



Danish User Conference 2017

Introduction to Spatial Functions in ProjectWise Design Integration

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Bentley Systems

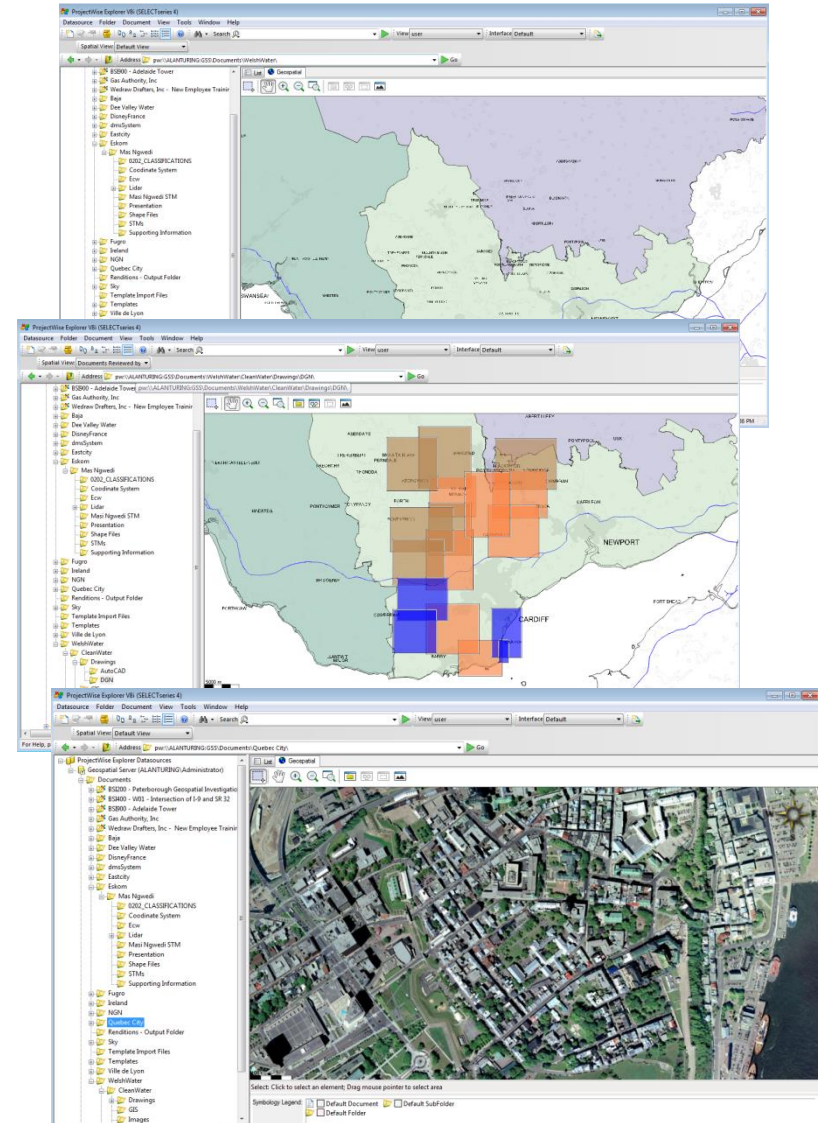


ProjectWise Spatial Options

- Standard functionality in ProjectWise and gives spatial context to documents, folders and projects stored in ProjectWise
- ProjectWise Geospatial brings more advanced geospatial options to ProjectWise
- For your data to be consistent, it is essential that you know the coordinate system of the DGN file you'll be using as map background. This is not something that can be “guessed” or determined through trial and error – it is information that needs to be known precisely. People dealing with spatial data must know the coordinate system used in their projects, files, data, etc.

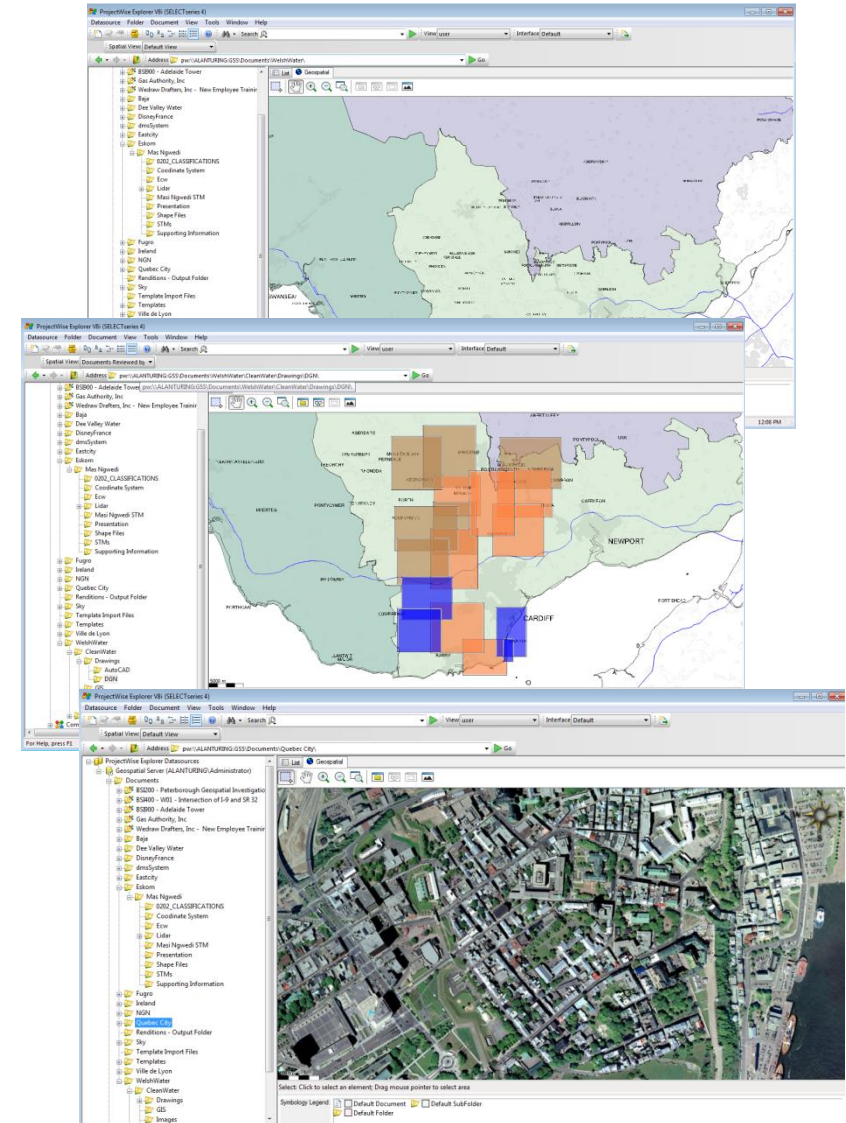
What is ProjectWise Spatial?

- A technology that adds spatial context to a managed environment
 - Spatial indexing
 - Query and locate
 - Spatial display
 - Maps created from one or more CAD files and are static and have a fixed resolution
 - Included with PW Design Integration
 - Supported on premise or hosted
- Originally derived from ProjectWise Geospatial Extension XM Edition
- Requires no extra servers or services.

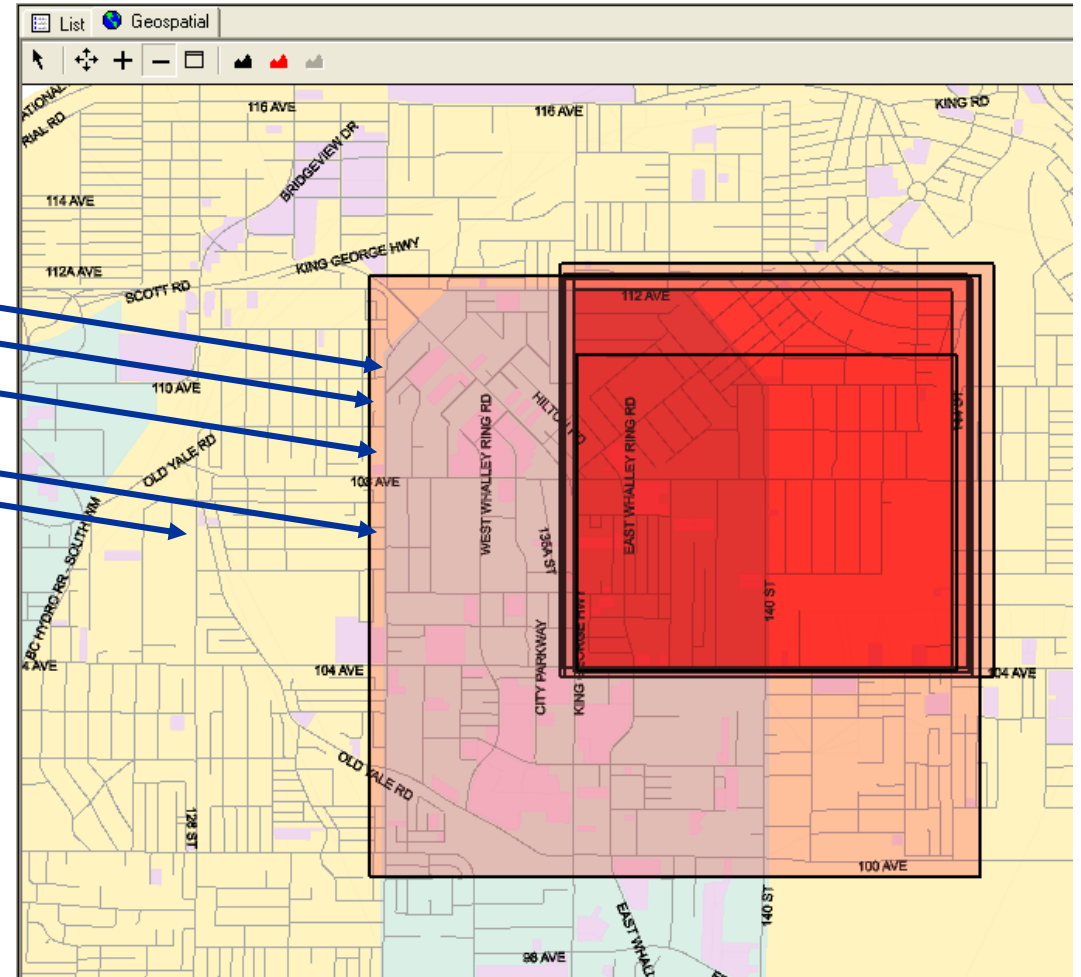
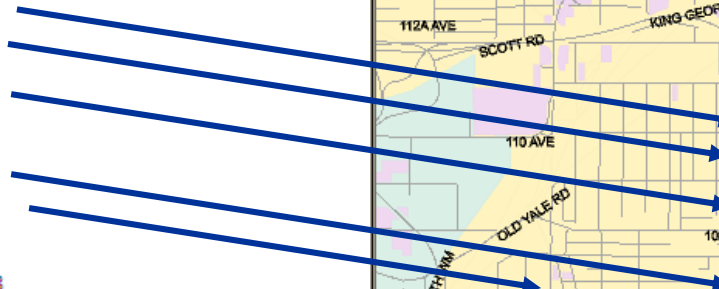
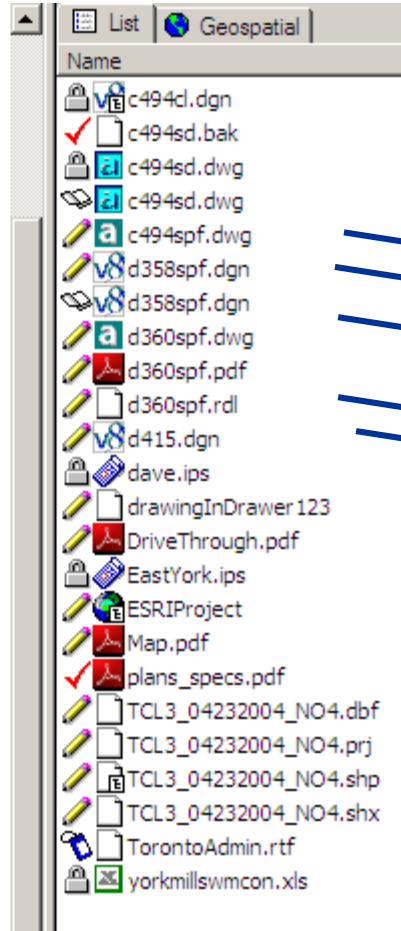
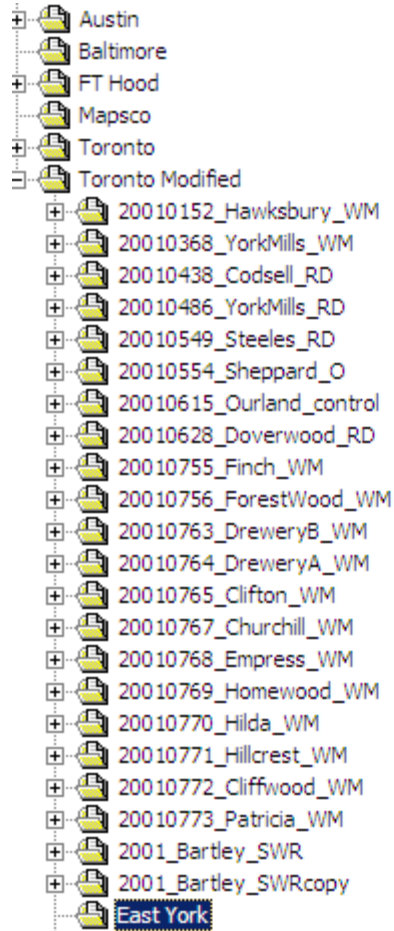


What is PW GeoSpatial?

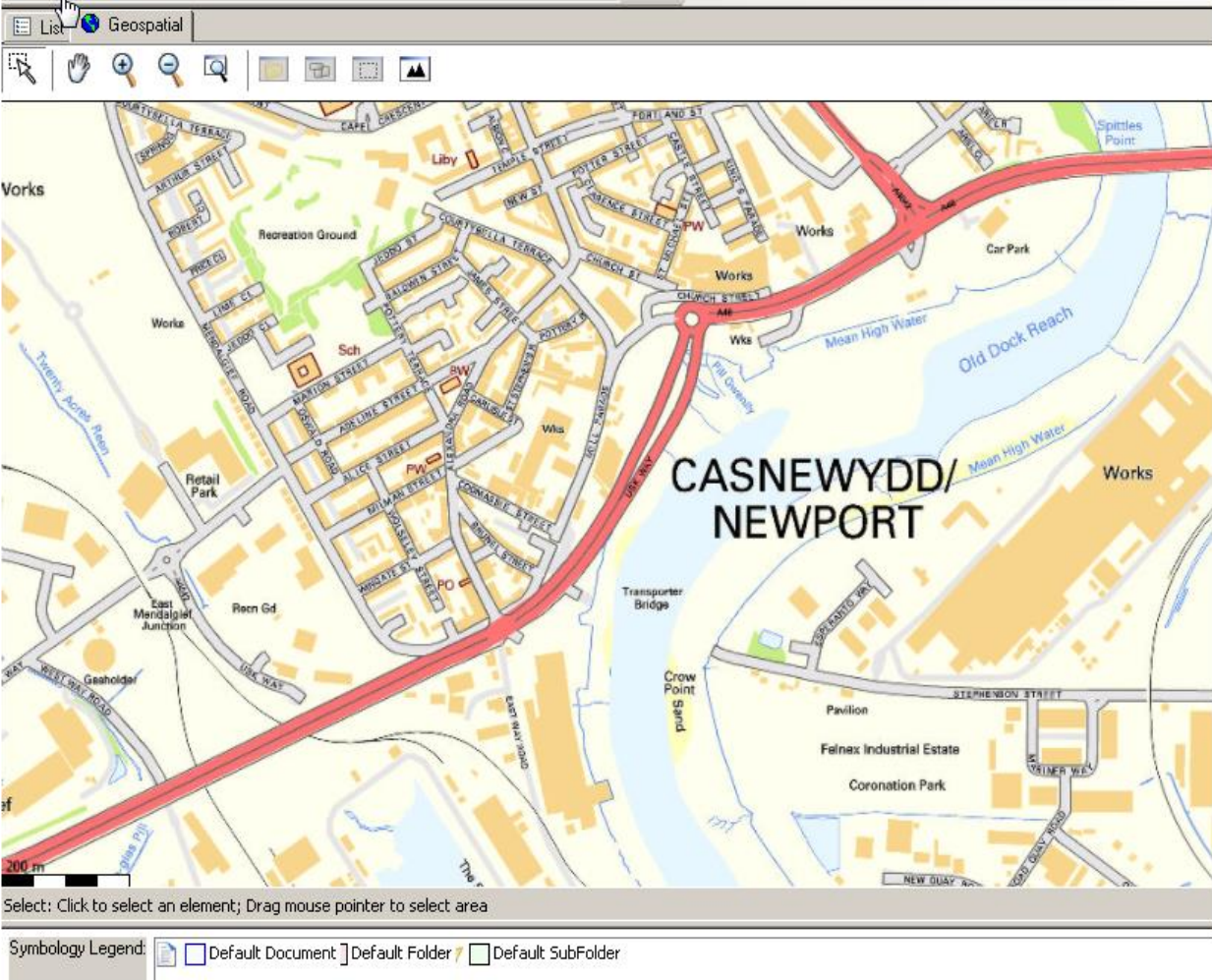
- A technology that adds spatial context to a managed environment ...
 - Spatial indexing
 - Query and locate
 - Spatial display
 - ESRI ArcMAP integration
 - Spatial location by attributes
 - Map can include
 - CAD files
 - Oracle Spatial Layers
 - Raster Imagery
 - ArcGIS data
 - WMS layers
 - Maps are generally dynamic (i.e. automatically update when the source is changed)
- PWCE requires GWP Ss5 (full version as no GWP Light no longer included)
 - Not available in hosted environment, on premise only



A geospatial extension to managing data



Scaleable Background Maps



Spatial Display Options

Thumbnails:

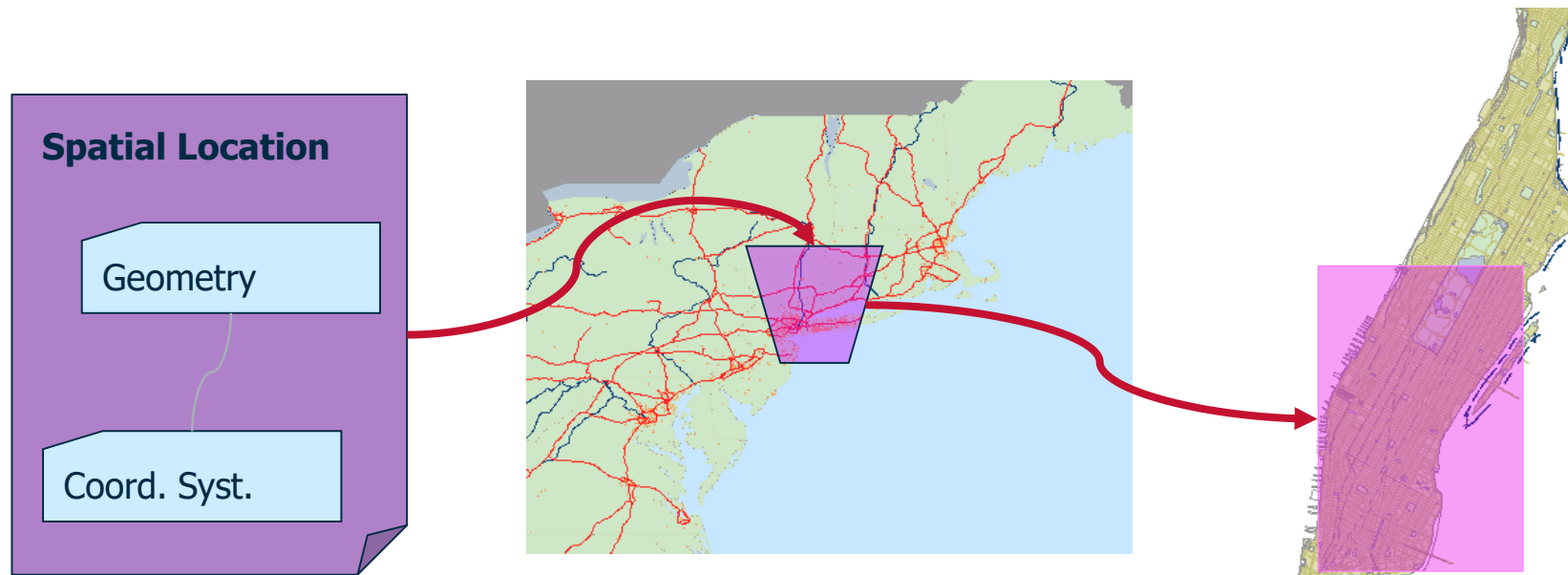
Shaded
Regions C
Interest
Centroid

Me
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The screenshot displays the ProjectWise Explorer V8i interface. The left pane shows a hierarchical file tree under 'Geospatial Server (ALANTURING\Administrator)'. The main map area shows a detailed view of Cardiff, Wales, with several small thumbnail windows overlaid on the map. The symbology legend at the bottom indicates that a red square represents a 'Checked Out' status.

