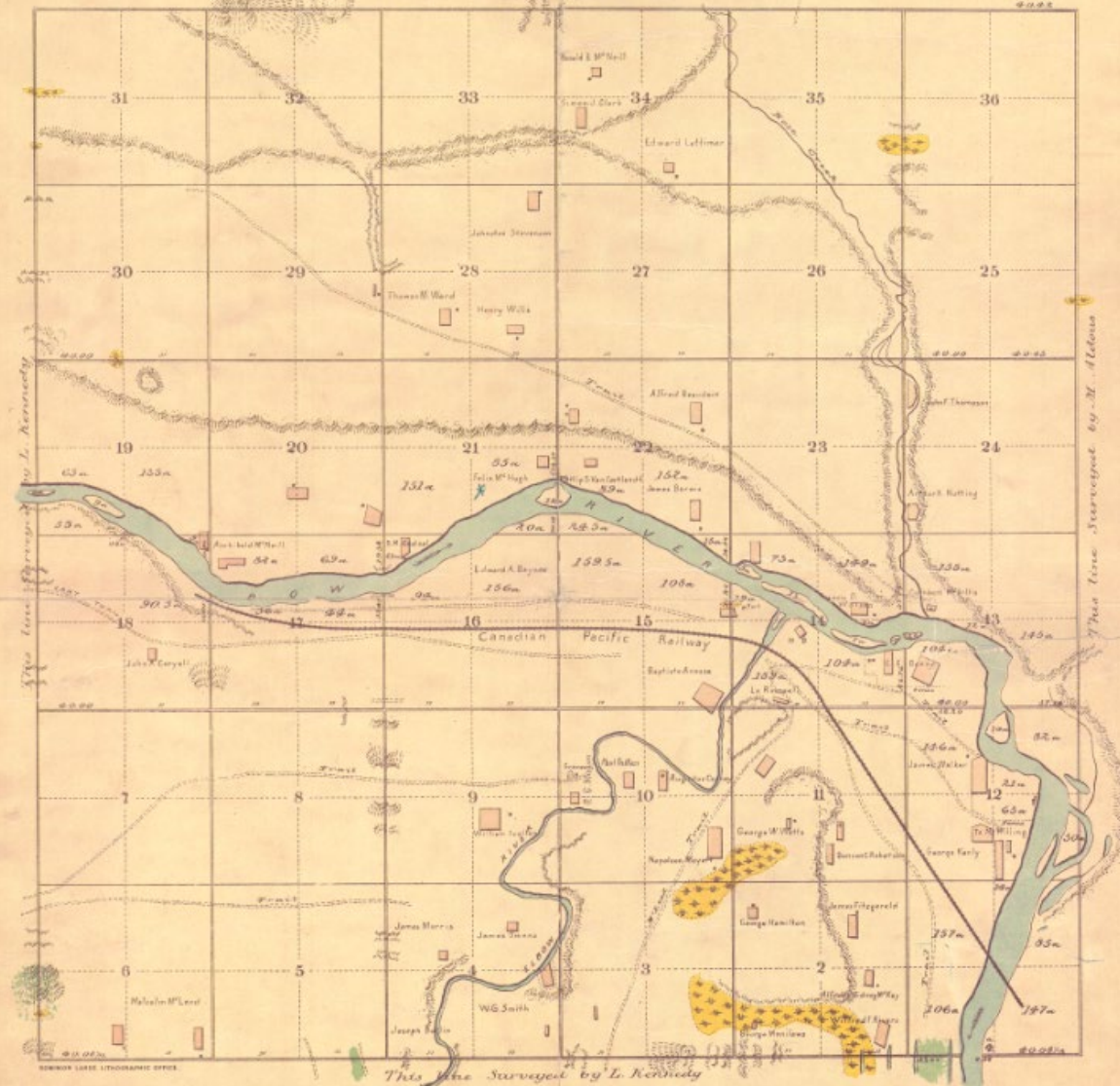
## PLAN OF

TOWNSHIP N<sup>o</sup> 24

RANGE 1 WEST OF FIFTH MERIDIAN

Scale, 40 Chairs to an inch

*This line Surveyed by M. Aldous*



Dominion Lands Office  
Ottawa

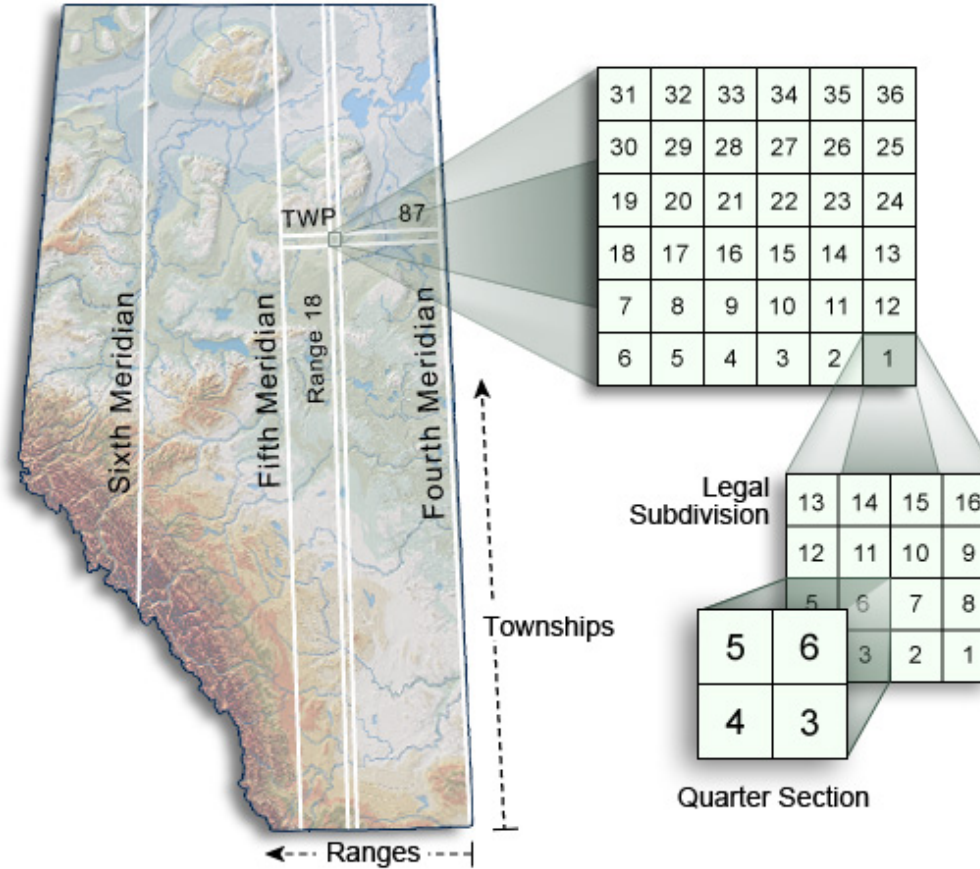
## Contents

Land in Sections 22219.00 Acres

*Surveyed by the Undersigned*



# Alberta Township System (ATS)



The legal description of the section highlighted in the diagram above would be written as:

1 - 87 - 18 - W4

Sec. Twp. Rge. Meridian



# Digital Historical Maps

Scanned maps from the University of Calgary's collection, as well as links to other web resources for historical maps, focused primarily on the western Canadian prairies

[Home](#)[Calgary & Area](#)[Exploration & Topographic Surveys](#)[Natural Resources](#)[Society](#)[Other Locations](#)[Transportation](#)

## Topographic

[1:76k \(1898\)](#)[1:190k NTS \(1926\)](#)[1:25k NTS \(1960s\)](#)[1:50k NTS \(1950-1960s\)](#)[1:63k NTS \(1930-1940s\)](#)[1:2k Municipal Topographic \(1960s-1980s\)](#)[Full Record](#)

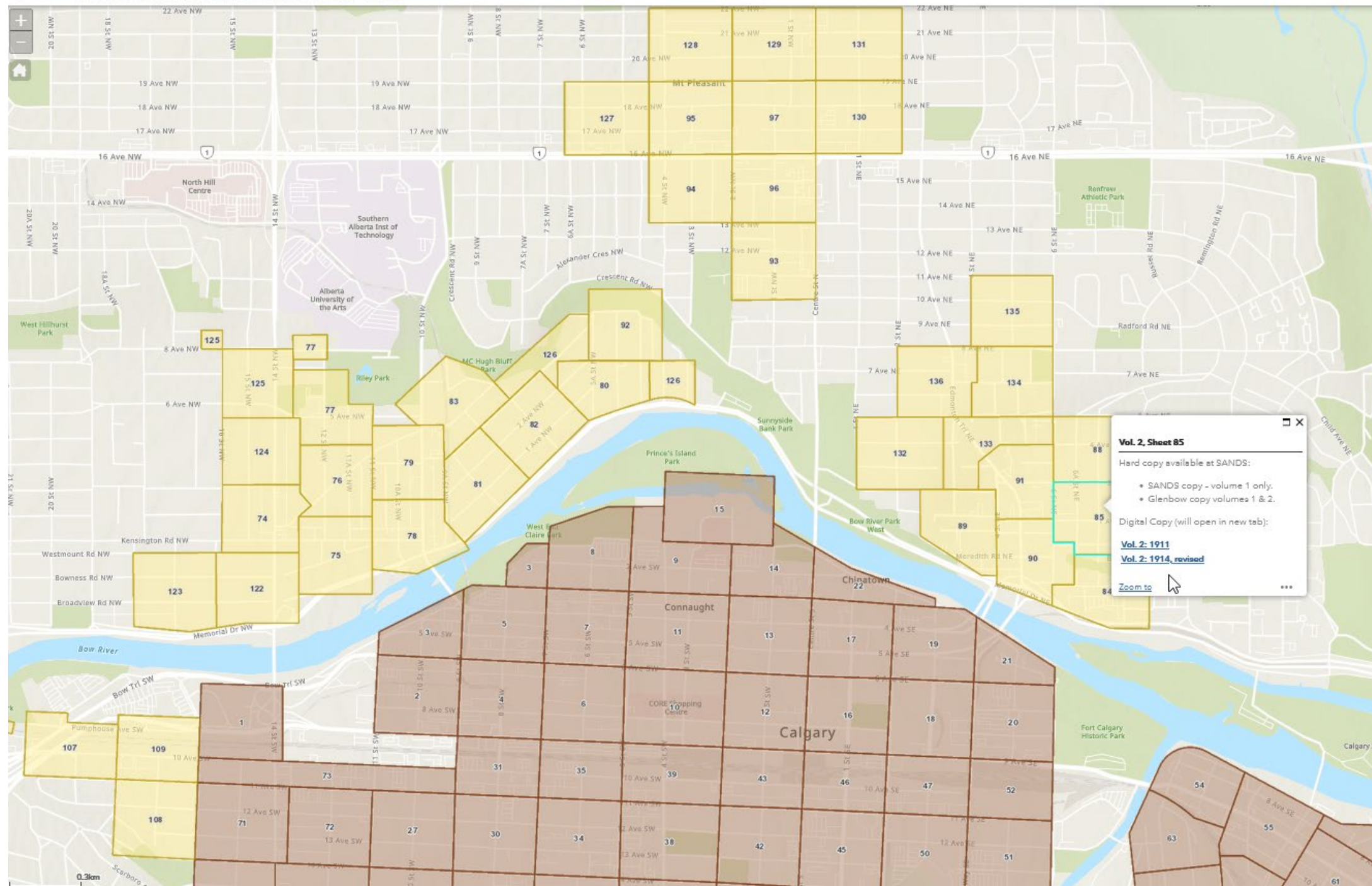
## Official Plans & Street Maps

[1891 1:13k](#)[1913](#)[1946](#)[1950](#)[1955](#)[1959](#)[1960](#)[1960 Military](#)[Roads - ca.1955](#)[Township Plans](#)[Full Record](#)









## Vol. 2, Sheet 85

Hard copy available at SANDS:

- SANDS copy - volume 1 only.
- Glenbow copy volumes 1 & 2.

Digital Copy (will open in new tab):

[Vol. 2: 1911](#)

[Vol. 2: 1914, revised](#)

[Zoom to](#)



...

85

6<sup>TH</sup> ST. S.EAST.6<sup>TH</sup> ST. NEAST.

SEE SHEET No 91

CALGARY, ALTA.

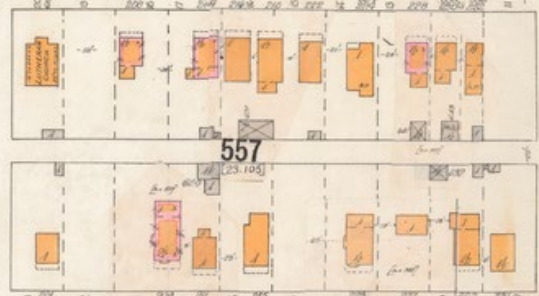
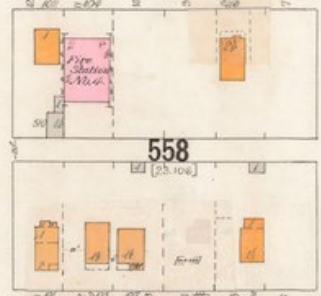
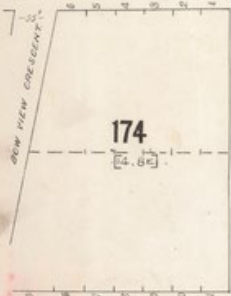
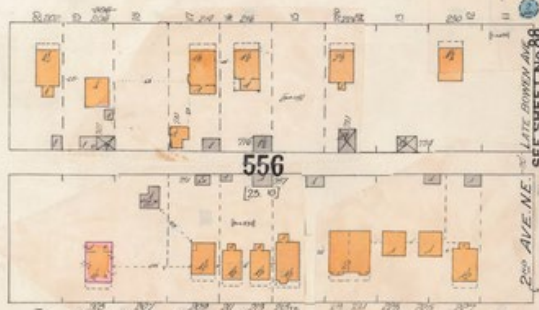
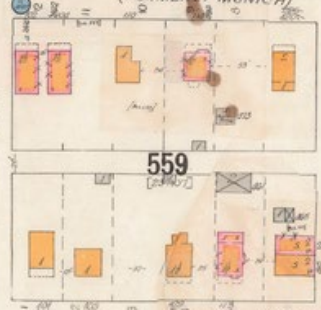
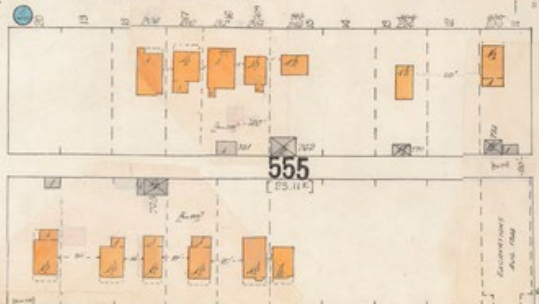
VOLUME II

OCTOBER 1911.

85

BRIDGELAND.

SEE SHEET No 90

6<sup>TH</sup> ST. A. S.EAST.6<sup>TH</sup> ST. A. NEAST.  
(FORMERLY DRESDEN)7<sup>TH</sup> ST. S.EAST.7<sup>TH</sup> ST. NEAST.  
(FORMERLY MUNICH)7<sup>TH</sup> ST. A. S.EAST.7<sup>TH</sup> ST. A. NEAST.  
(FORMERLY DOUGLASS)8<sup>TH</sup> ST. S.EAST.8<sup>TH</sup> ST. NEAST.  
(FORMERLY DRURY)

SEE SHEET No 86

SCALE 50 FT. = 1 INCH

SEE SHEET No 88

2<sup>ND</sup> AVE. NE.