Spatial Location

- A location is a combination of a geometry and a coordinate system
- Spatial locations can be displayed over multiple backdrops



Document/Project Extent Indexing

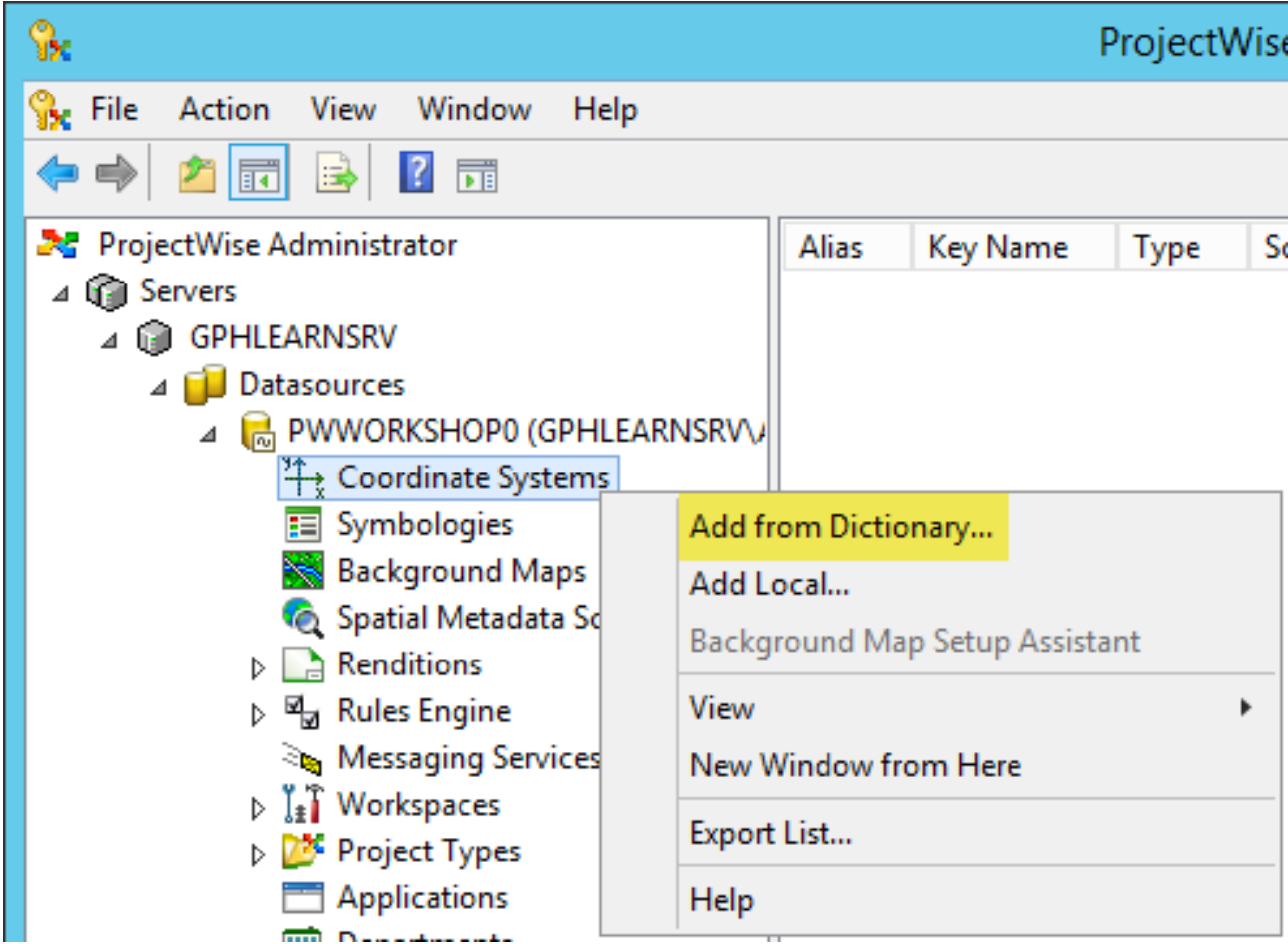
- A spatial location may be:
 - manually defined
 - inherited from the parent folder
 - scanned from the files (auto extract and batch)
 - imported from an external file
 - calculated (for a folder and files)
 - inferred from an attribute value*
- It can be a gradual process (as with any other meta data)

*denotes PW GeoSpatial functionality

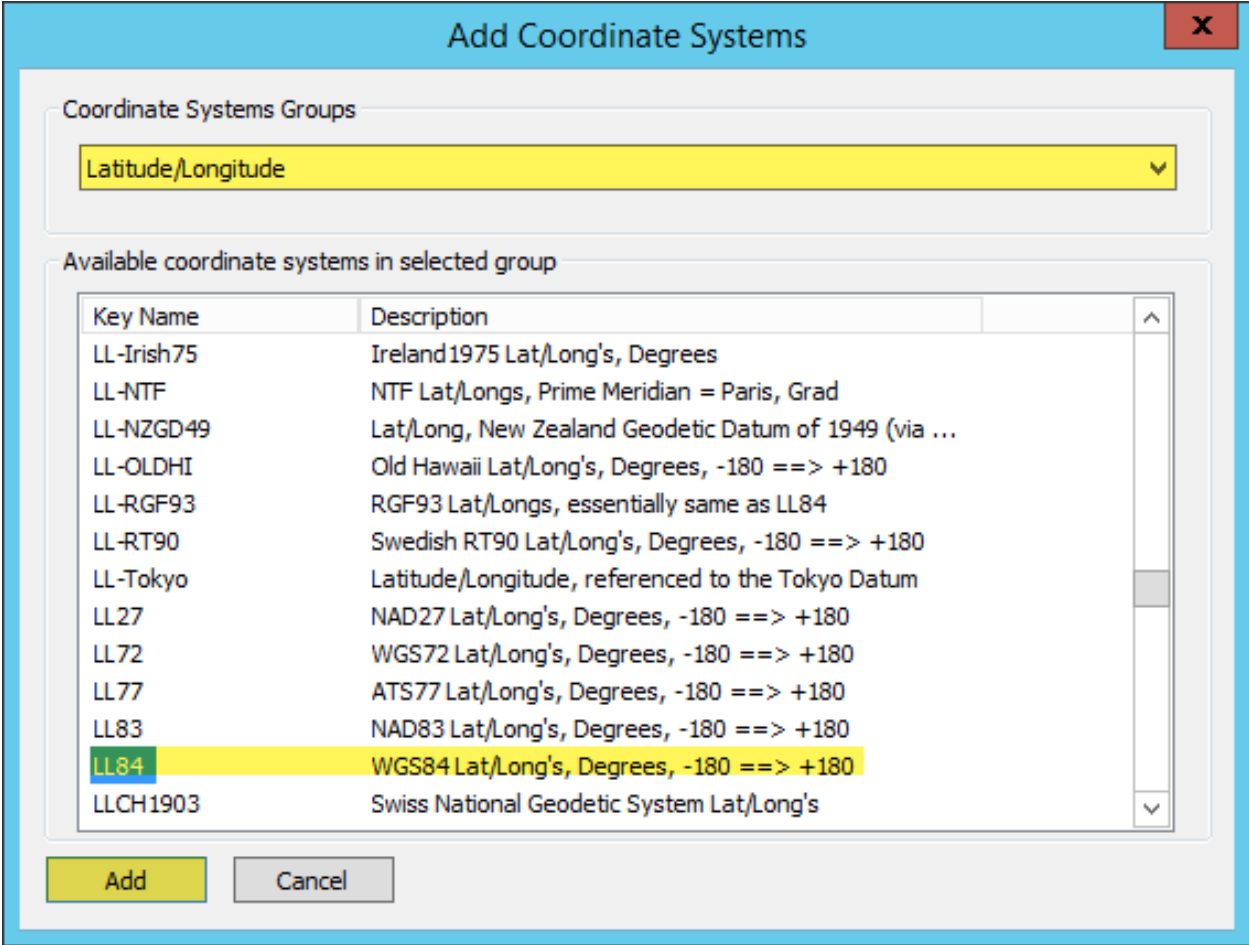
Setting up ProjectWise Spatial - Overview

- Adding Coordinate System
 - Add Background Maps or DPRs to ProjectWise
 - Add Coordinate System from Dictionary
- Creating Background Maps
 - Static CAD Layers
 - Multiple CAD Layers
- Assign Spatial Location
 - Drawing a Spatial Location manually
 - Using “Auto-scan for CAD files” feature
 - Using Spatial Location Scan tool
 - Using “Extraction” function
 - Using “Calculate” function




Setting up ProjectWise Spatial – Add Coordinate System



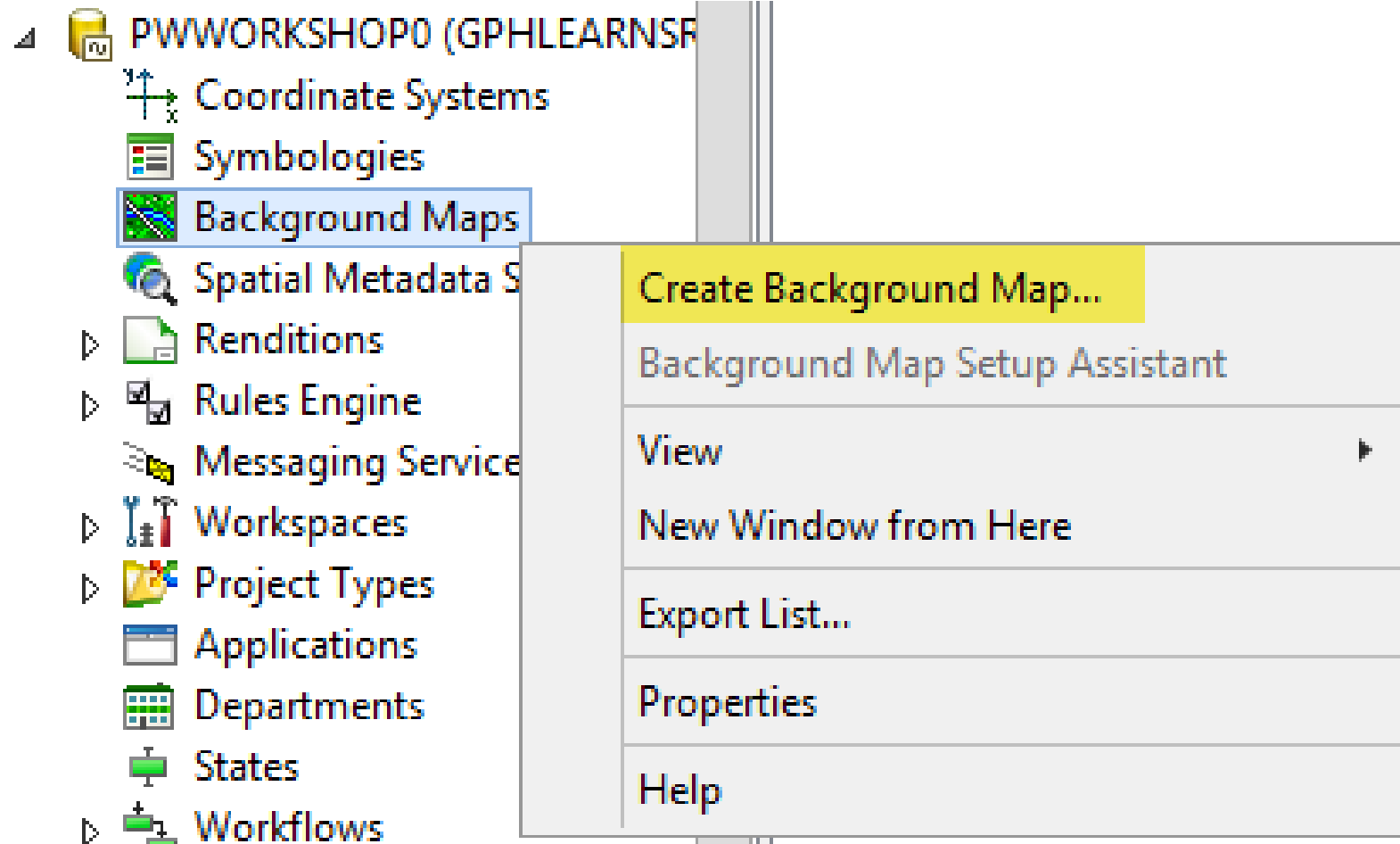
Setting up ProjectWise Spatial – Add Coordinate System



Setting up ProjectWise Spatial – Add Coordinate System

Alias	Key Name	Type	Scan Action	Replace By	Status
 LL84	LL84	From Dictionary	Ask		OK
 UTM83-17	UTM83-17	From Dictionary	Ask		OK
 UTM83-18	UTM83-18	From Dictionary	Ask		OK

Setting up ProjectWise Spatial – Create Background Maps



Setting up ProjectWise Spatial – Create Background Maps

Background Map Settings

Map Name: World

Coordinate System: LL84

Filename	Minimum scale	Maximum scale
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Add Layer

Remove Layer

Edit Layer

Folder: Browse...

Save Cancel

Setting up ProjectWise Spatial – Create Background Maps

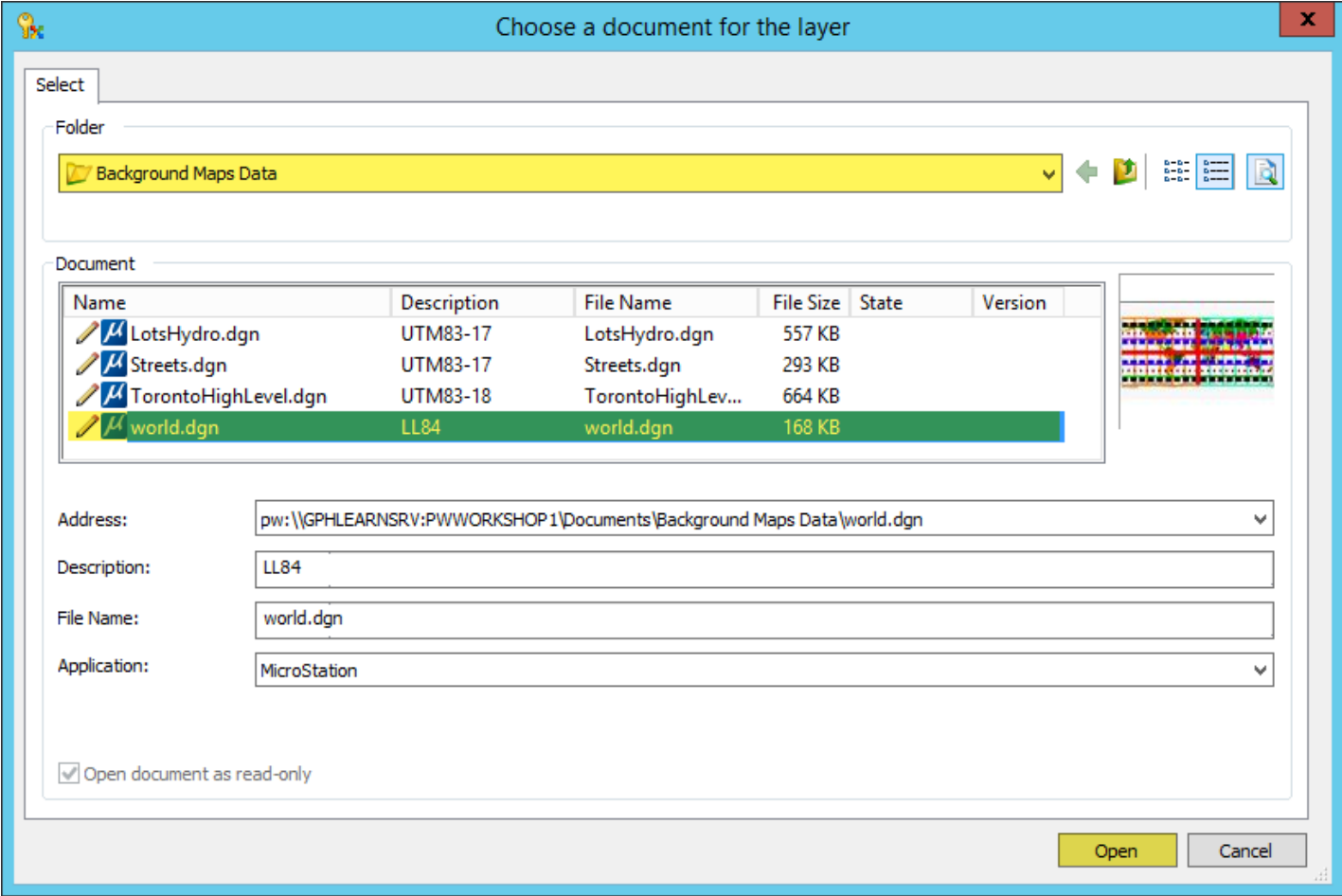
The image shows a software dialog box titled "Edit Map Layer Settings" with a close button (X) in the top right corner. The dialog contains the following fields and sections:

- URL:** A text input field that is currently empty, with a small icon to its right.
- Bounding box:** A section containing four input fields for coordinates:
 - Lower left:** X: 0.0, Y: 0.0
 - Upper right:** X: 0.0, Y: 0.0
- Scale range:** A section containing two input fields:
 - Minimum:** 0.0
 - Maximum:** 0.0
- Buttons:** "OK" and "Cancel" buttons at the bottom.