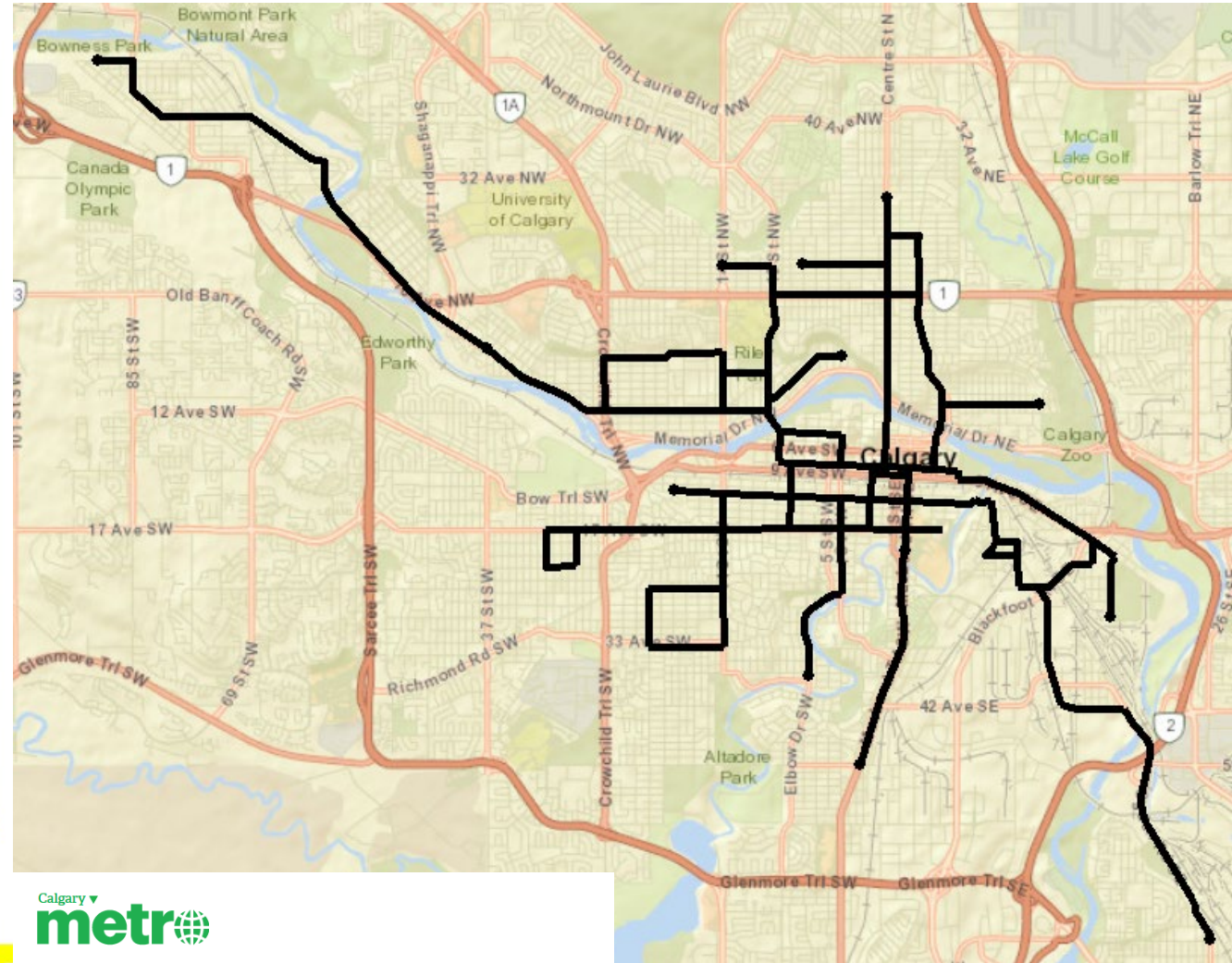
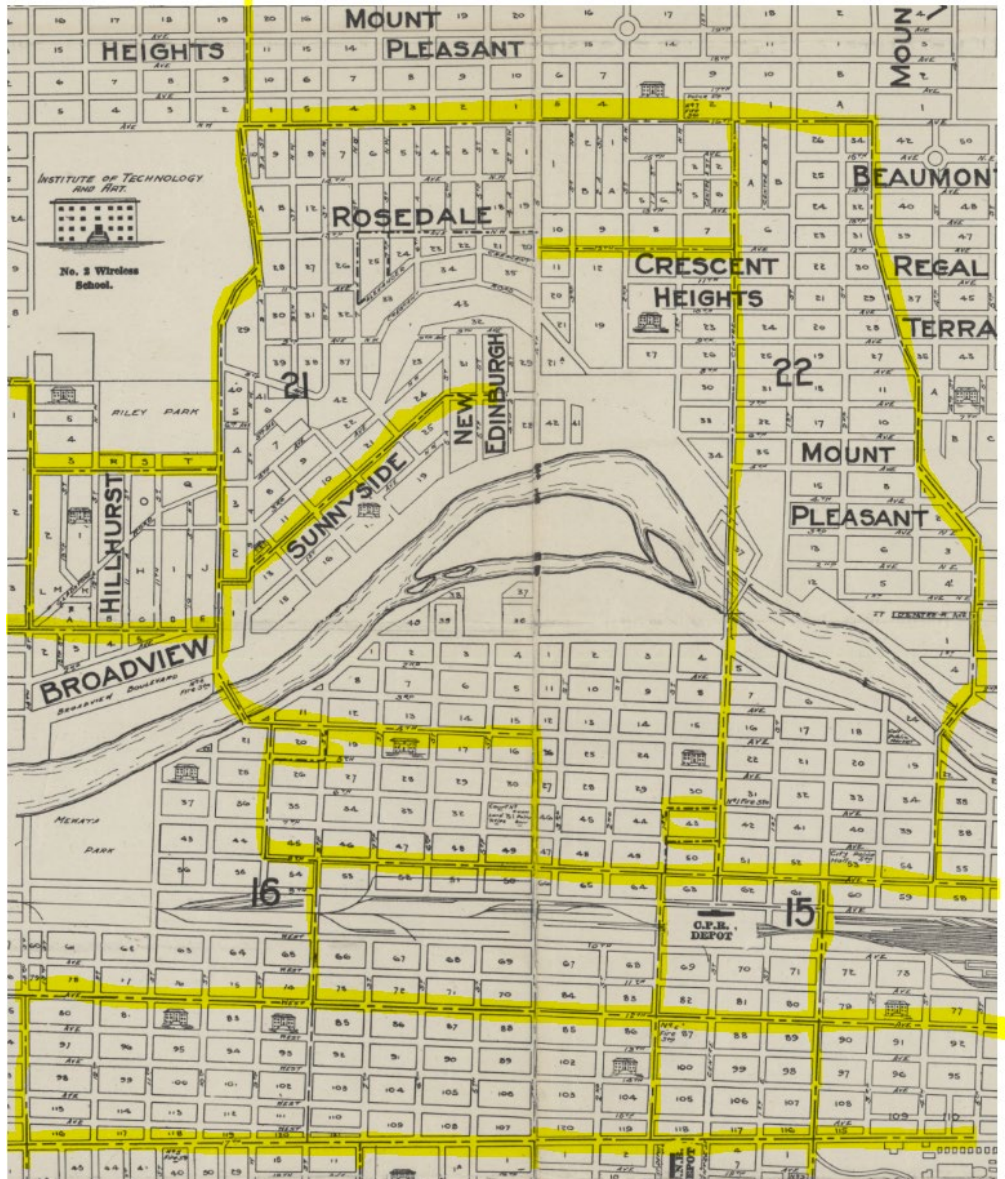
LATE BROWN AVE.

1<sup>ST</sup> AVE. N.E. (FORMERLY LOUISA AVE.)CENTRE AVE. EAST.  
(FORMERLY NORTHCOTE AVE.)

BOW VIEW CREEK



# Georeferencing and Vectorization



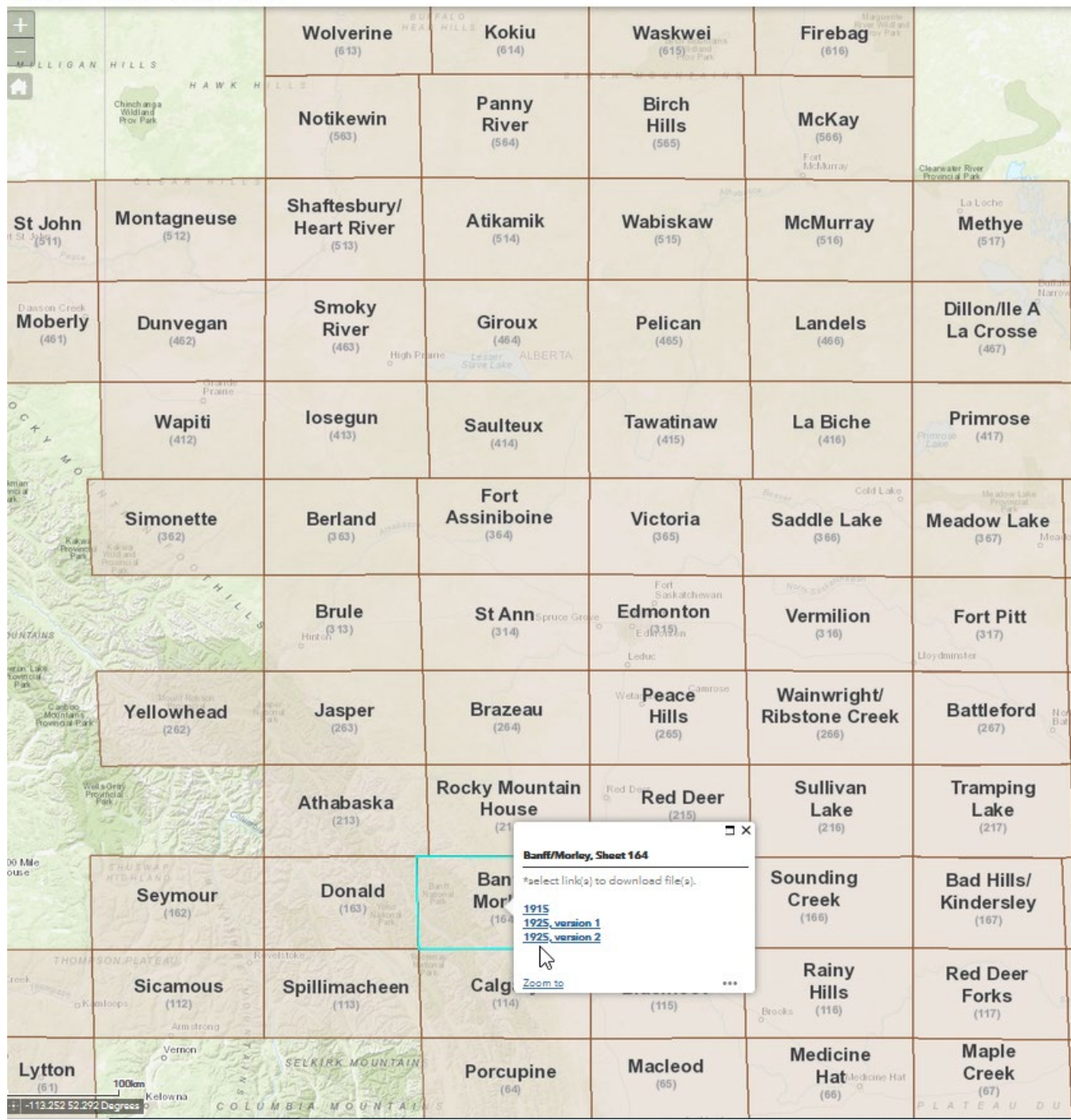
Calgary 

[HOME](#)  
[NEWS](#)  
Calgary  
Canada  
World  
[VIDEOS](#)