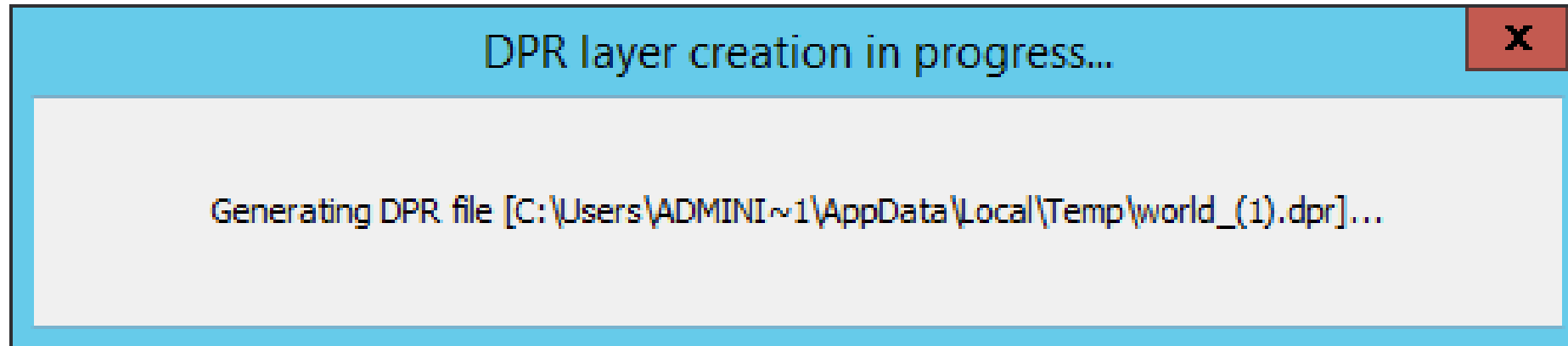
A context menu is open to the right of the URL field, listing three options:

- Add static CAD layer (highlighted in yellow)
- Add dynamic CAD layer
- Add DPR layer

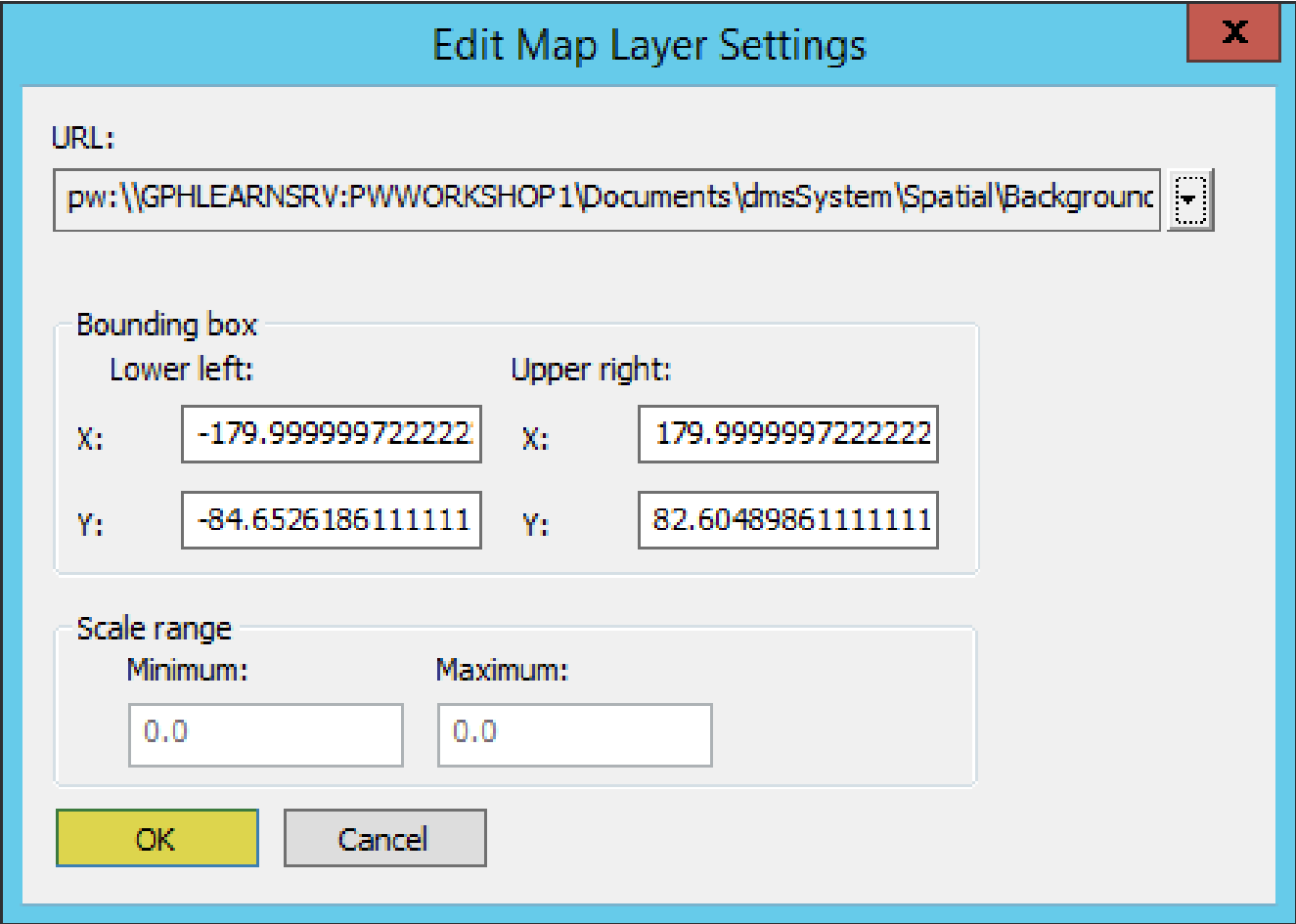
Setting up ProjectWise Spatial – Create Background Maps



Setting up ProjectWise Spatial – Create Background Maps



Setting up ProjectWise Spatial – Create Background Maps



URL:

pw:\\GPHLEARN_SRV:PWWORKSHOP1\Documents\dmsSystem\Spatial\Background

Bounding box

Lower left:	Upper right:
X: -179.999999722222	X: 179.999999722222
Y: -84.6526186111111	Y: 82.6048986111111

Scale range

Minimum:	Maximum:
0.0	0.0

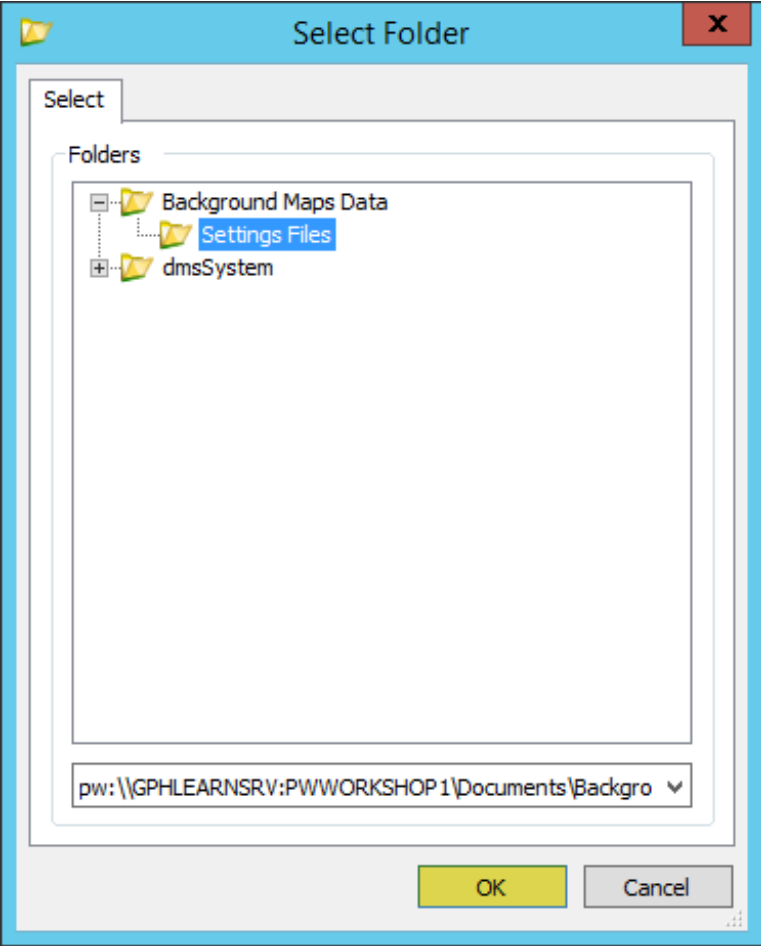
OK Cancel

Setting up ProjectWise Spatial – Create Background Maps



- Settings File

```
<?xml version="1.0"?>  
- <MapDefinition version="08.11">  
  - <Maps>  
    - <Map DGNGUID="968f9ea3-9b13-4fcc-82c1-d9d3ebe079c2" DPRGUID="14810f6c-7fbd-41c9-8f6d-c3cadfe9f34d">  
      <BoundingBox YMax="82.60489861111111" XMax="179.9999997222222" YMin="-84.65261861111111" XMin="-179.9999997222222"/>  
    </Map>  
  </Maps>  
  <CoordSys GUID="72c61791-dd3a-4765-8623-b1ec90586ca6"/>  
</MapDefinition>
```

Setting up ProjectWise Spatial – Create Background Maps

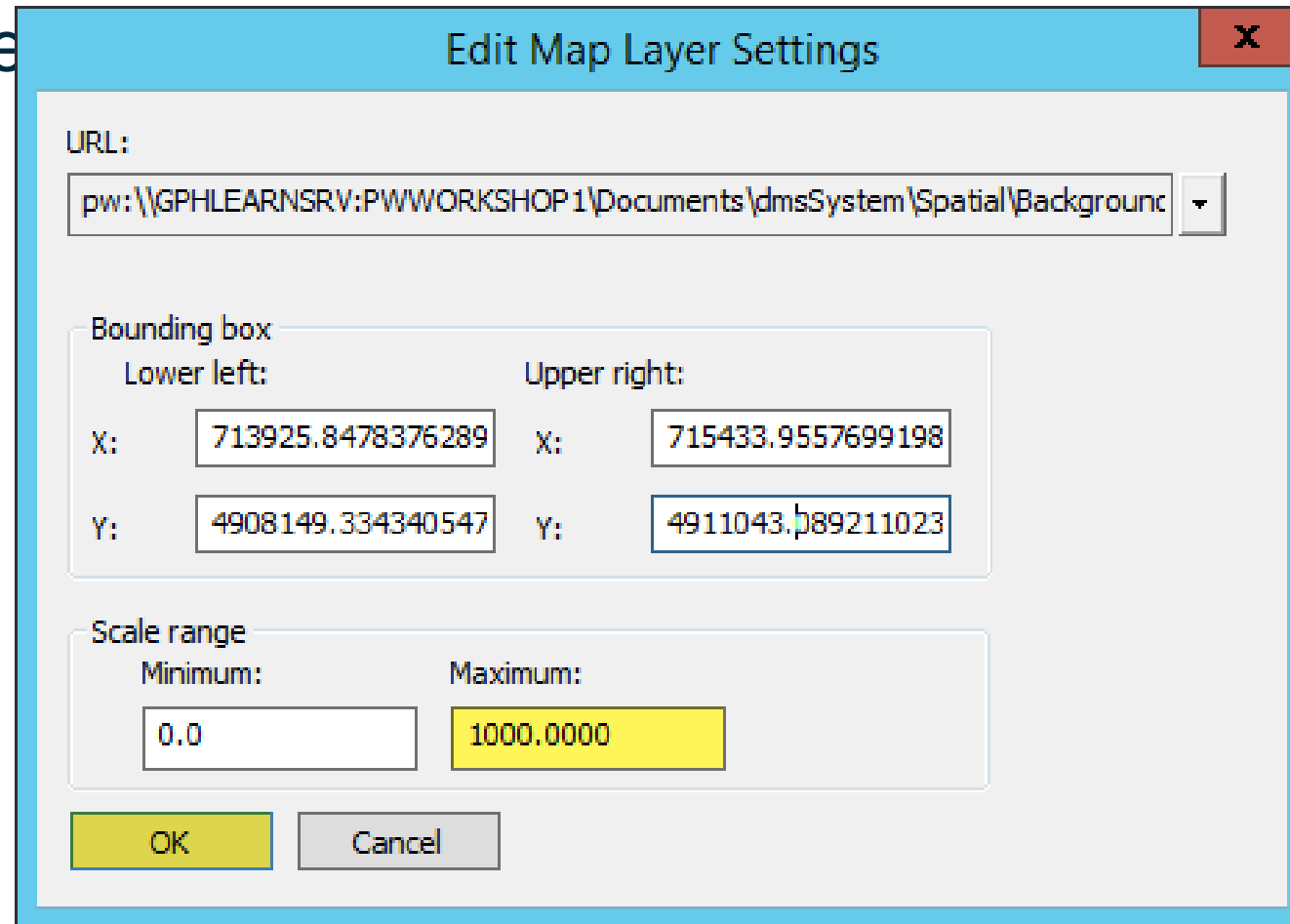


Setting up ProjectWise Spatial – Create Background Maps

Map name	Map Settings file
 World	pw:\\GPHLEARNSRV:PWORKSHOP1\Documents\Background Maps Data\Settings Files\World
 Toronto	pw:\\GPHLEARNSRV:PWORKSHOP1\Documents\Background Maps Data\Settings Files\Toronto

Setting up ProjectWise Spatial – Create Background Maps

- Adding a layer



URL:

pw:\\GPHLEARN_SRV:PWWORKSHOP1\Documents\dmsSystem\Spatial\Background

Bounding box

Lower left: Upper right:

X: 713925.8478376289 X: 715433.9557699198

Y: 4908149.334340547 Y: 4911043.689211023

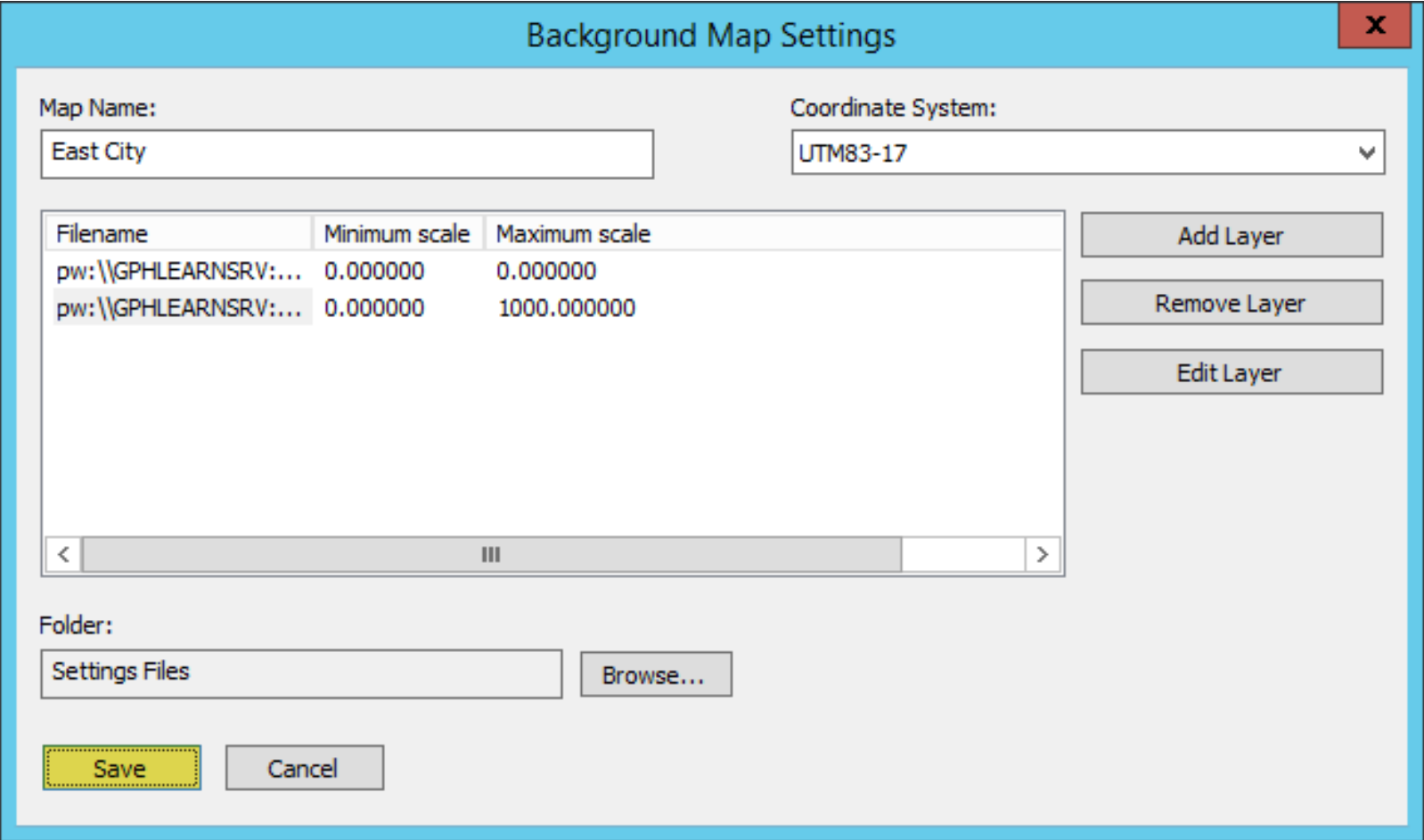
Scale range

Minimum: Maximum:

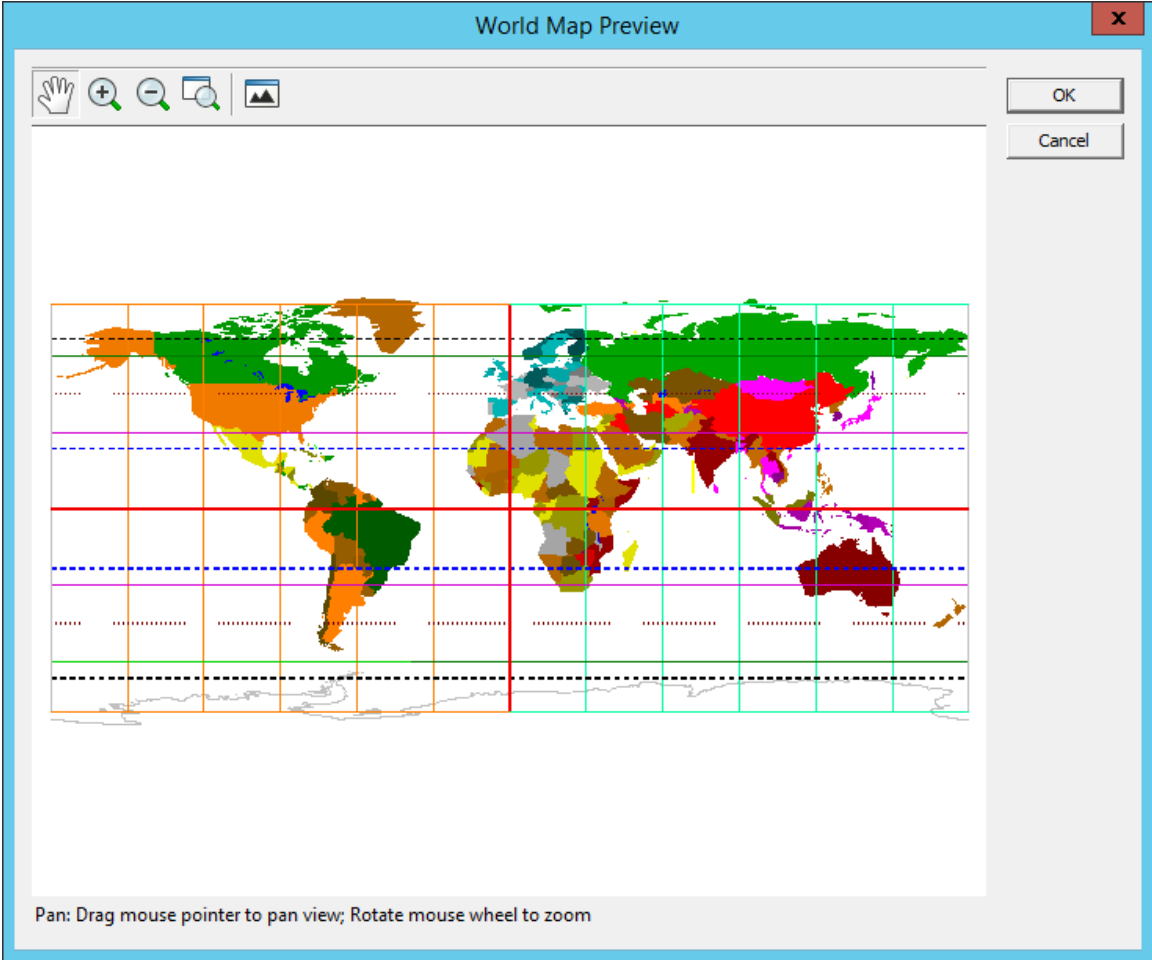
0.0 1000.0000

OK Cancel

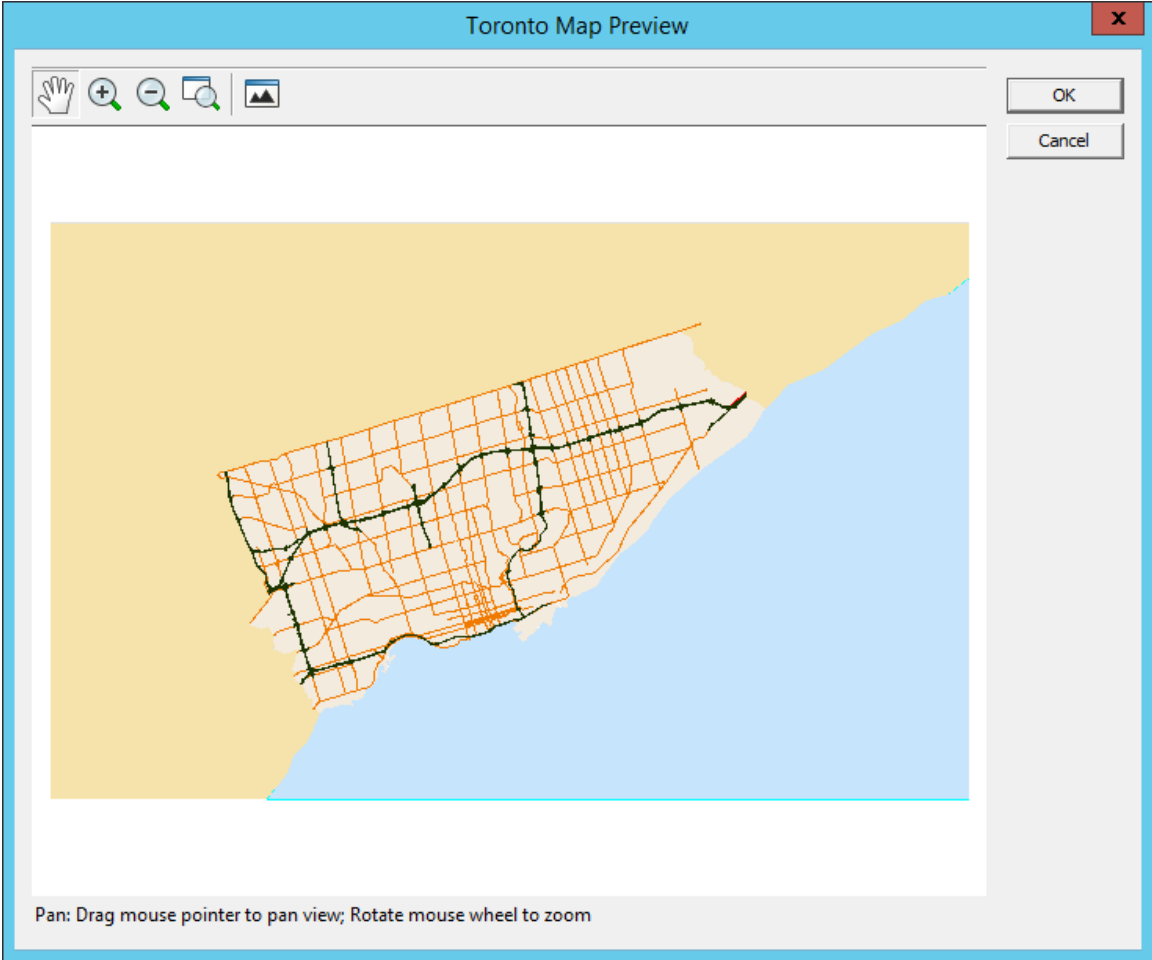
Setting up ProjectWise Spatial – Create Background Maps