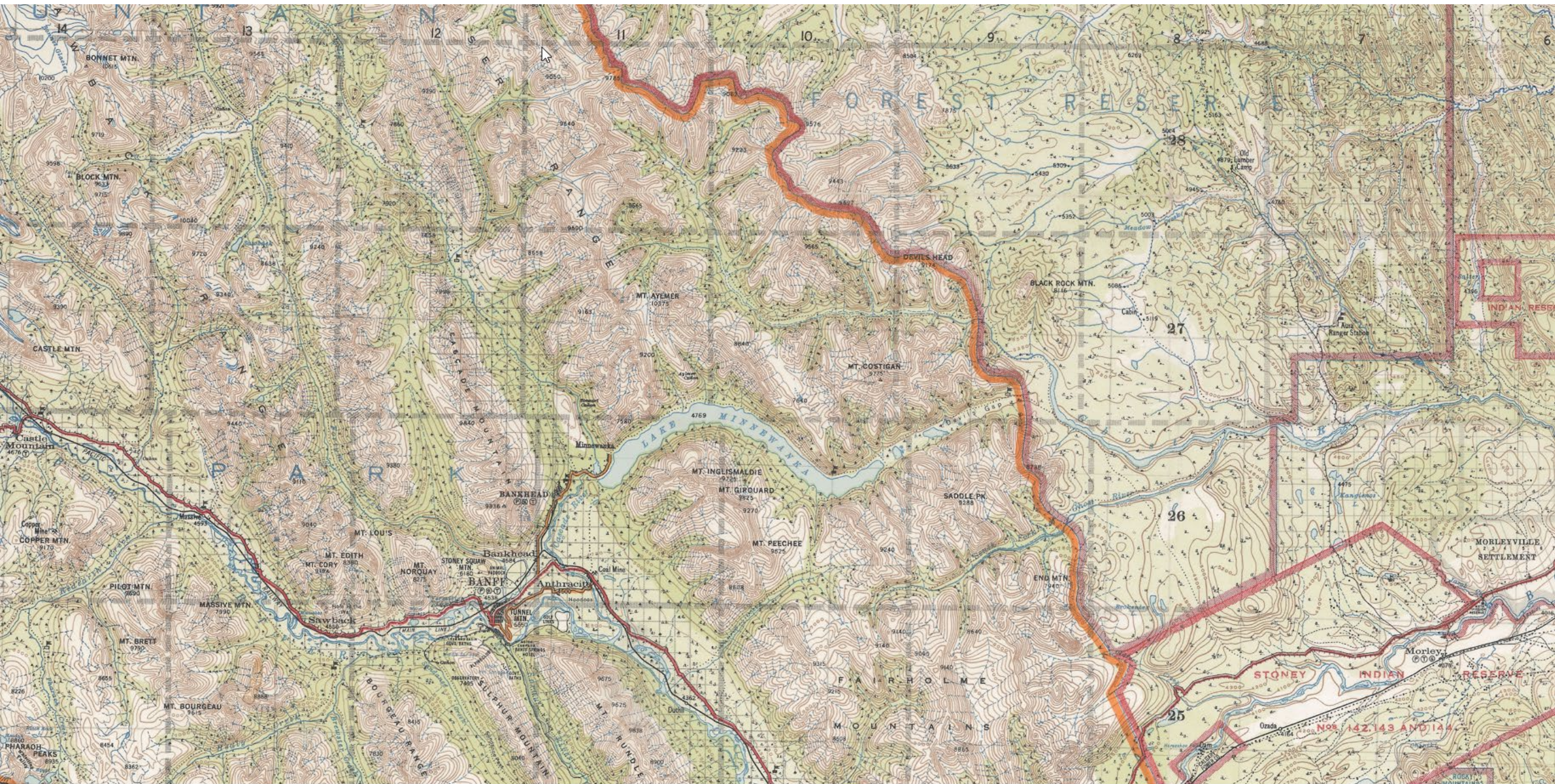
News / Calgary

**Street car revival: Calgary administration talks bringing back trolley**



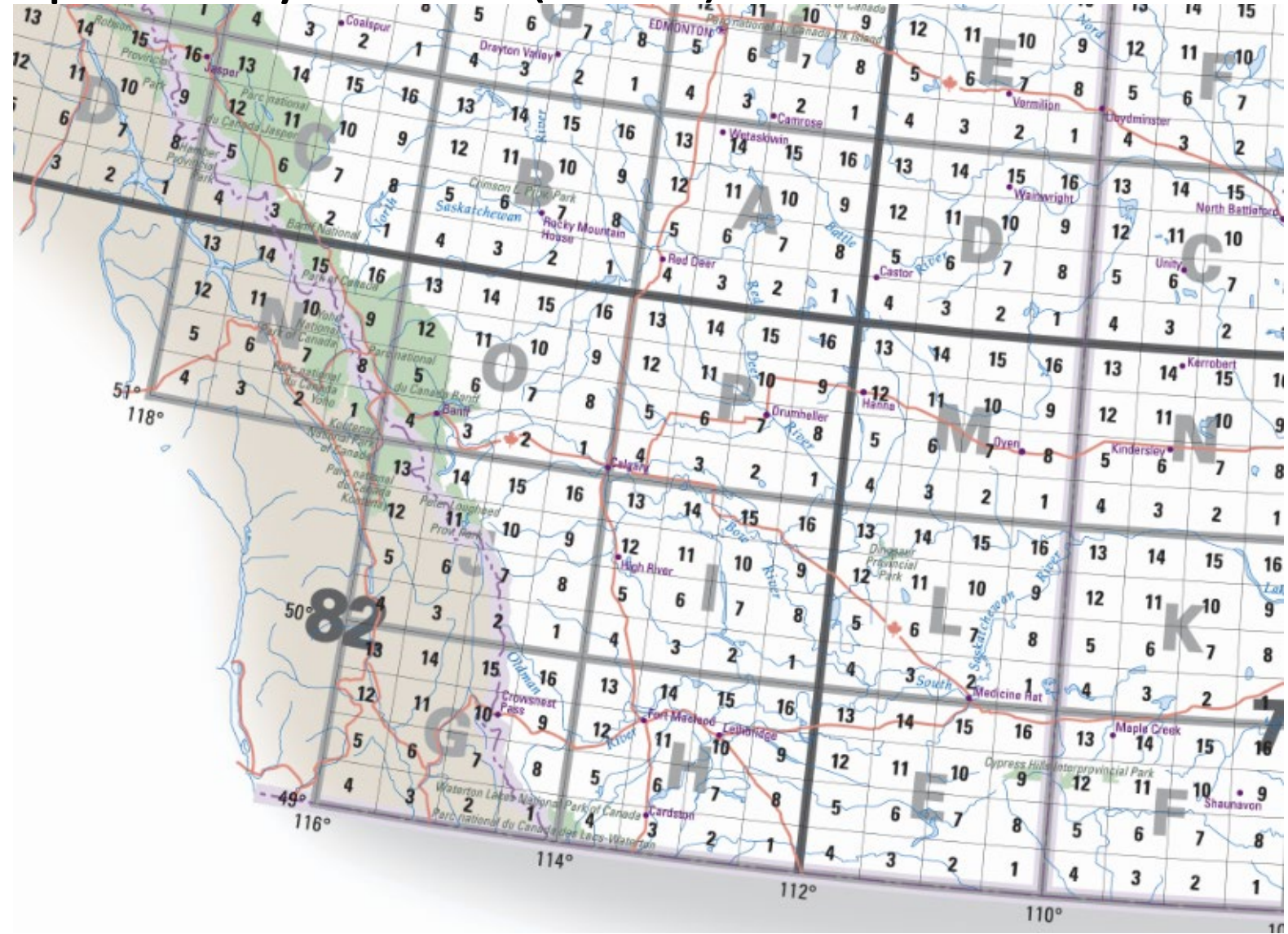
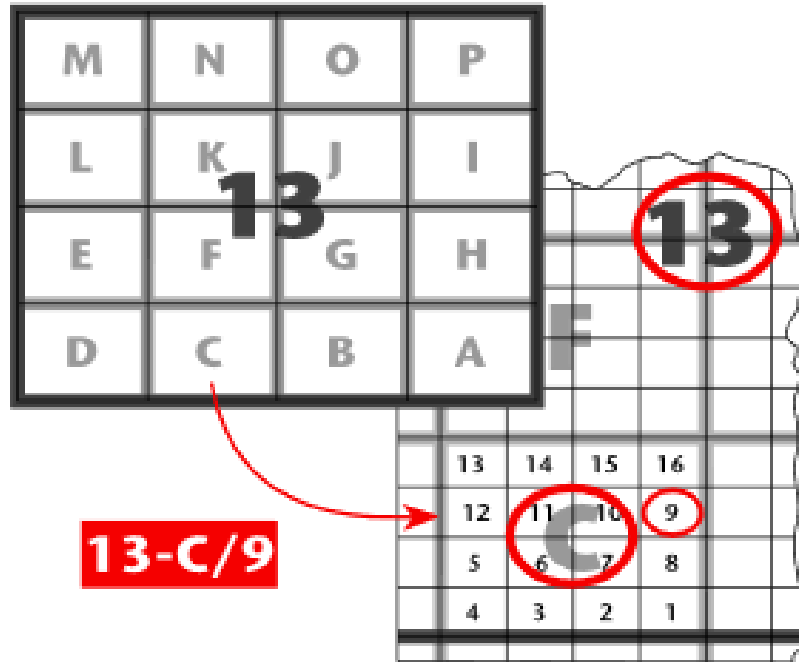