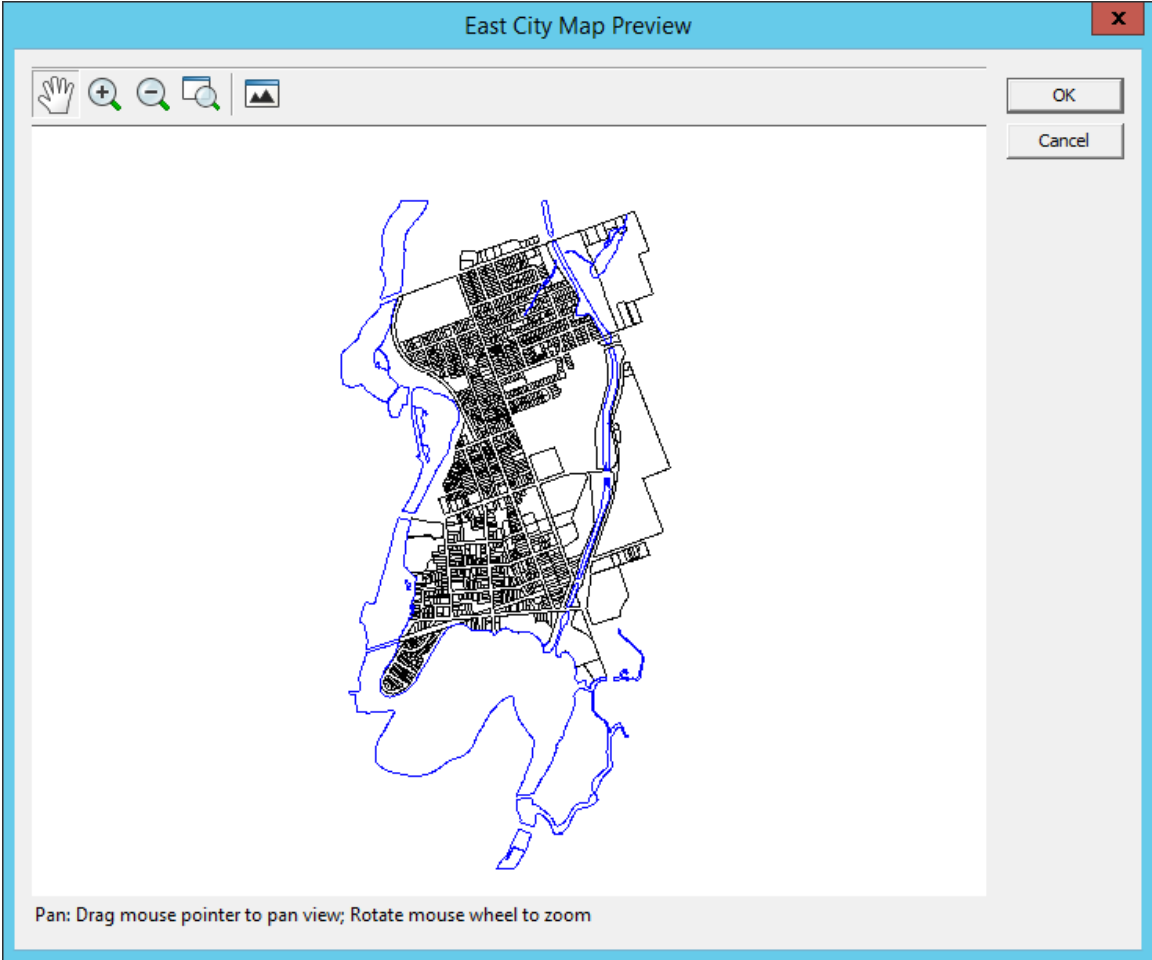
Map Previews



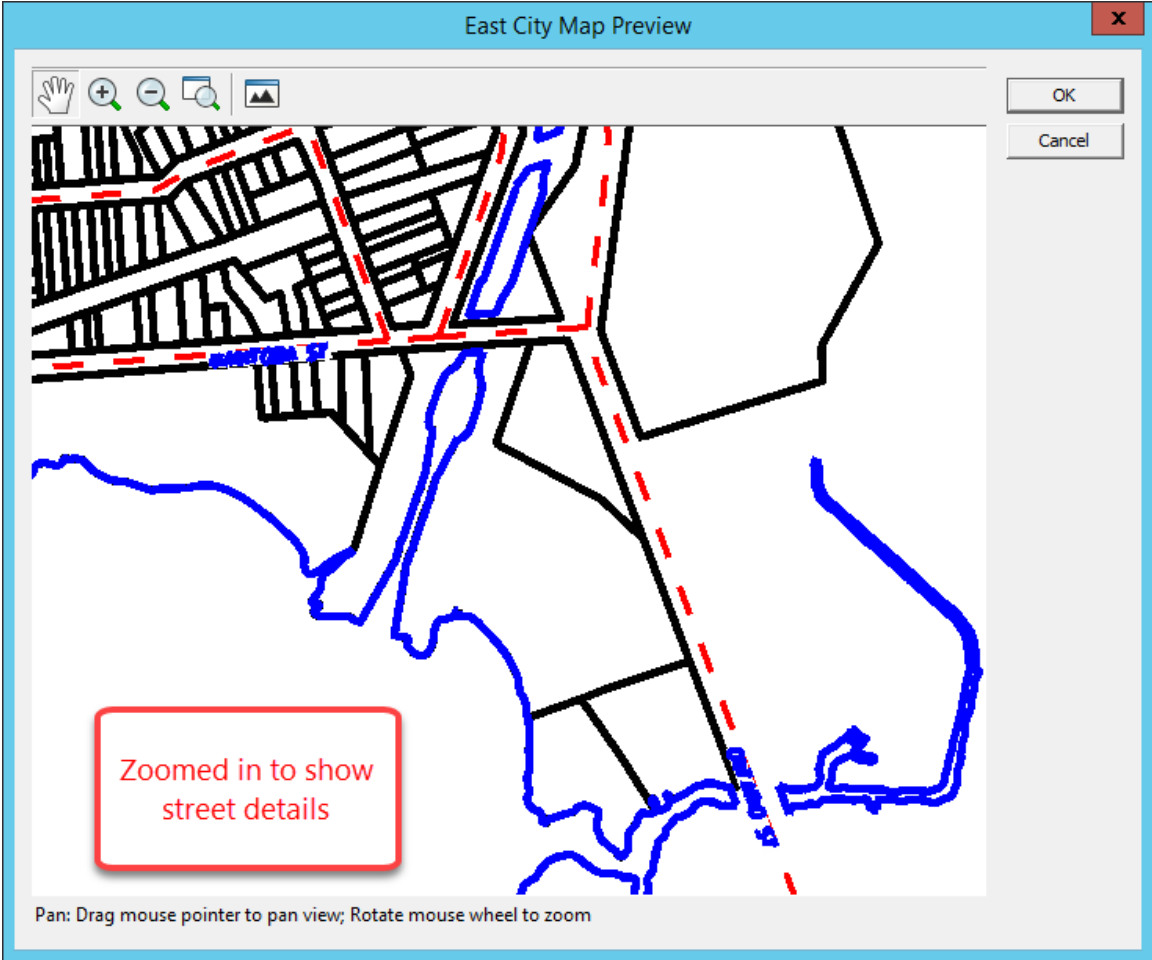
Map Previews



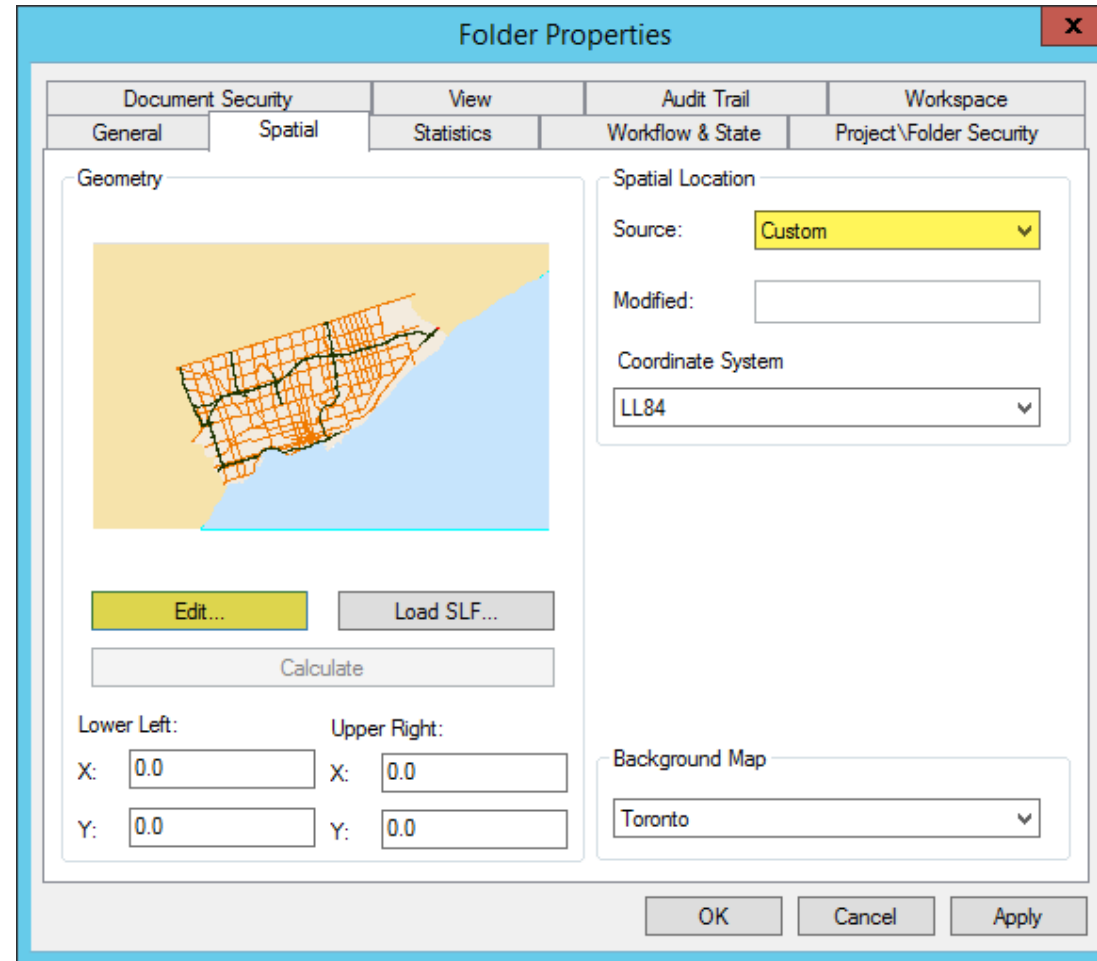
Map Previews



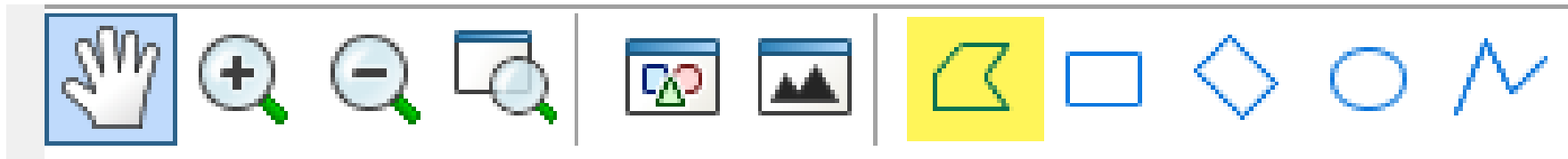
Map Previews



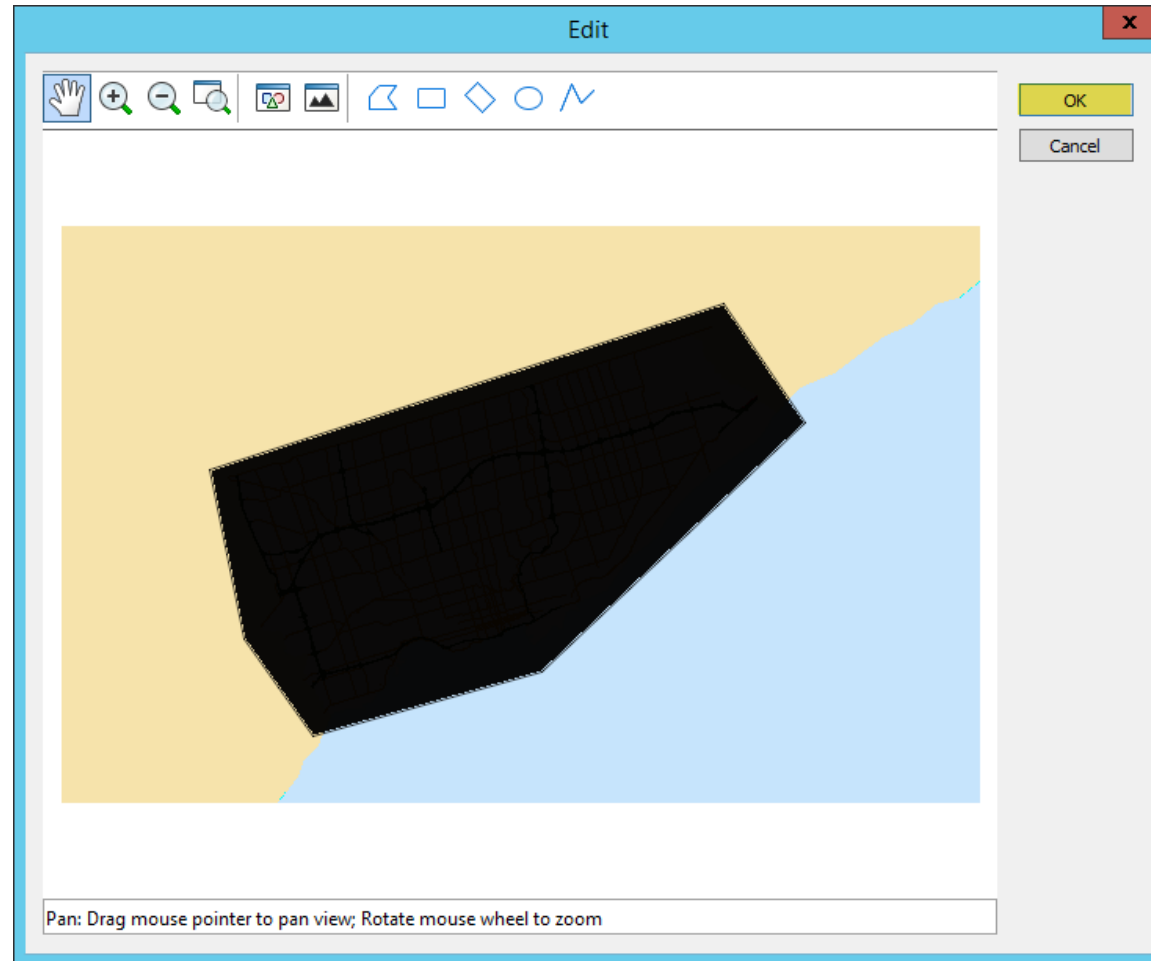
Assign Spatial Location - Manual



Assign Spatial Location - Manual



Assign Spatial Location - Manual

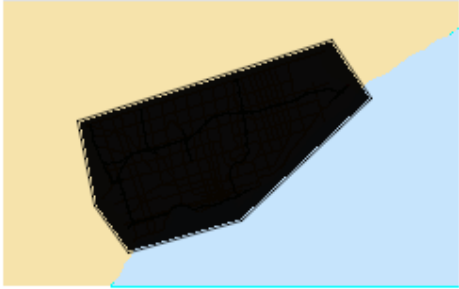


Assign Spatial Location - Manual

Folder Properties

Document Security | View | Audit Trail | Workspace
General | Spatial | Statistics | Workflow & State | Project\Folder Security

Geometry



Edit... Load SLF...

Calculate

Lower Left: Upper Right:
X: 292111.529416436 X: 337895.244938550
Y: 4825454.96712938 Y: 4858709.80408201