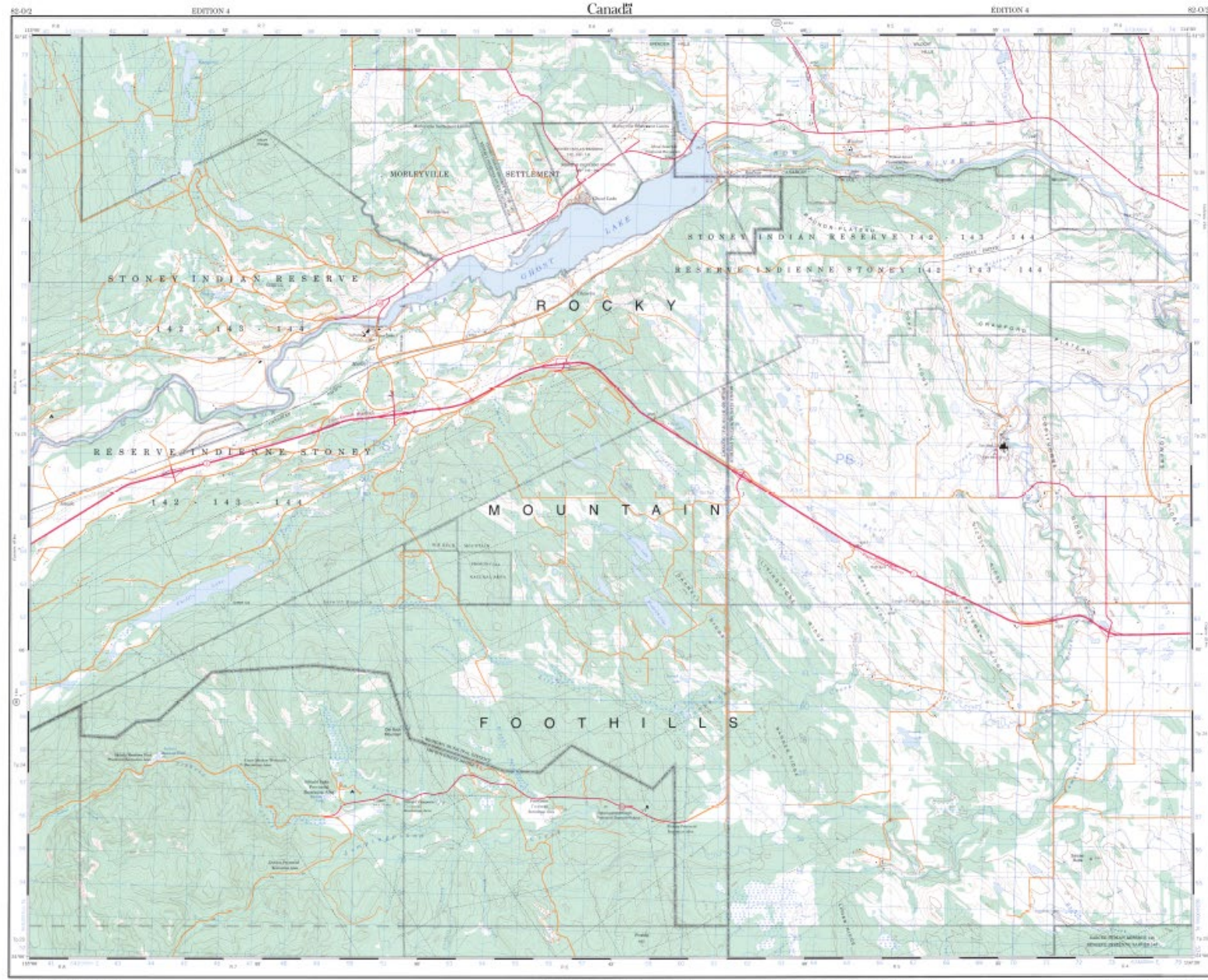




# National Topographic System (NTS)







Produced by the Canadian Centre for Mapping  
Produit par le Centre canadien de cartographie

For more information, please contact:  
Pour plus de renseignements, veuillez communiquer avec:

1-800-461-8417

Symbol	Description
[Symbol]	Settlement
[Symbol]	Water
[Symbol]	Vegetation
[Symbol]	Topography
[Symbol]	Infrastructure
[Symbol]	Boundaries

Scale 1:50,000

Scale 1:50,000

Scale 1:50,000

Symbol	Description
[Symbol]	Settlement
[Symbol]	Water
[Symbol]	Vegetation
[Symbol]	Topography
[Symbol]	Infrastructure
[Symbol]	Boundaries

Some symbols are not shown on this map.  
Certains symboles ne sont pas représentés sur cette carte.

Symbol	Description
[Symbol]	Settlement
[Symbol]	Water
[Symbol]	Vegetation
[Symbol]	Topography
[Symbol]	Infrastructure
[Symbol]	Boundaries



THE TOWN OF JUMPINGPOUND CREEK

Symbol	Description
[Symbol]	Settlement
[Symbol]	Water
[Symbol]	Vegetation
[Symbol]	Topography
[Symbol]	Infrastructure
[Symbol]	Boundaries



LOCAL DESIGN

DETAILED DESIGN

NEW TOPOGRAPHIC MAPS  
LES NOUVEAUX CARTES TOPOGRAPHIQUES

JUMPINGPOUND CREEK  
82-0/2





## Topographic Information

Topographic Information: where you can find maps, data, applications and tools.

## Geospatial Applications and Tools

### [Open Government Search](#)



Search Natural Resources Canada products by keyword.

### [Geospatial Product Index - HTML](#)



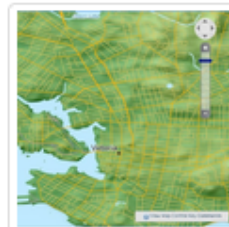
Find and download our most popular geospatial data.

### [Toporama Interactive Map](#)



Explore topographic data using tools for searching place names, measuring distances and more.

### [Geospatial Data Extraction](#)



Download elevation and topographic data based on predefined or custom-defined geographic areas.



# AltaLIS Open Data


The screenshot displays the AltaLIS Open Data web application interface. The top navigation bar includes links for [Sign Up](#), [Sign In](#), [Map](#), [Tools](#), [Help](#), and a shopping cart icon with a red circle containing the number 0.

The main interface is divided into several sections:

- Left Sidebar:**
  - Base Features:** A section with a globe icon and text describing the 1:20 000 Base Features as a GIS spatial database product. It includes a [Read More](#) link.
  - Product Selection:** A section titled "Select one of the products below to continue" with a list of products: [Access](#), [Geo-Administrative Areas](#) (highlighted with a mouse cursor), [Alberta Township System](#), [Contour Linework](#), [Hydrography](#), and [Base Hydrography Update](#).
- Top Map Bar:** A dark blue bar containing navigation tools: [PAN/ZOOM](#), [SEARCH](#), [SELECT](#), [MODIFY SELECTION](#), and [UNDO](#).
- Map:** A large map of Western Canada showing the provinces of British Columbia, Alberta, and Saskatchewan. Major cities like Vancouver, Edmonton, and Calgary are labeled. The map displays various data layers, including green areas representing land and blue areas representing water.
- Right Sidebar:** A section titled "Select a Product" with two options: [Street Map](#) and [Planet Imagery](#).
- Bottom Panel:** A dark blue bar containing a **LAYERS** dropdown menu, a **LEGEND** dropdown menu, and a scale bar indicating 200 km. The coordinate system is listed as EPSG:3401.



# City of Calgary Open Data




Search

HomeBrowse DataDataset SuggestionsAboutDeveloper InfoHelp


Open Calgary

The City of Calgary's Open Data Portal




Browse Data

Browse the datasets




Feedback

Do you have feedback or suggestions to enhance data.calgary.ca




Help

New to our site or want to learn more about what you can do with Open Data? Click here.




City Council Meeting Dashboard

See how Council voted on the City Council Meeting Vote Dashboard.




Current Year Rainfall

Check daily rainfall data in the City.



COVID-19 Vaccination Locations

Map of AHS and pharmacy locations.



Search

HomeBrowse DataDataset SuggestionsAboutDeveloper InfoHelp

Search

Categories

Base Maps

Business and Economic Activity

Demographics

Environment

Government

Show All...