Spatial Location

Source: Custom

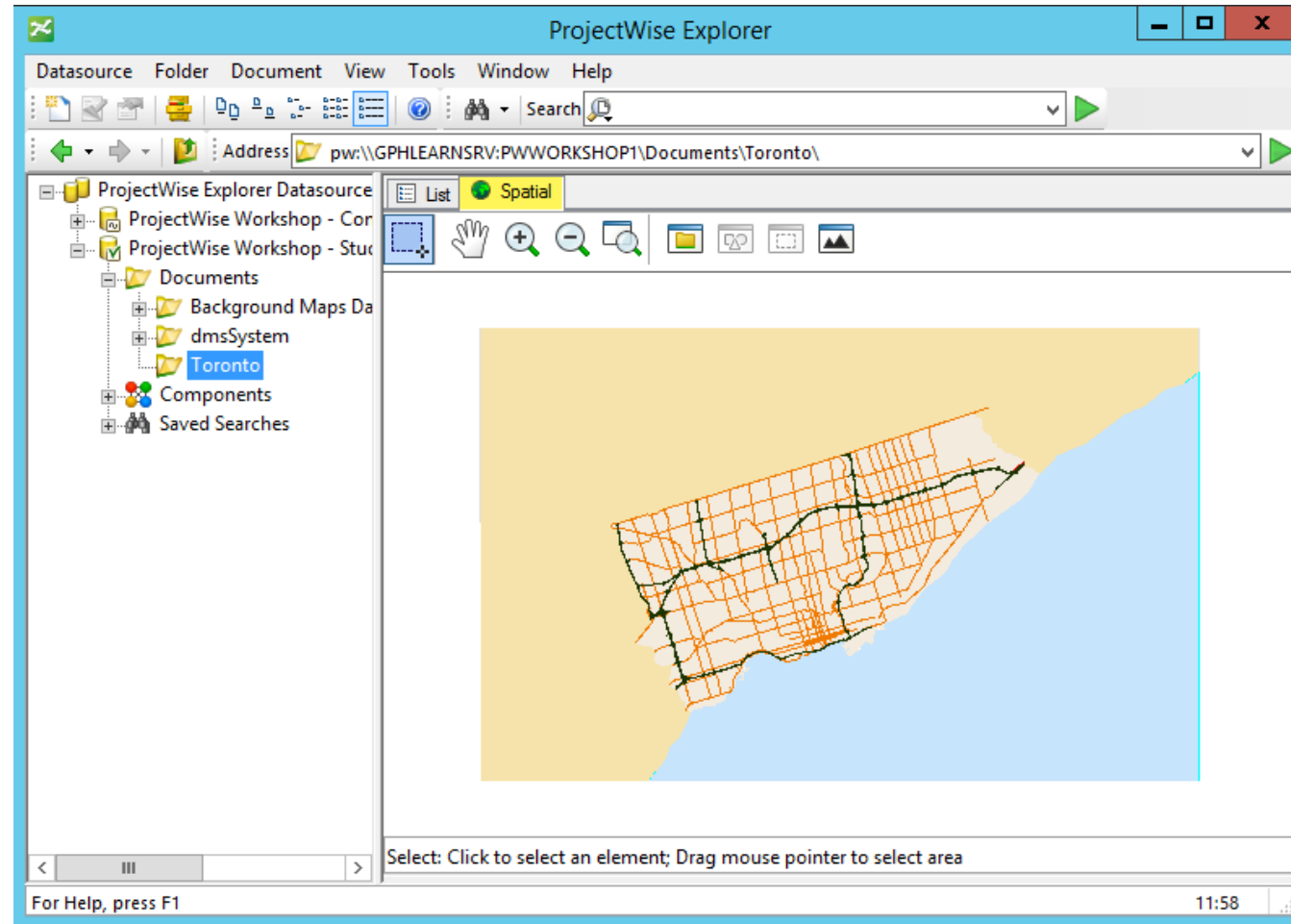
Modified: 2016-11-02 11:54:23.817

Coordinate System: UTM83-18

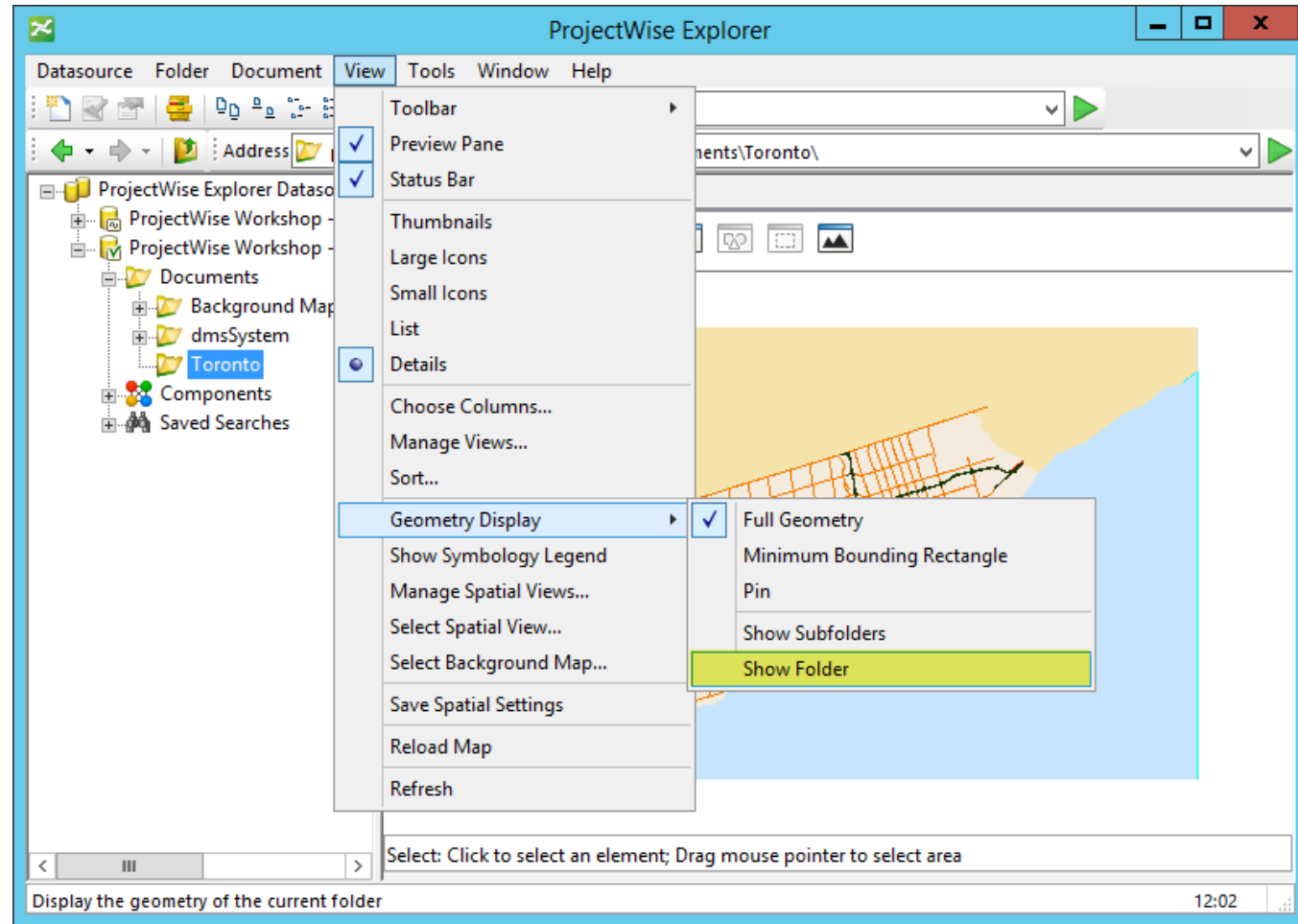
Background Map: Toronto

OK Cancel Apply

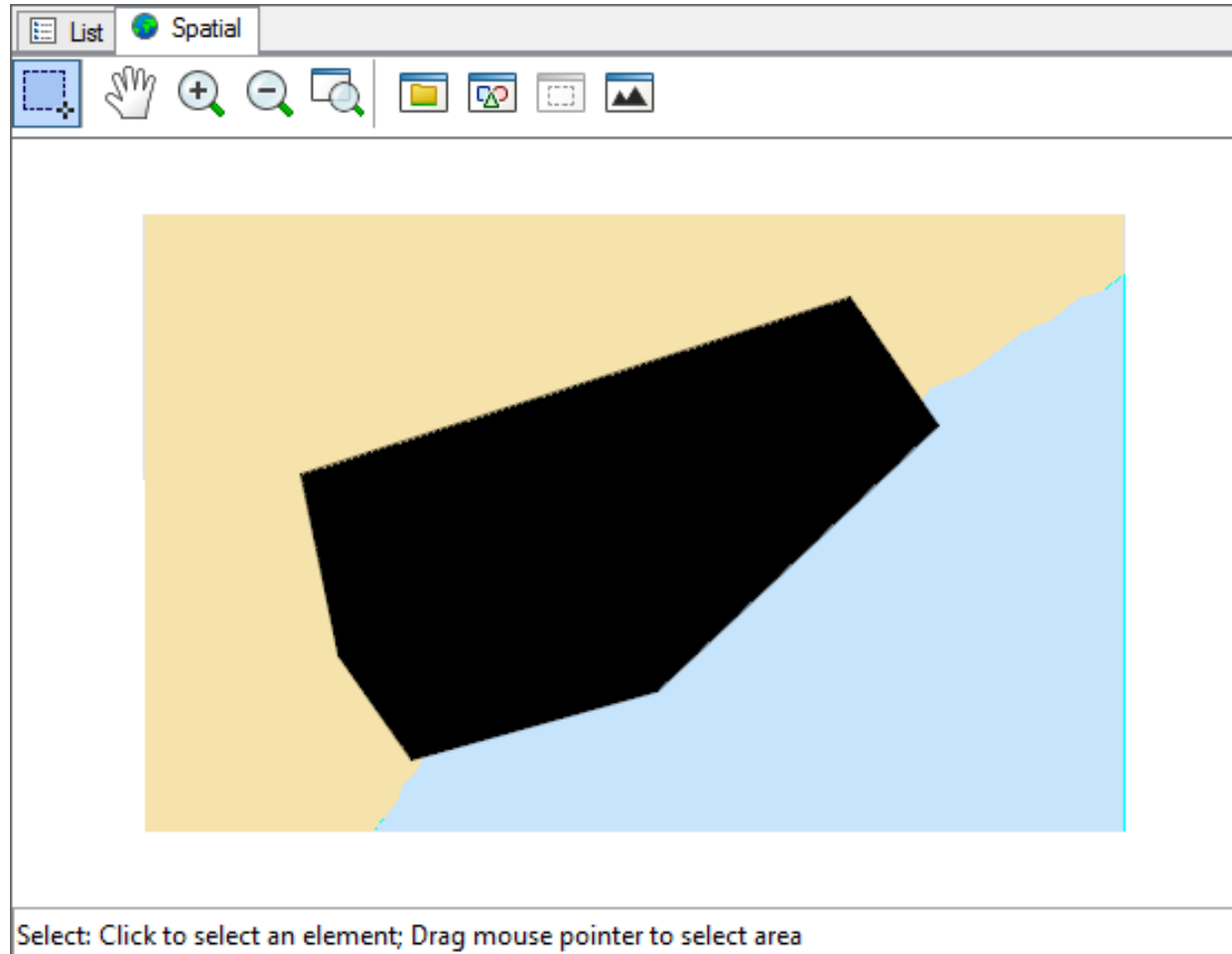
Assign Spatial Location - Manual



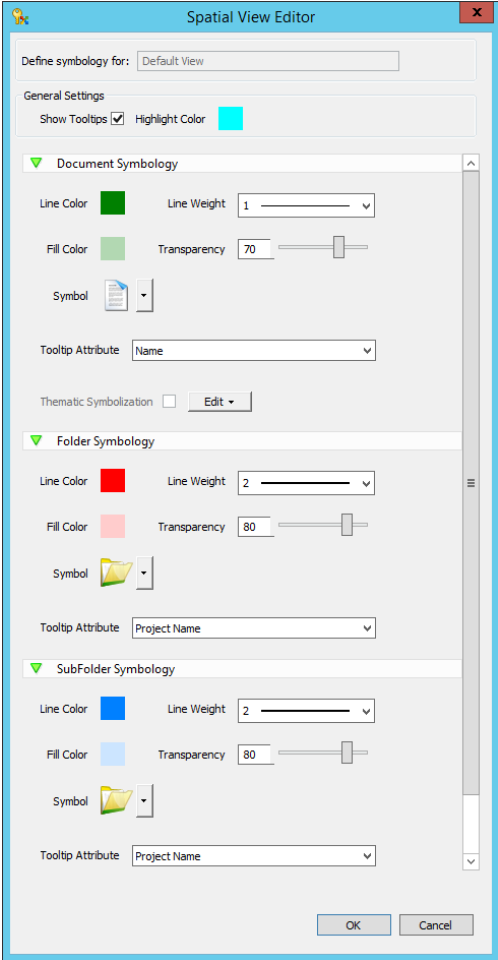
Assign Spatial Location - Manual



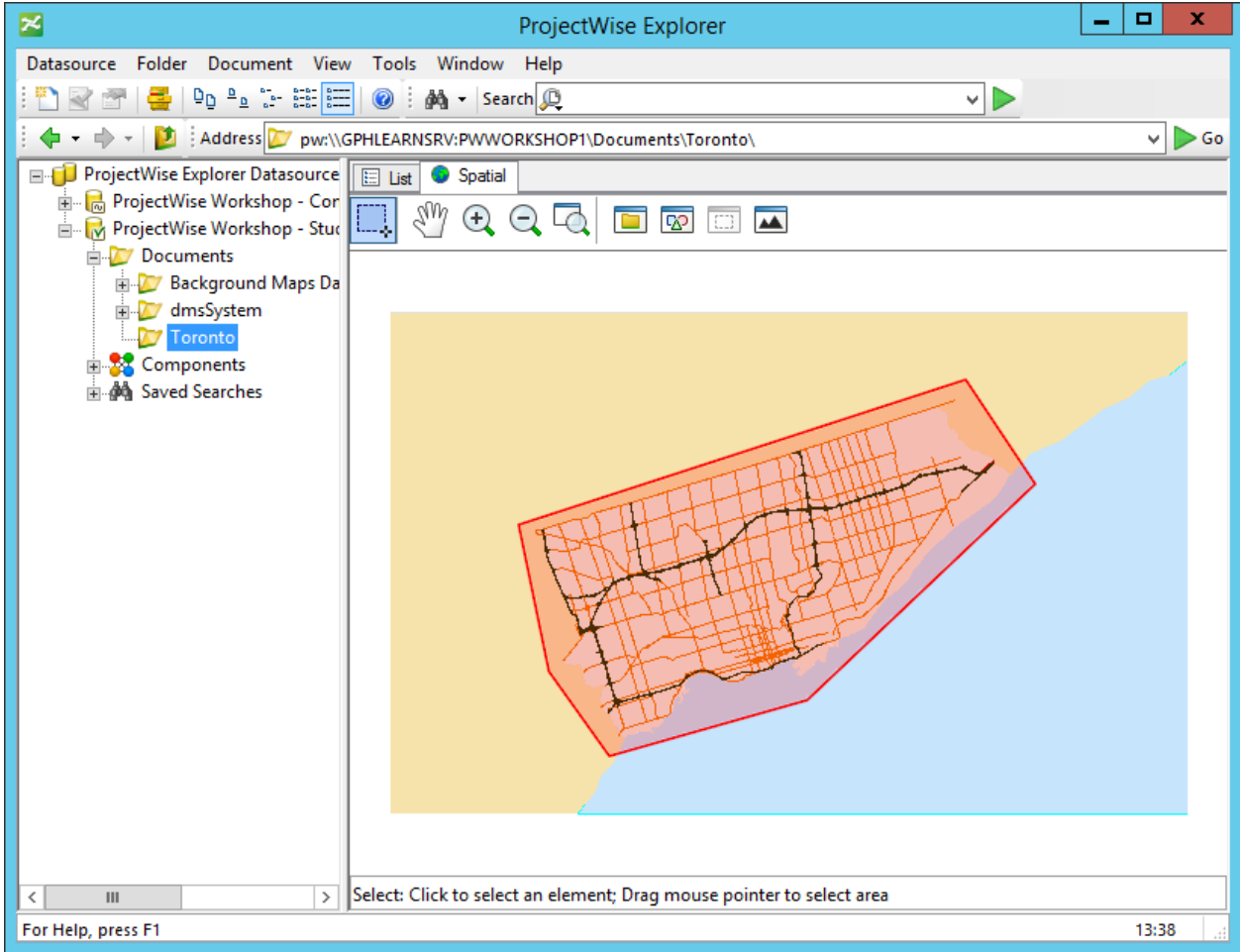
Assign Spatial Location - Manual



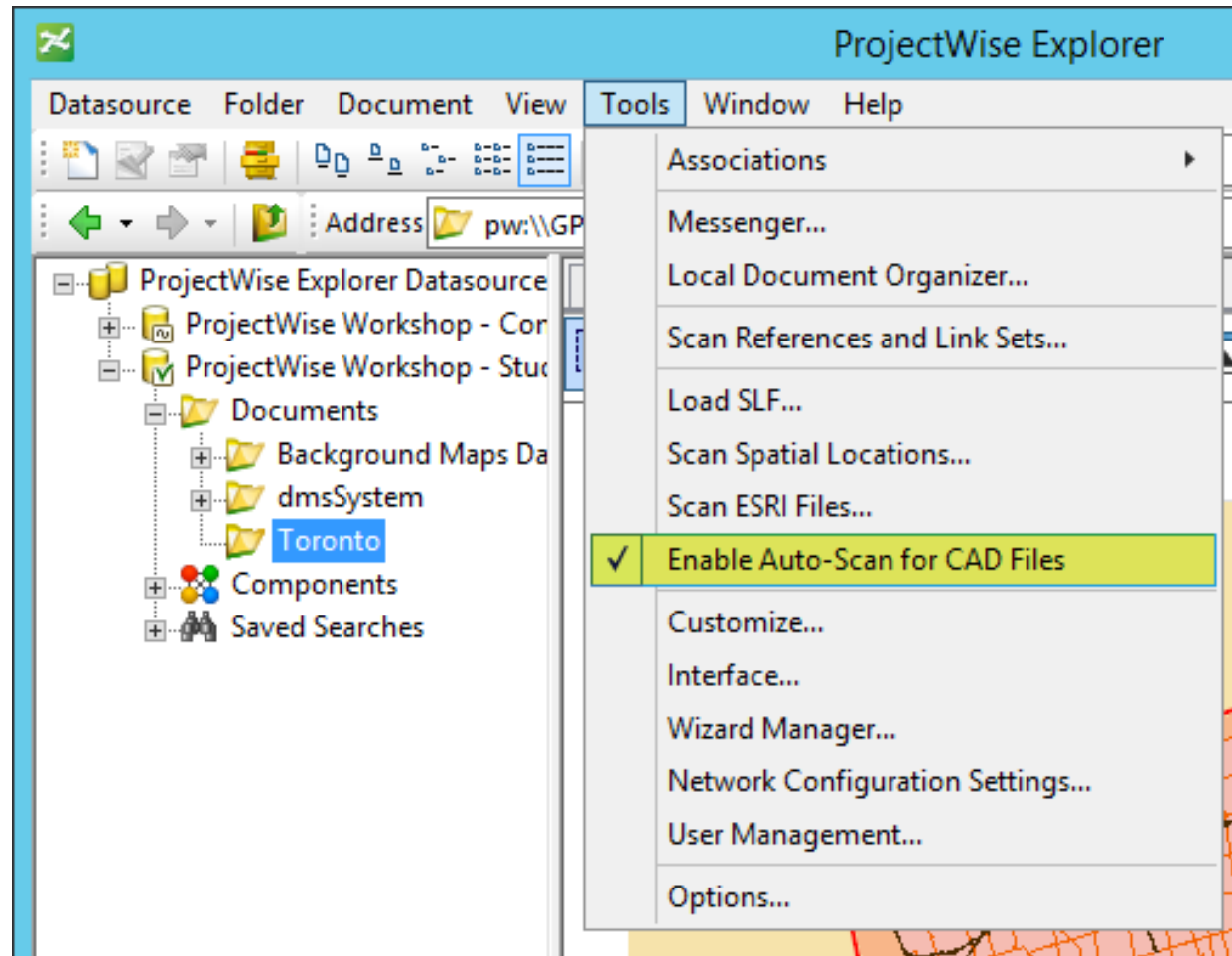
Default Display Symbology



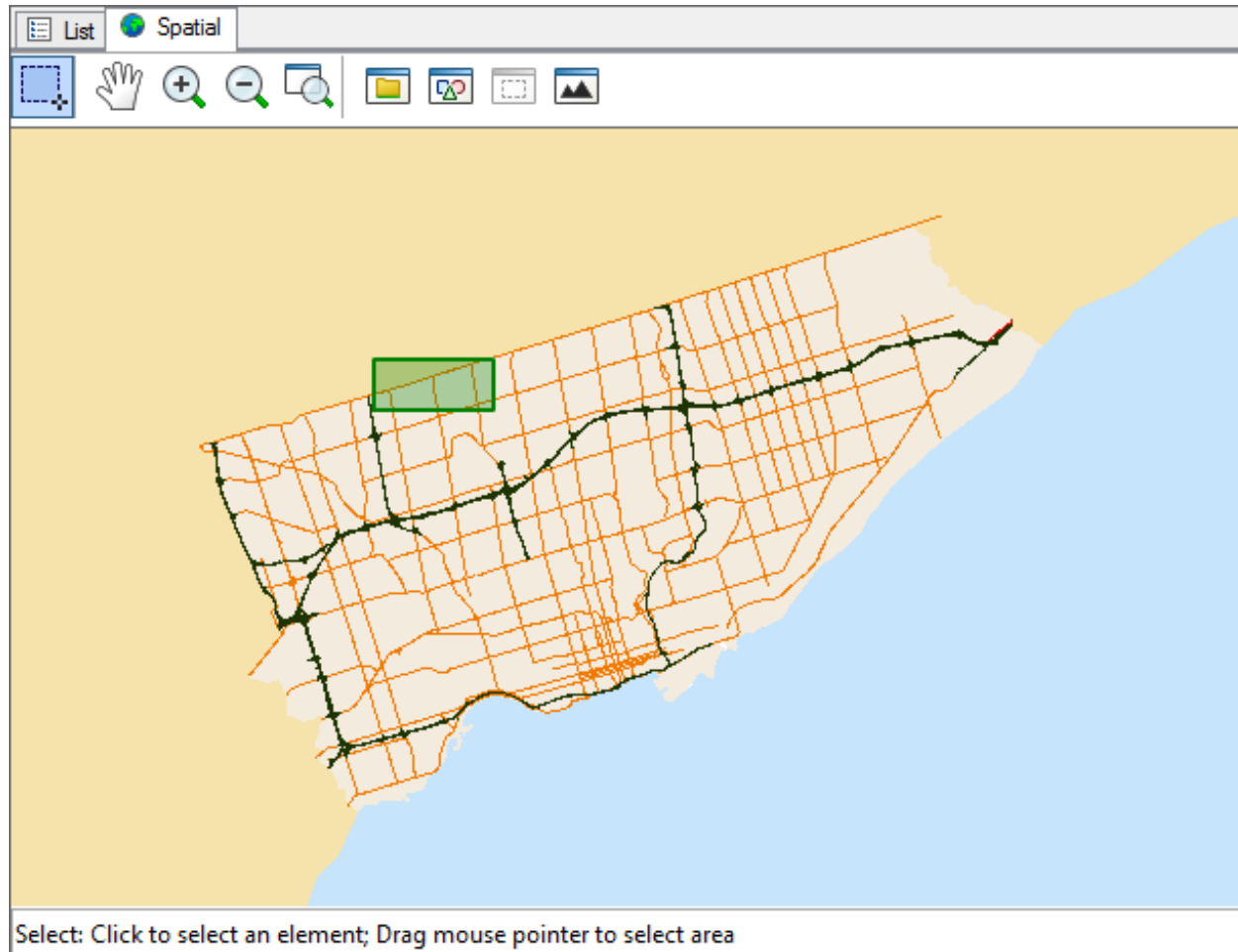
Default Display Symbology



Assign Spatial Location - Autoscans

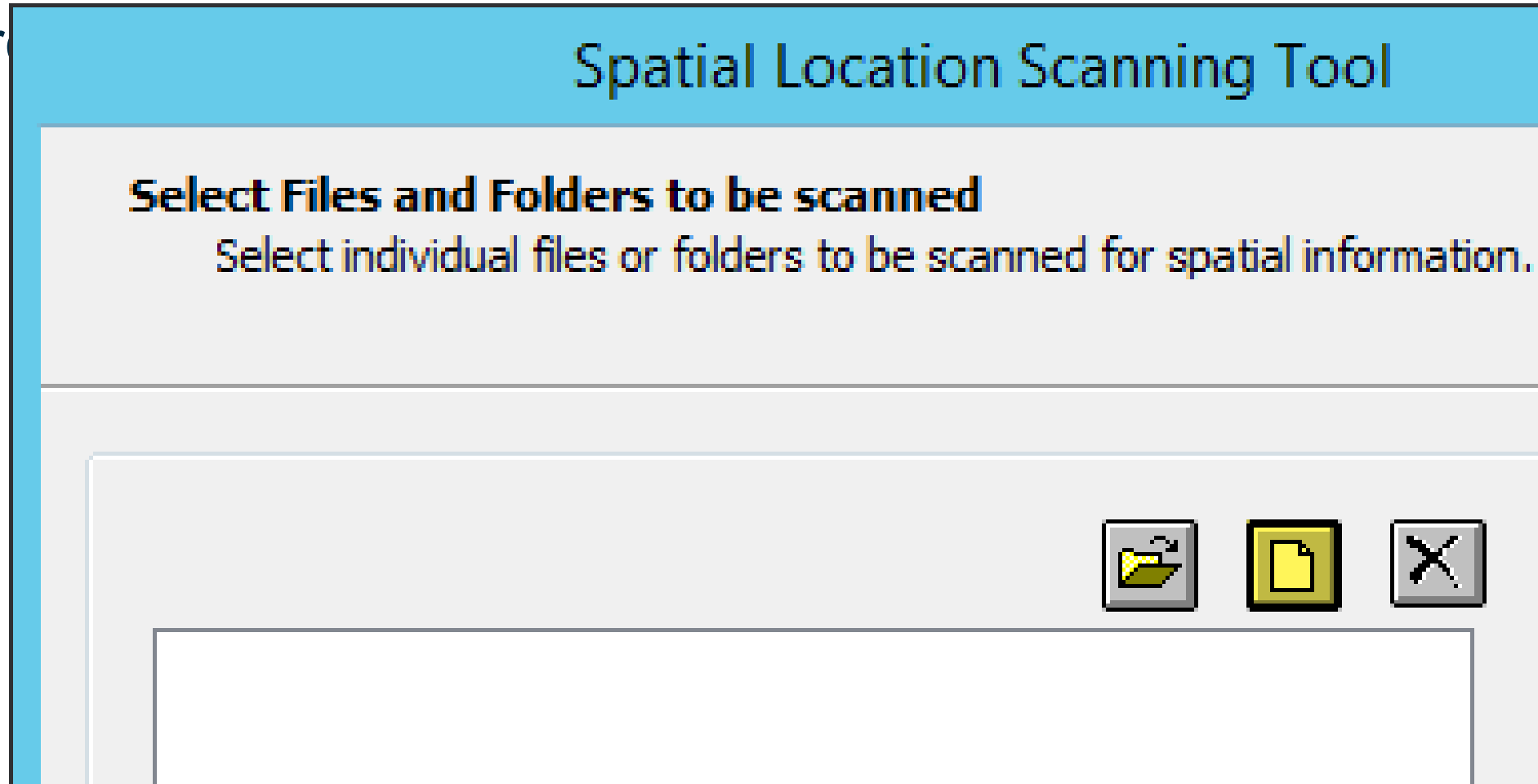


Assign Spatial Location - Autoscan

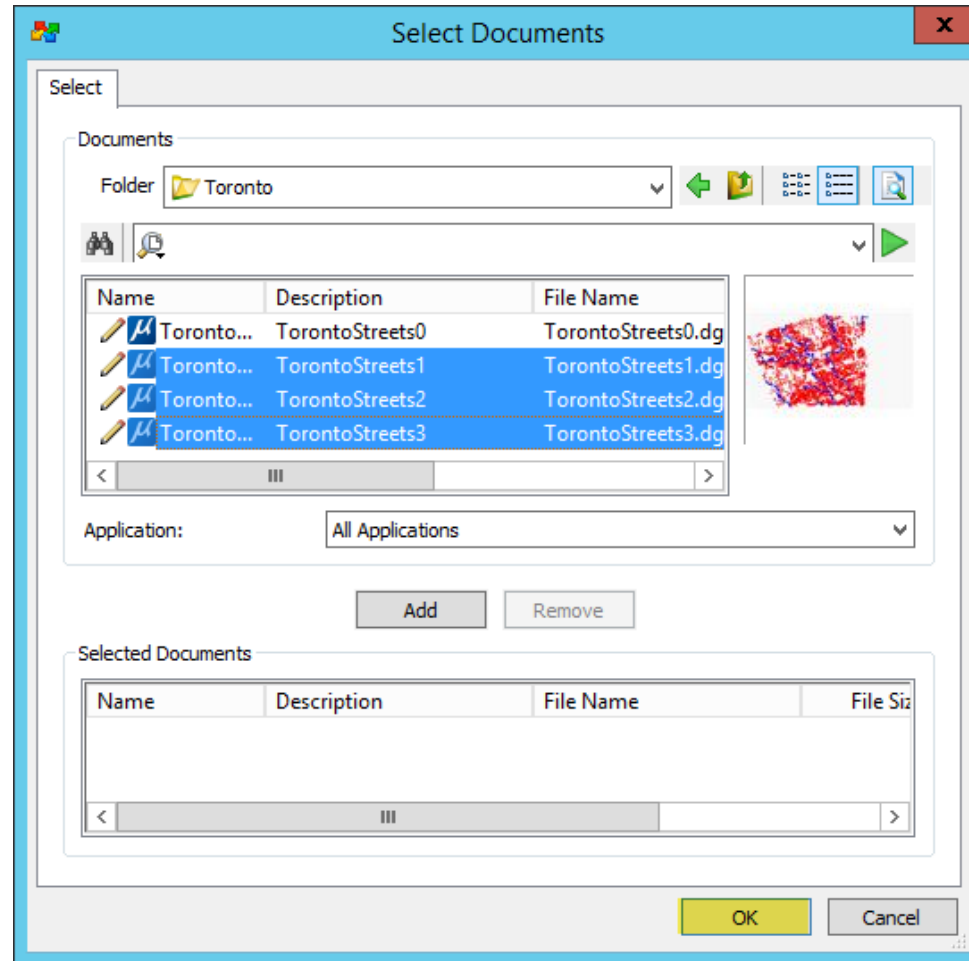


Assign Spatial Location – Spatial Location Scan Tool

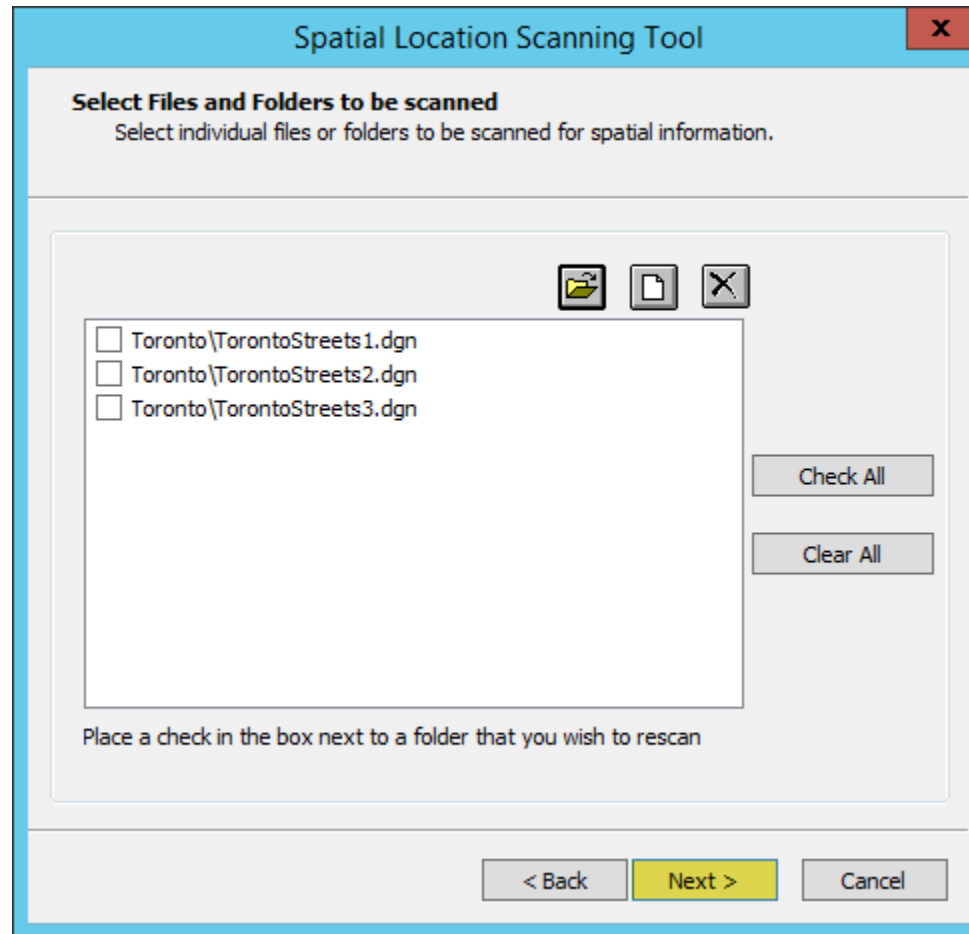
- In Pr



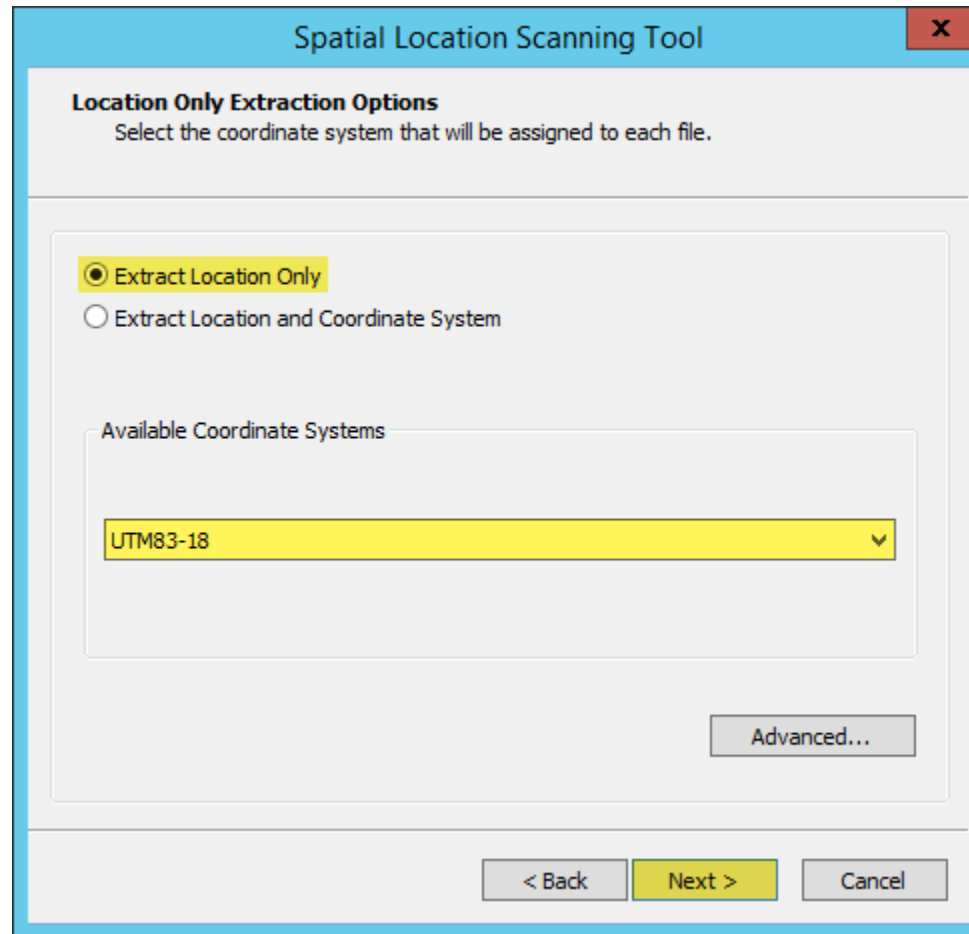
Assign Spatial Location – Spatial Location Scan Tool



Assign Spatial Location – Spatial Location Scan Tool



Assign Spatial Location – Spatial Location Scan Tool

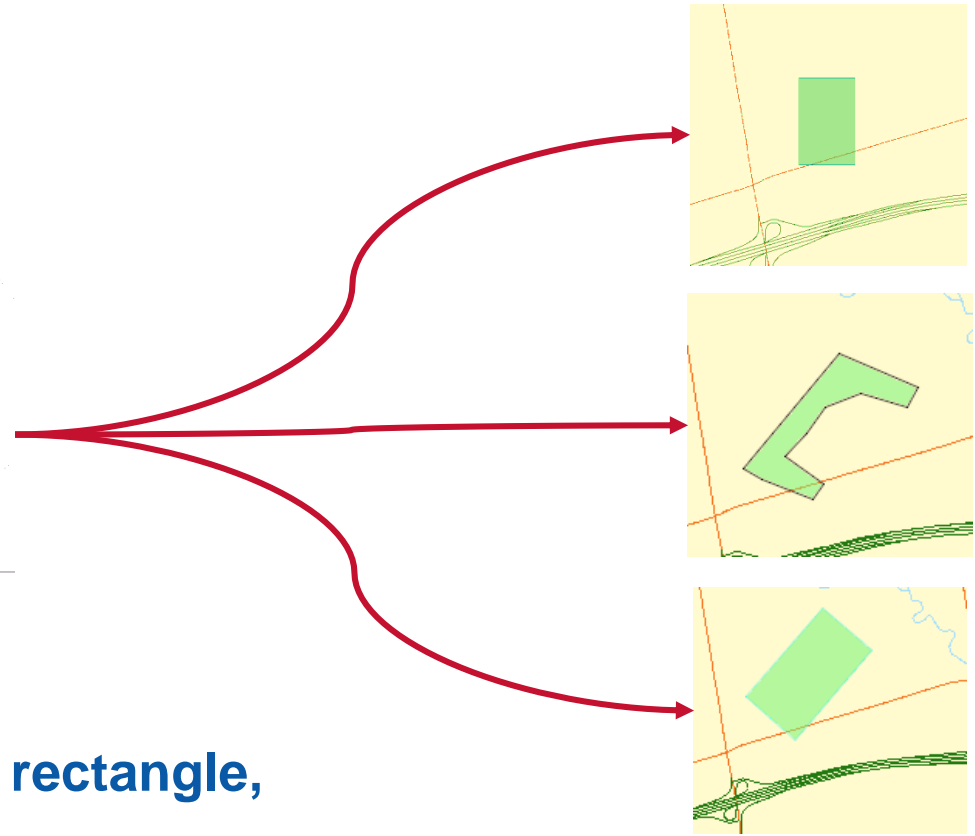
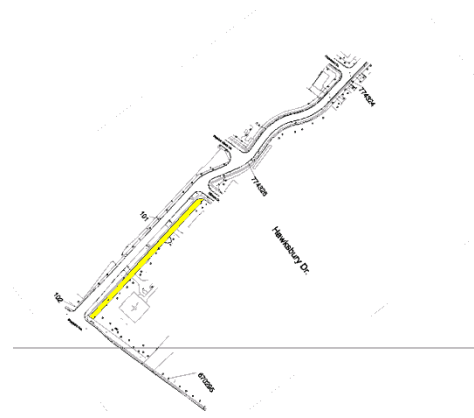