View Types

Calendars

Charts

Data Lens pages

Datasets

External Datasets

Files and Documents

Filtered Views

Forms

Maps

Measures

Stories

Tags

816 Results

Sort byRecently Added

Traffic Signal Signs

Health and Safety

Dataset

This dataset identifies the various traffic signs installed at traffic signals.

Created September 16, 2021

Views 26

Tags pedestrian, signs, turns

API Docs

Land Use Redesignation Applications - by Community

Map

Applications for land use redesignation, outline plans and road closures.

Created August 5, 2021

Views 73

Tags No tags assigned

Healthy Rivers Sub Watersheds map

Environment

Map

The polygons delineate the boundaries of each of the major sub-watersheds within City of Calgary boundaries. These include Bow River Direct, Elbow River, Fish Creek, Nose Creek, Pine Creek and Shepard Wetland/Western

Created July 29, 2021

Views 71

Tags No tags assigned

Healthy Rivers Sub Watersheds

Environment

Dataset

The polygons delineate the boundaries of each of the major sub-watersheds within City of Calgary boundaries. These include Bow River Direct, Elbow River, Fish Creek, Nose Creek, Pine Creek and Shepard Wetland/Western

Created July 26, 2021

Views 151

Tags bow river direct, elbow river, fish creek, nose creek, pine creek and shepard wetland/western headworks canal

API Docs

Road Marking Lines






Transportation/Transit





Dataset

This dataset was created for visually locating road marking lines and designs.

Created July 19, 2021


# ABMI Data Portal



[Data Download](#)


## Data Download

As species, habitat, and human footprint data accumulate, the ABMI is continually adding new ways of visualizing and interpreting data. The Data Download section provides easy access to the ABMI's data and innovative data products ranging from raw field data, to species habitat associations, to remote sensing and geospatial products, to animal camera trap data, and more.




### Species & Habitat Raw Data

The ABMI collects species and habitat data at terrestrial and wetland sites across Alberta. Access and download these data using the Species & Habitat Raw Data Download interface.



### Human Footprint Products

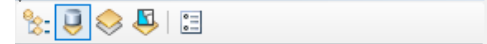
The ABMI provides a comprehensive representation of human footprint, vegetation classes, and other land cover features in a GIS format. Access province-wide and sample-based inventories of human footprint and land cover here.



## Data Download

### Overview

- [Species & Habitat Raw Data](#)
- [Human Footprint Products](#)
- [Advanced Landcover Prediction & Habitat Assessment \(ALPHA\) Products](#)
- [Other Geospatial Land Surface Data](#)
- [GIS Data: Biodiversity](#)
- [Species-level Data Sets](#)
- [Remote Camera Mammal Data](#)
- [Rare Species Data](#)
- [Data Archive](#)



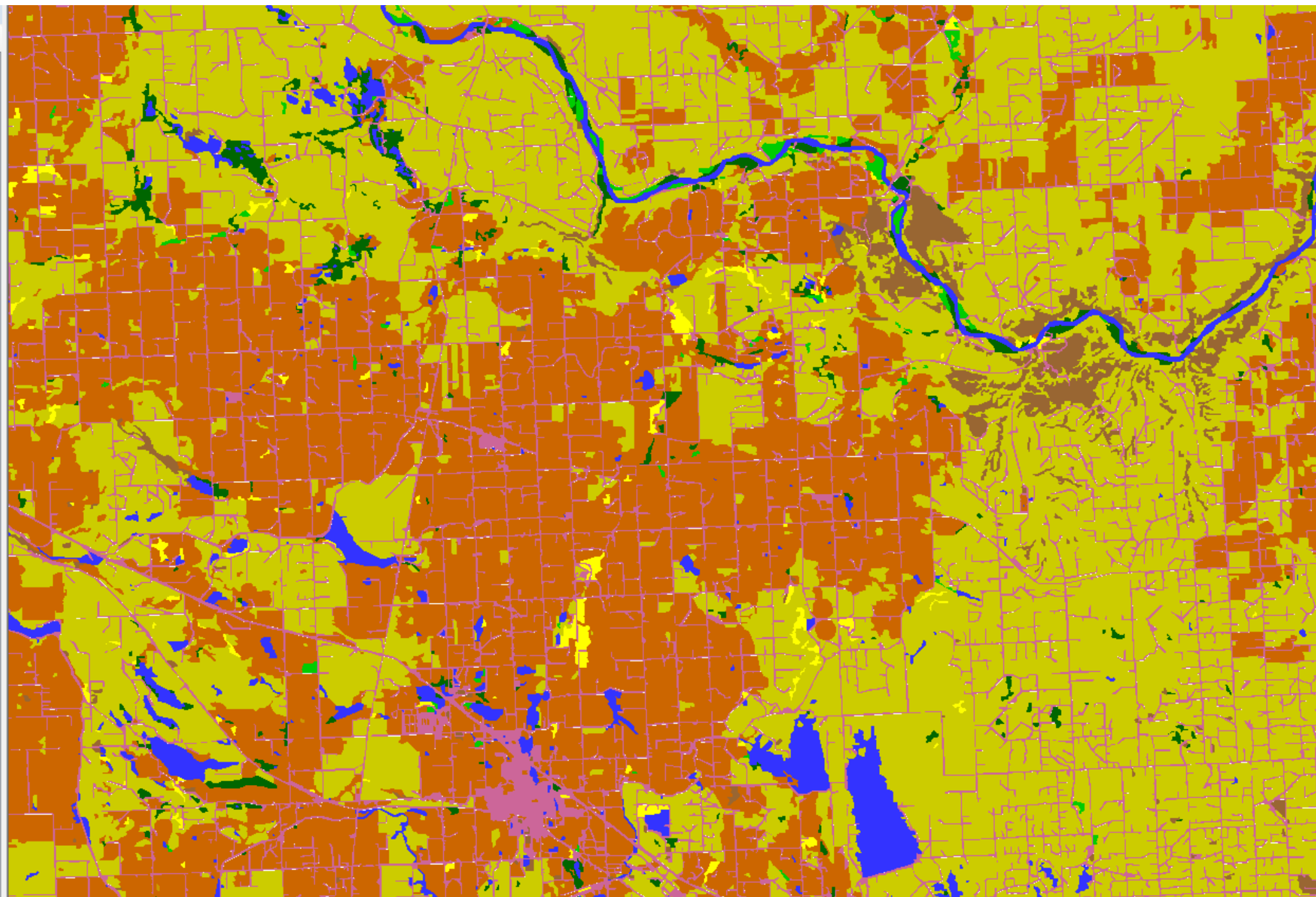
Layers

\\dtpfsrv1.admin.ad.ucalgary.ca\ppeller\$

☒ LandCover

GRIDCODE

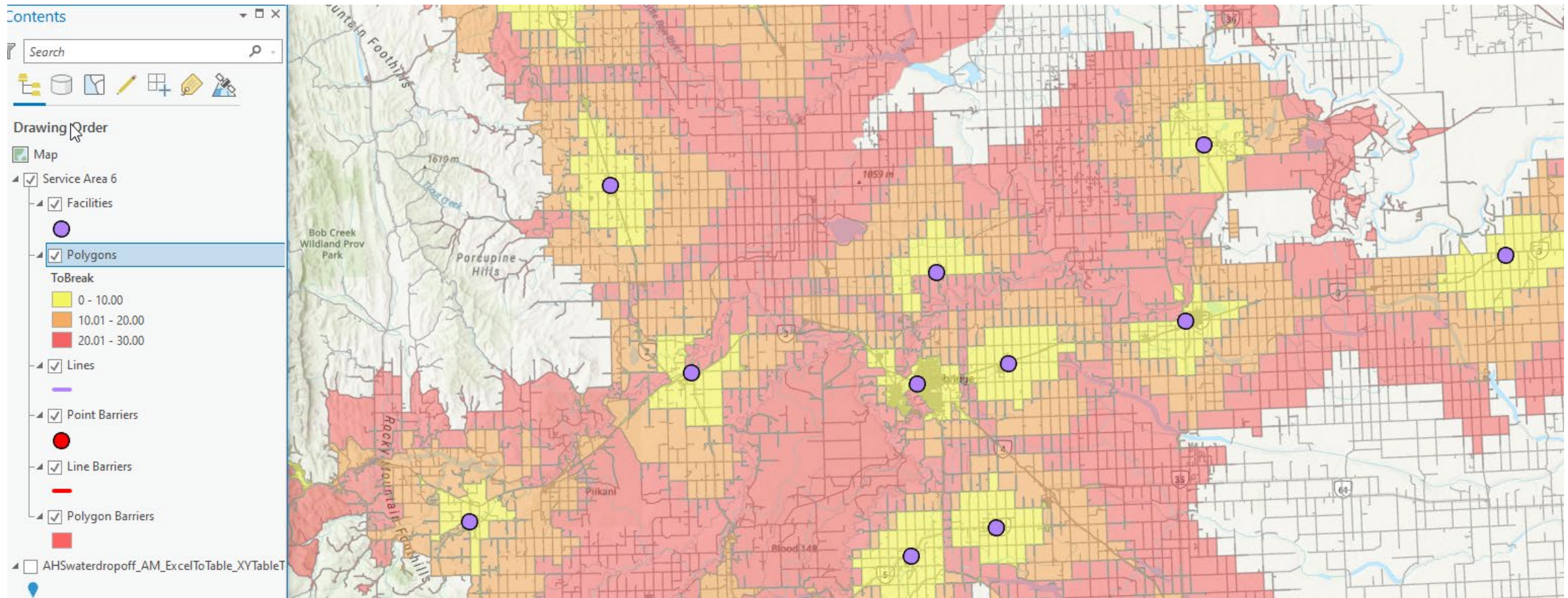
- 20-Water
- 31-Snow/Ice
- 32-Rock/Rubble
- 33-Exposed land
- 34-Developed
- 50-Shrubland
- 110-Grassland
- 120-Cultivated Agricultural Land
- 210-Coniferous Forest
- 220-Deciduous Forest
- 230-MixedWood - Sparse





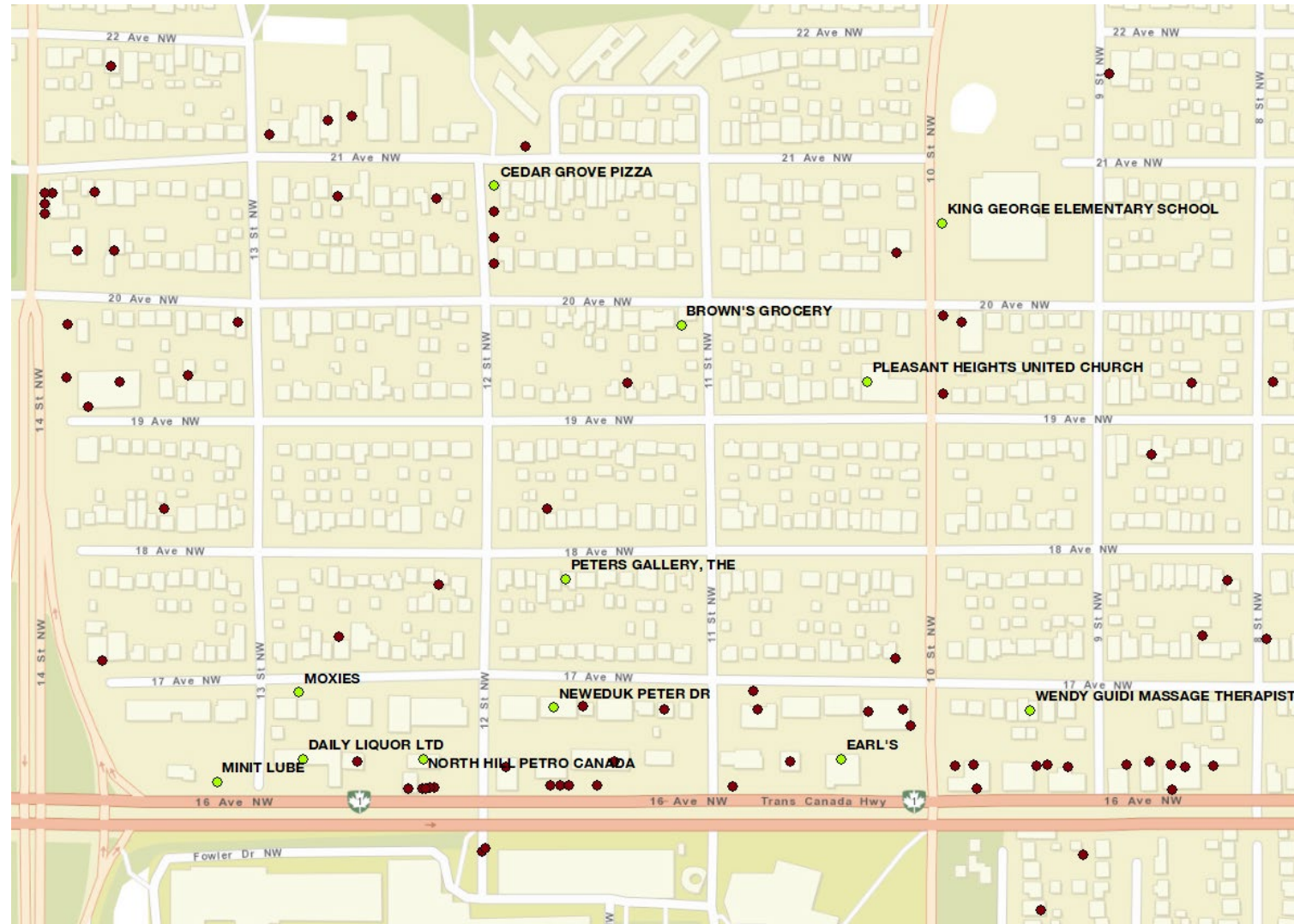


# DMTI Roads Network Layer Service Area Analysis

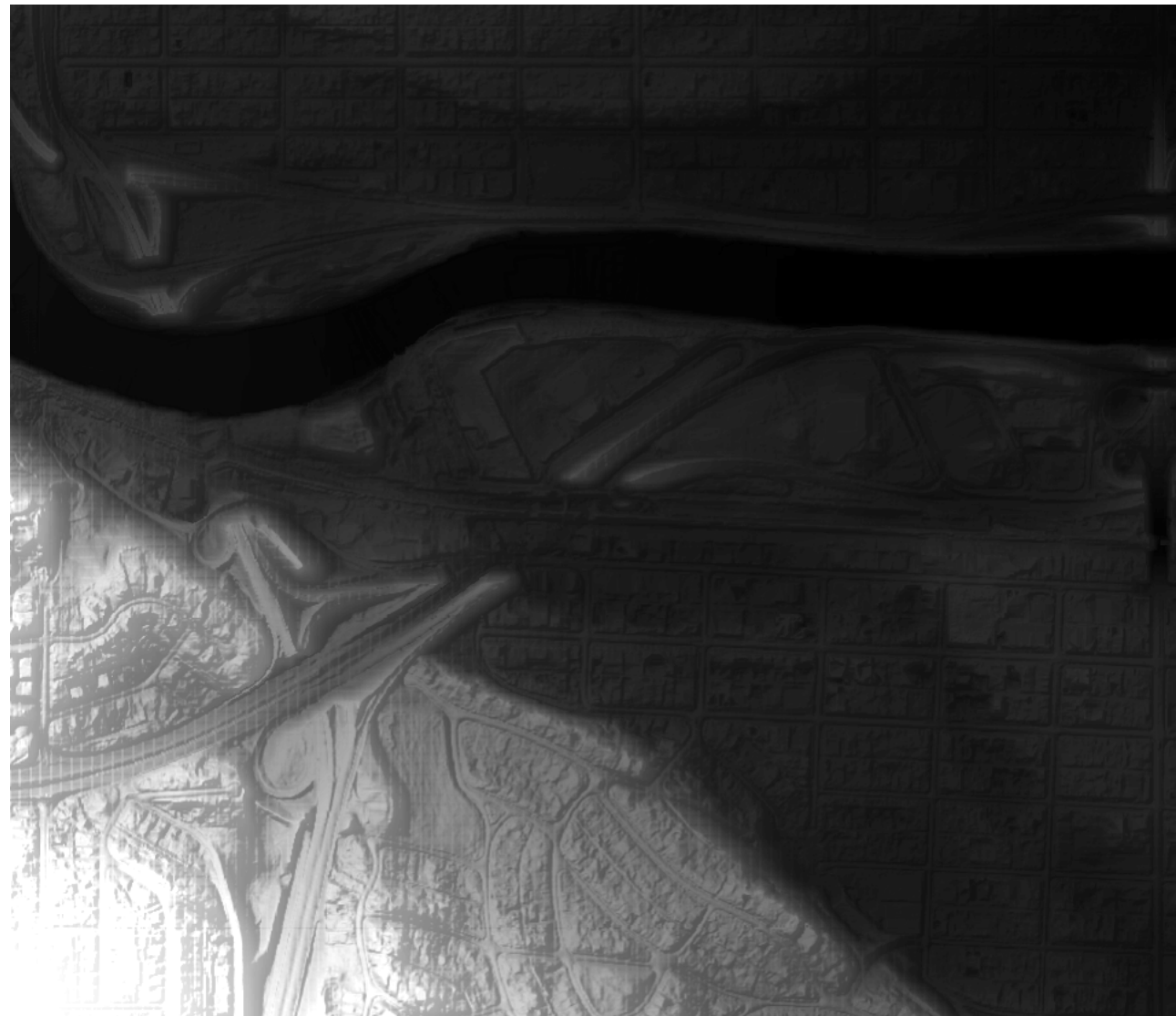
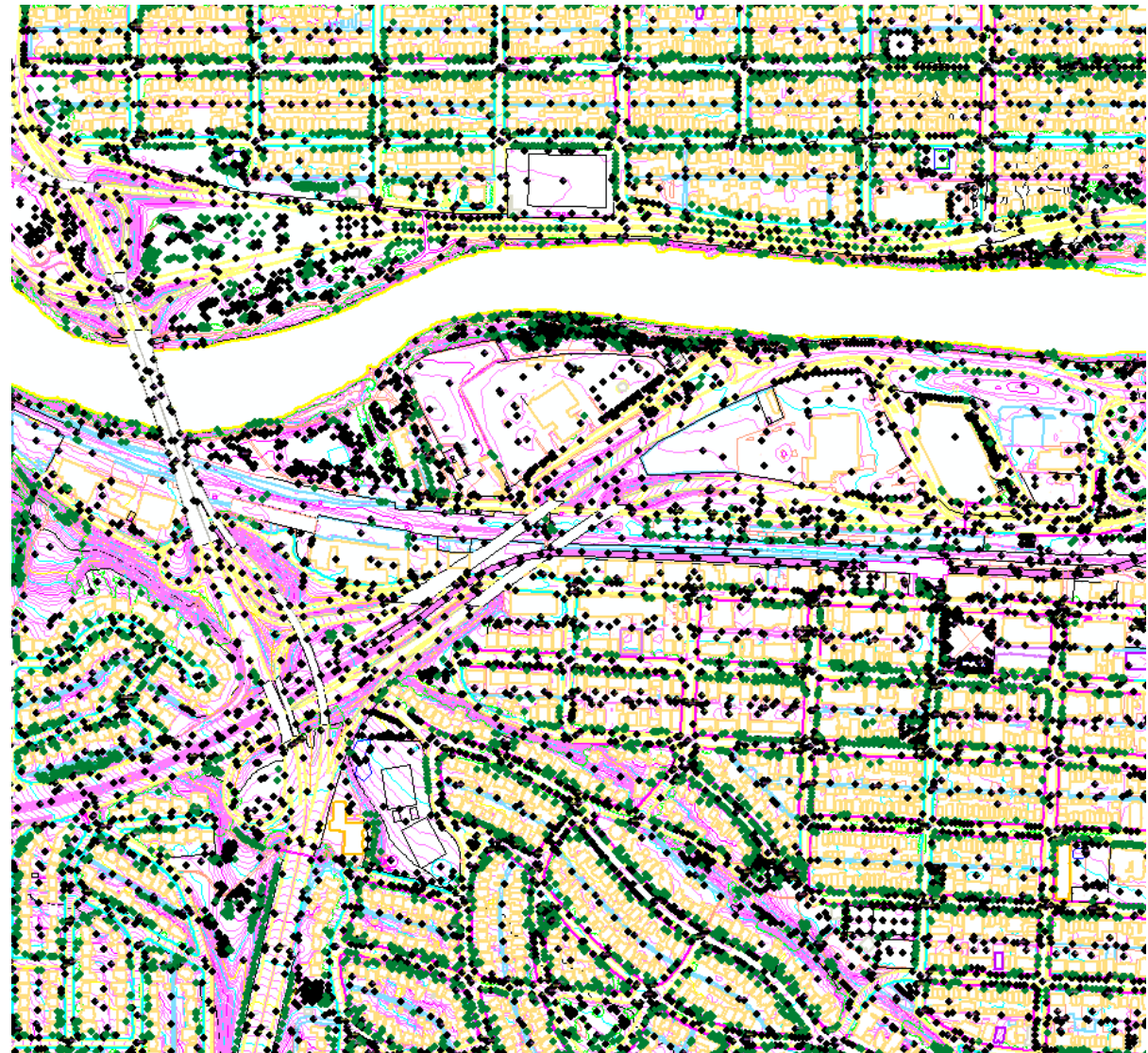