The image shows a software dialog box titled "Spatial Location Scanning Tool". The dialog has a light blue header bar with a close button (X) in the top right corner. Below the header, the text "Location Only Extraction Options" is displayed, followed by the instruction "Select the coordinate system that will be assigned to each file." There are two radio button options: "Extract Location Only" (which is selected and highlighted in yellow) and "Extract Location and Coordinate System". Below these options is a section titled "Available Coordinate Systems" containing a dropdown menu with "UTM83-18" selected and highlighted in yellow. An "Advanced..." button is located at the bottom right of the main content area. At the very bottom of the dialog, there are three buttons: "< Back", "Next >" (highlighted in yellow), and "Cancel".

Advanced Options

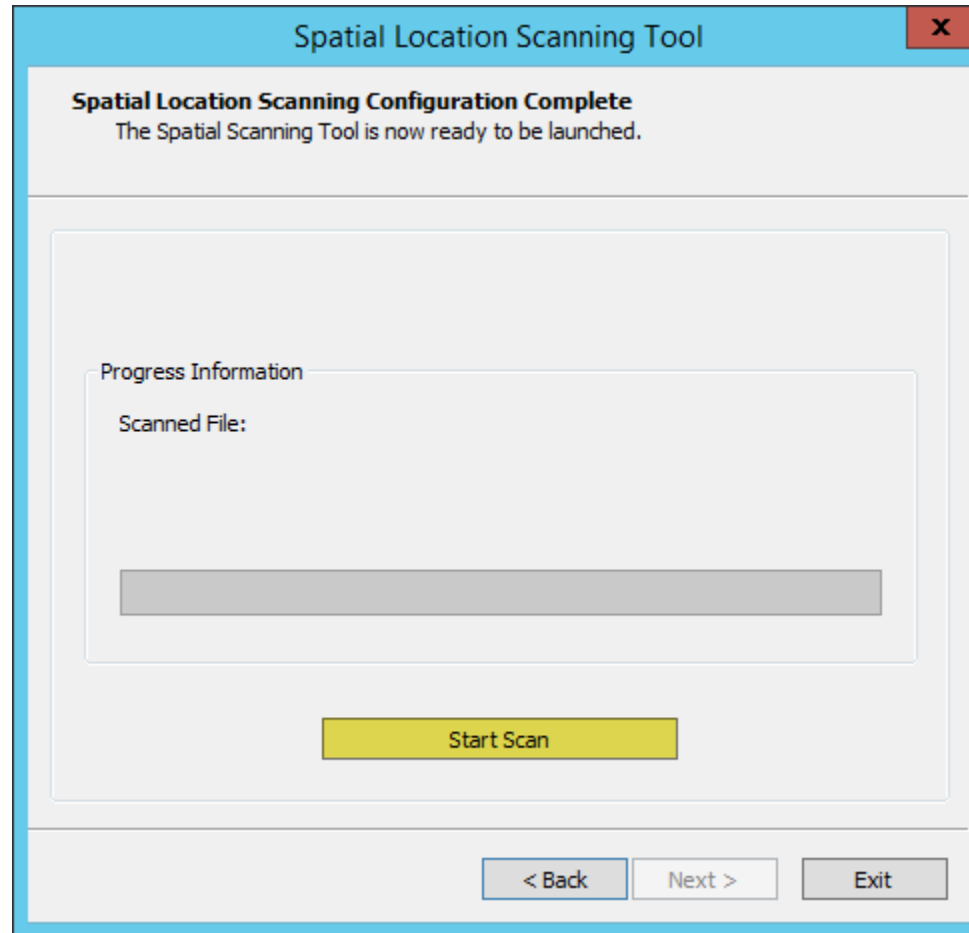
- Use case:
 - DGN or DWG files for which the location is automatically extracted.
- Feature:
 - Convex Hull, oriented rectangles can be extracted in addition of the MBR (bounding box)
 - References can be taken into account for the calculation

Advanced Options Examples

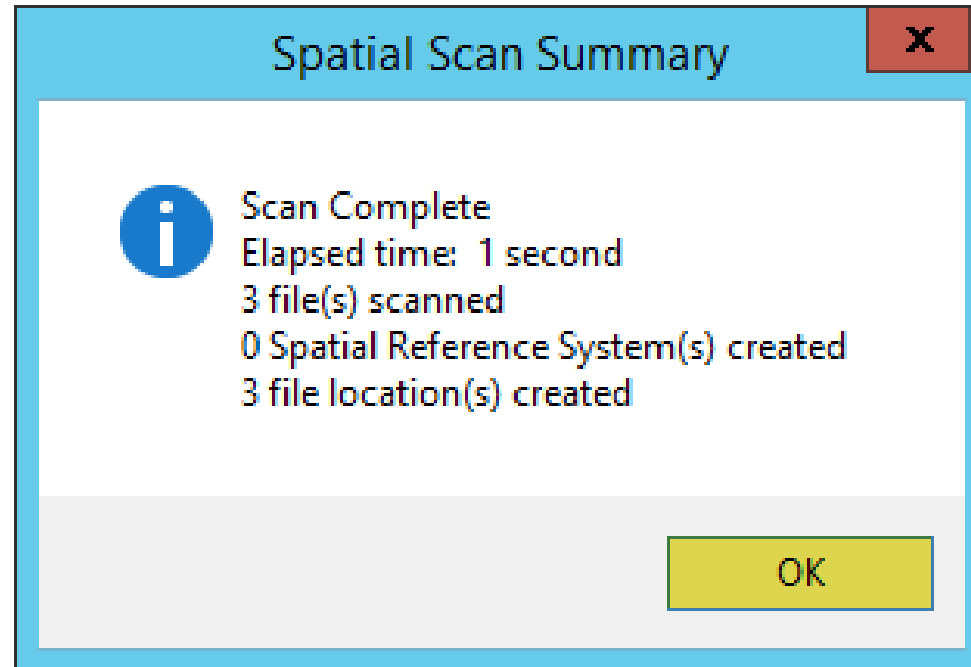


**Minimum Bounding rectangle,
Convex Hull,
Oriented Rectangle**

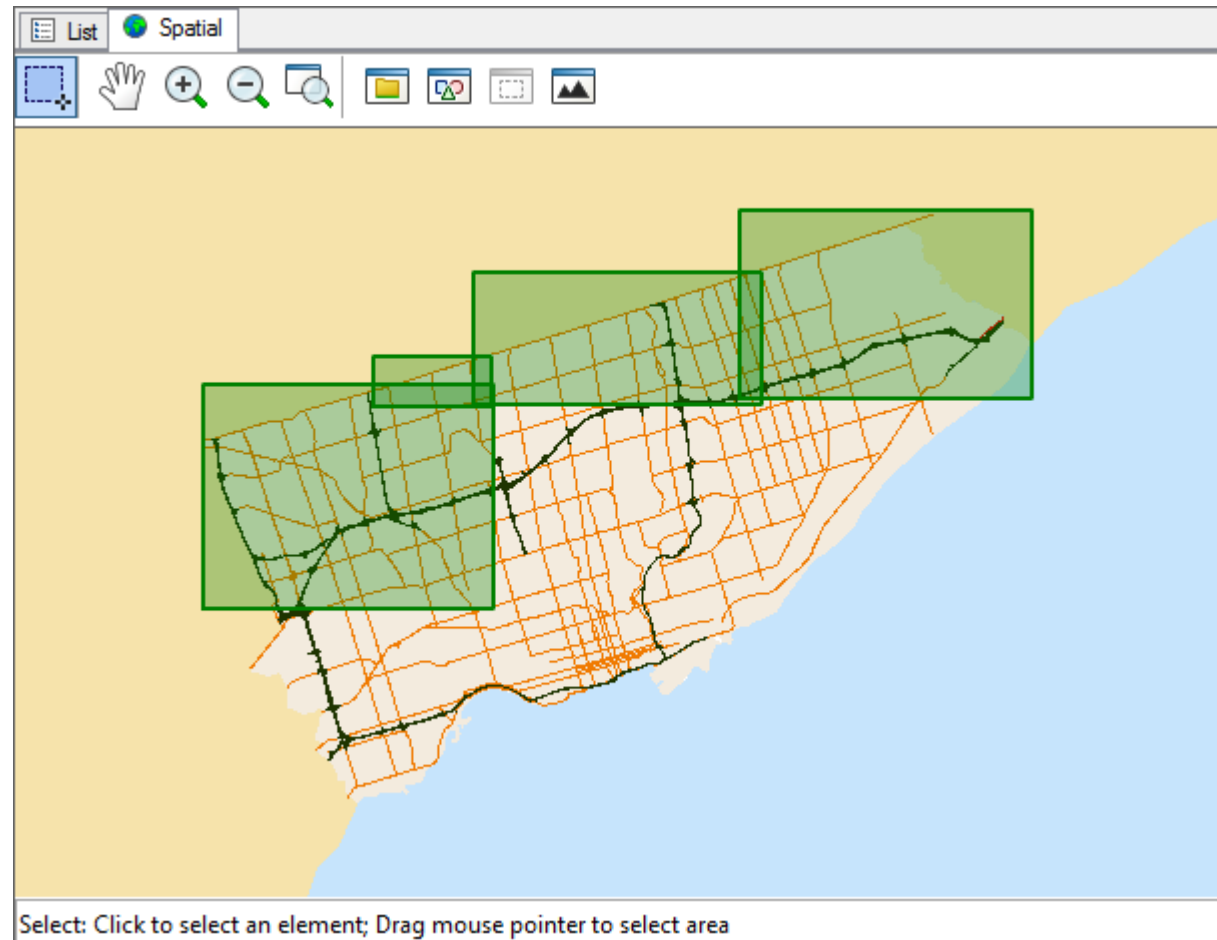
Assign Spatial Location – Spatial Location Scan Tool