# DMTI Enhanced Points of Interest



# City of Calgary Licensed Data





# City of Calgary 3D Buildings



- Thematic data
- Agriculture
- Air Quality/Pollution
- Biodiversity
- Boundary files
- Buildings/Structures
- Census
- Climate/Weather
- Crime & Justice
- DEMs
- Energy
- Environmental
- Fires
- Floods
- Geology/Landforms
- Glaciers
- Images
- Pipelines
- Polar
- Real estate values
- Soil
- Solar
- Transportation
- UofC floor plans
- Vegetation
- Water
- Wetlands

## Floods

### Calgary

- 2013 flood extent shapefiles and data (at SANDS)
  - [Open Data 2013 flood extent file](#)
- 2013 flood orthophotos taken June 22, 2013 (at SANDS)
  - free download from [CITYonline](#) by section, tiff format, 1m
- 2005 flood orthophotos (at SANDS)
- floodplain files [download](#) from Open Data portal
- City of Calgary [Flooding in Calgary: maps](#)

### Alberta

- Alberta ESRD GENESIS server
  - [access new GENESIS](#) platform
  - RGB Aerial layers cover 2013 southern Alberta flooding
- [Alberta Flood Hazard Mapping](#)
  - [download](#) shapefiles

## Soil

### Calgary

- Open Calgary [Habitat shapefile](#) has some soil information
- Alberta Geological Survey: *Surface Materials of the Calgary Urban Area* (Moran) [pdf and shapefiles](#)
- Alberta Agriculture Bulletin no 39: *Soil Survey of Blackfoot and Calgary sheets* [report and maps jpg format](#)
- Alberta Geological Survey: *Soil Survey of the Calgary Urban Perimeter* (MacMillan): [pdf](#)

### Alberta

- [Alberta Soil Information Viewer](#)
  - allows viewing and querying of soils information within the agricultural region of Alberta
- [Alberta Soil Information Centre](#)
  - provides digital files, published maps, and reports for soil information
- [AGRASID](#) Agricultural Region of Alberta Soil Inventory Database
  - [coverage](#)
  - [download](#) gdb and shapefile from SANDS file server (version 4)
  - [download](#) individual map sheets 1:250K and [metadata](#) (version 3)
- [Current and Historical Alberta Weather Station Data viewer](#)
  - includes soil moisture and temperature under Elements tab
- ESRI ArcCanada3 province wide soil layer [download](#) ArcCda3\_AB\_soil.zip

### British Columbia

- [BC Soil Information Finder Tool](#)
- [Agriculture Capability Mapping](#) Canada Land Inventory

### Canada

- [Canada Land Inventory Land Capability for Agriculture](#) 1:50,000 and 1:250,000 scales
  - [download](#) from SANDS file server including product specification document
- [CANSIS](#) Canadian Soil Information System includes the National Soil DataBase, maps, reports, interpretations and other publications
- [Soil Landscapes of Canada](#) a series of GIS files showing the major characteristics of soil and land across Canada




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## Map Tools

[Conversion Tools](#)[Distance Calculators](#)[Projections](#)[Gazetteers & Place Names](#)[Map Organizations](#)[Outline Maps](#)[Citations](#)[Dictionaries & Factbooks](#)

## Citations

- **ACMLA Best Practices in Citation of Cartographic Materials**   
A .pdf document, published in 2012
- **Cartographic Citation**   
Guide to citing maps, atlases and aerial photographs provided by McMaster University
- **Citation Guide for Maps & Airphotos**  
Queen's University guide includes maps, airphotos, atlases and digital maps
- **How to Reference Geospatial Data, Maps, Atlases, Air Photos**   
Reference guide from Brock University
- **How to cite Statistics Canada Maps and Geospatial Products**  
Examples from the free online publication "How to cite Statistics Canada Products" (cat. no. 12-591-XWE)

## Spatial and Numeric Data Services Home Page

### Contact Information:

#### **Spatial and Numeric Data Services**

Rm 466, Taylor Family Digital Library

Telephone: 403-220-6822

Email: [maps@ucalgary.ca](mailto:maps@ucalgary.ca)

# Basic elements of a geospatial data citation

- Author/Producer
- Date produced
- Title/Name
- Format – table, shapefile, geodatabase, orthophoto, etc.
- Source/Distributor – DOI, url, data centre (in person)
- Date obtained

Examples:

DMTI. 2016. *Enhanced Points of Interest* [shapefile]. University of Calgary, Spatial and Numeric Data Services (distributor).

[http://libdata.ucalgary.ca/get.php?file=DMTI\\_2016/CanMapContentSuite/EnhancedPointsOfInterestPointWestCAN.zip](http://libdata.ucalgary.ca/get.php?file=DMTI_2016/CanMapContentSuite/EnhancedPointsOfInterestPointWestCAN.zip) (accessed January 20, 2018).

Alberta Biodiversity Monitoring Institute. 2014. *Wall-to-wall Human Footprint Inventory* [geodatabase]. <http://www.abmi.ca/home/data-analytics/da-top/da-product-overview/GIS-Land-Surface/HF-inventory.html> (accessed December 6, 2017).



# Thanks!

## Interactive Maps and Apps



[View All Our Applications](#)

## Hardware

- 3 Workstations
- 8.5" x 11" Scanner
- 11.7" x 16.5" Scanners
- 42" Wide Format Scanner

## Software

- ArcGIS 10.8
- ArcGIS Pro 2.8
- AutoCAD 2020
- NVivo 12
- QGIS 3.16
- R 4.7
- SPSS 27
- StataSE 15

## Contact Us

Location: TFDL 466

P: **1.403.220.6822**

E: **[maps@ucalgary.ca](mailto:maps@ucalgary.ca)**

## Hours

Mon-Fri: By Appointment

[Schedule Appointment](#)

Sat-Sun: Closed

**[Submit a Data Request](#)**