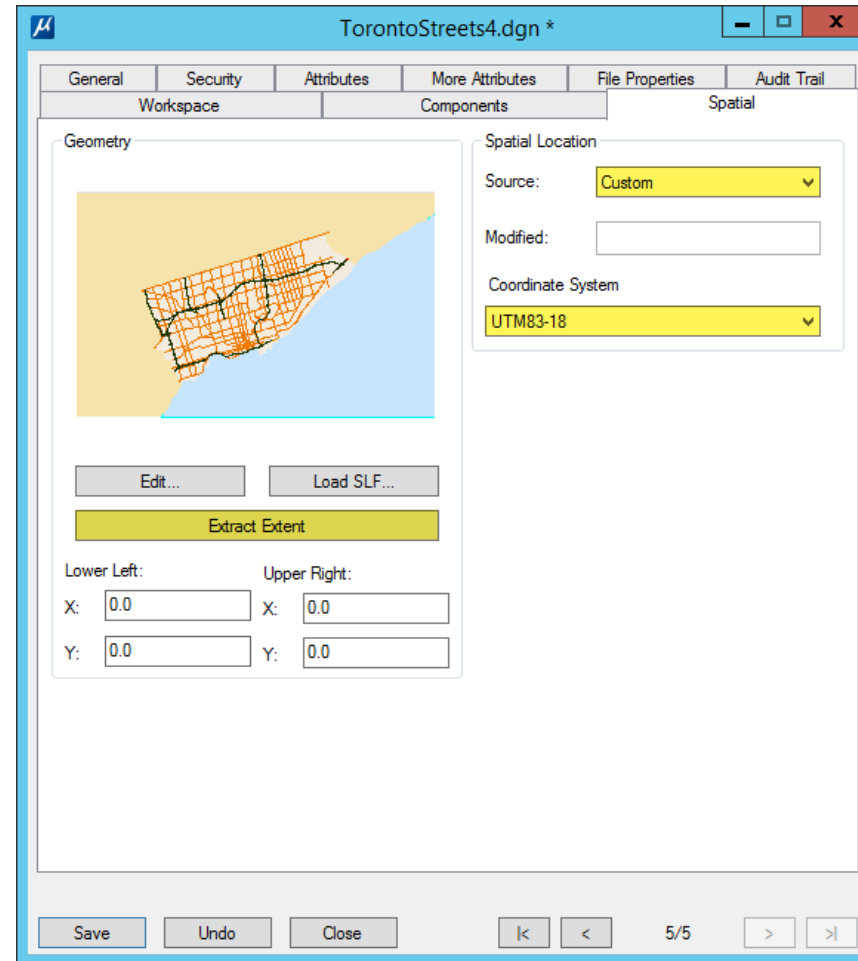
Assign Spatial Location – Spatial Location Scan Tool



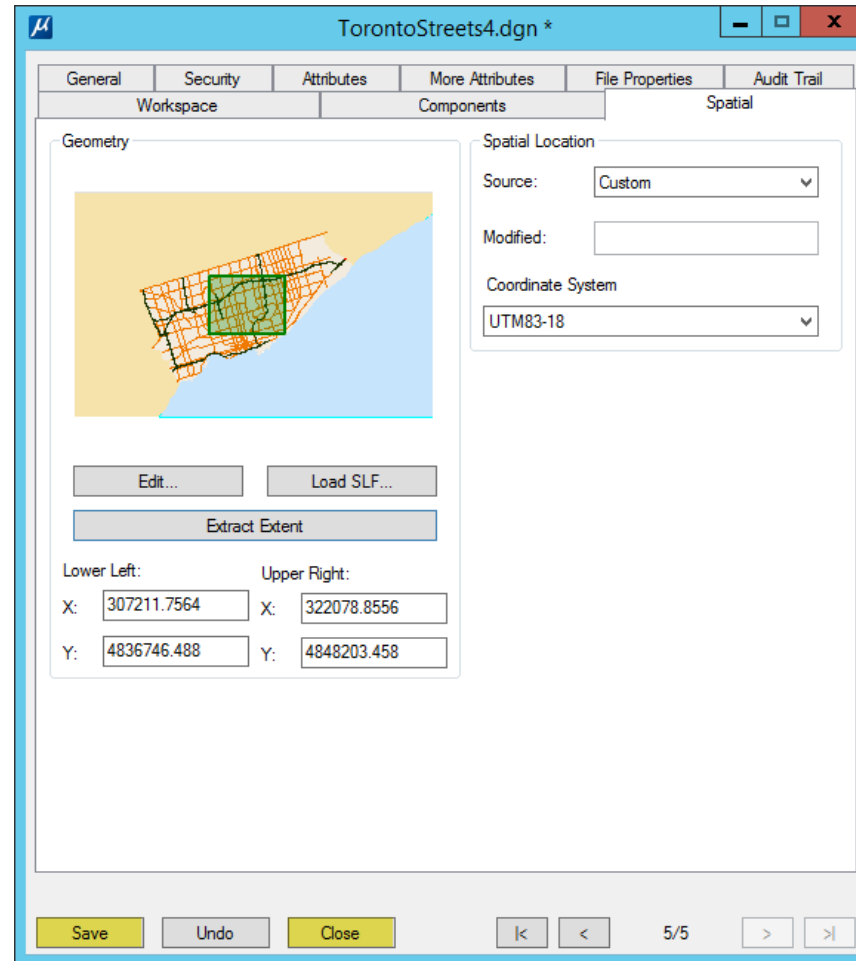
Assign Spatial Location – Spatial Location Scan Tool



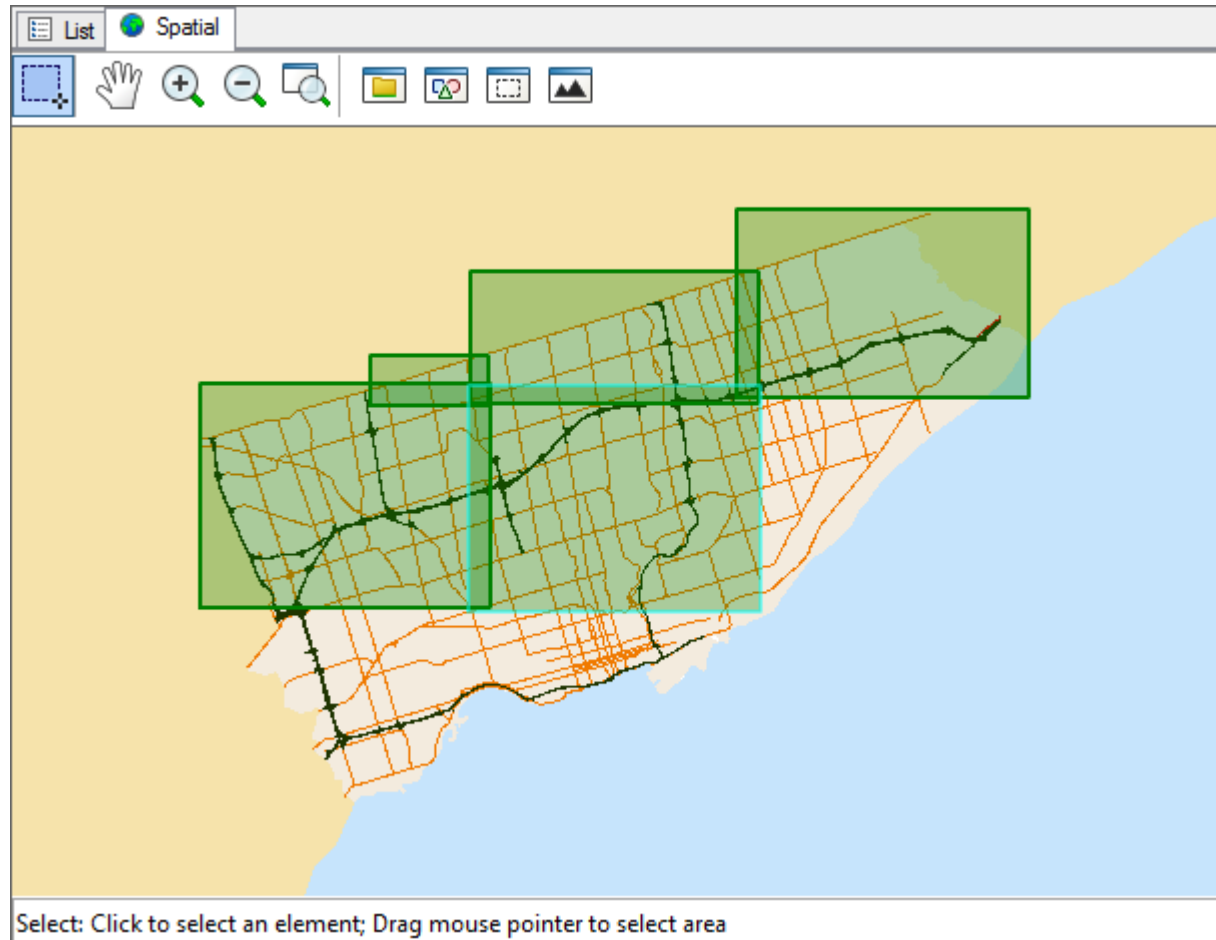
Assign Spatial Location – Extract Extent



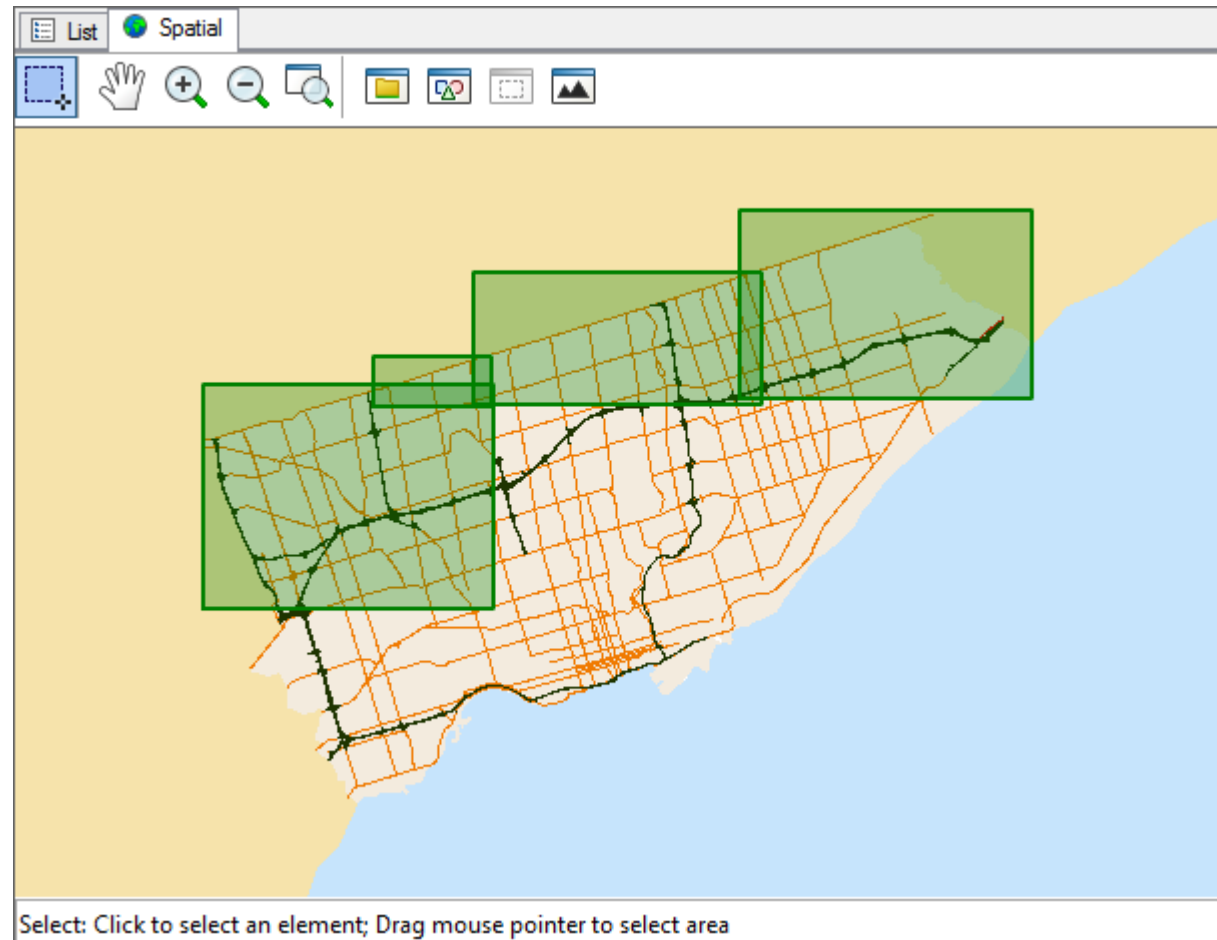
Assign Spatial Location – Extract Extent



Assign Spatial Location – Extract Extent

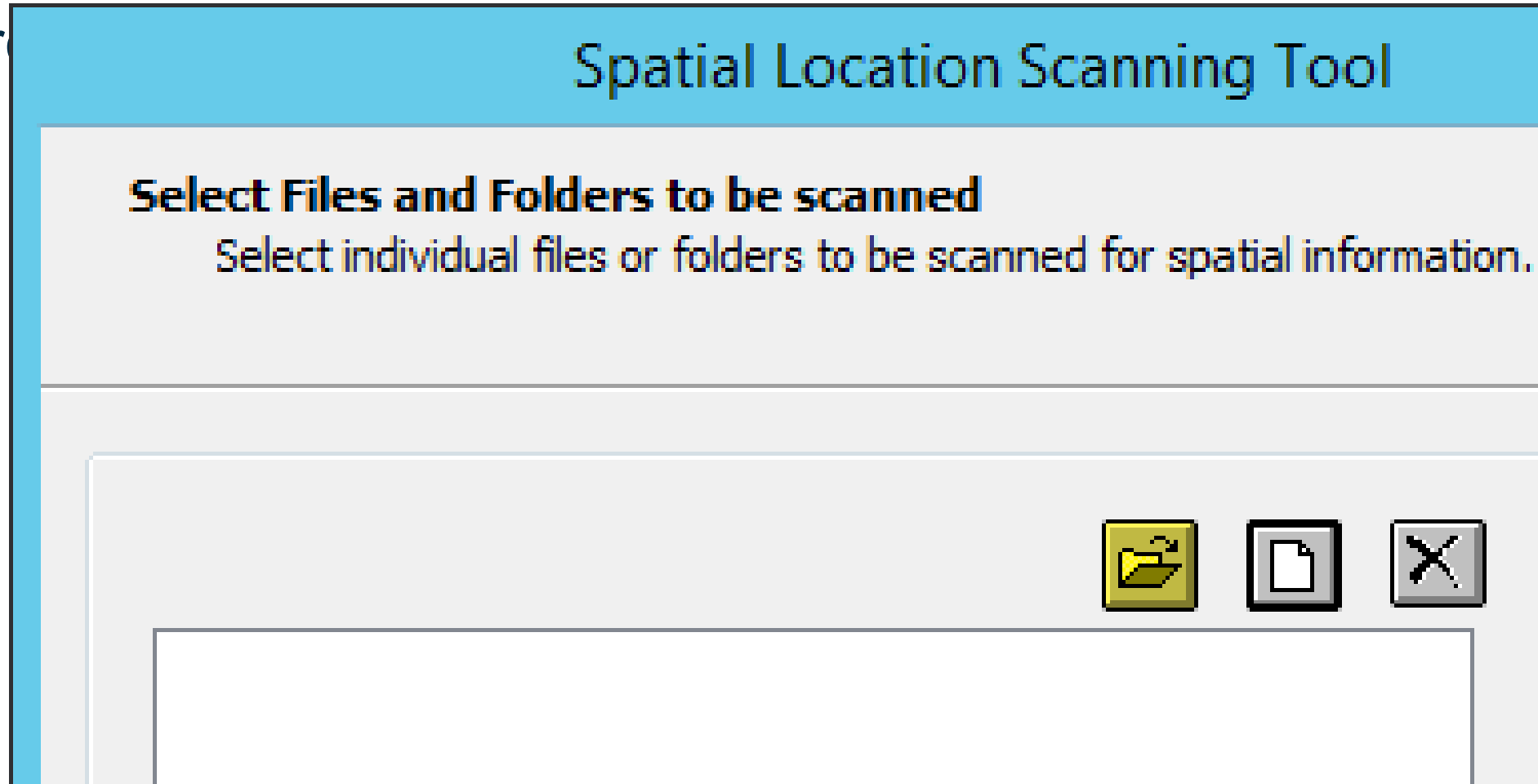


Assign Spatial Location – Calculate Folder Spatial Location

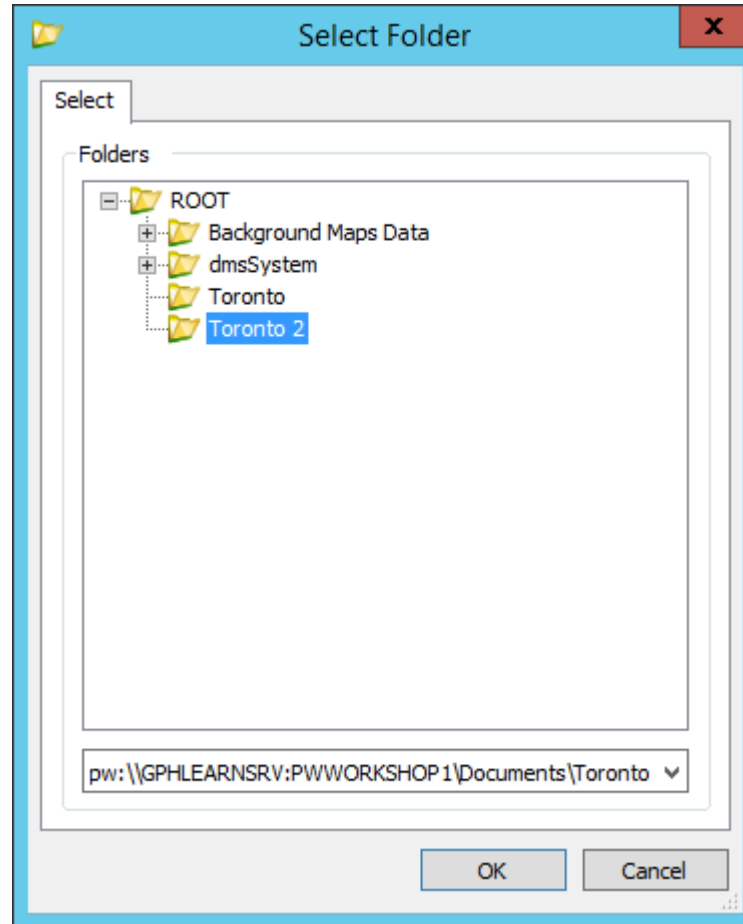


Assign Spatial Location – Calculate Folder Spatial Location

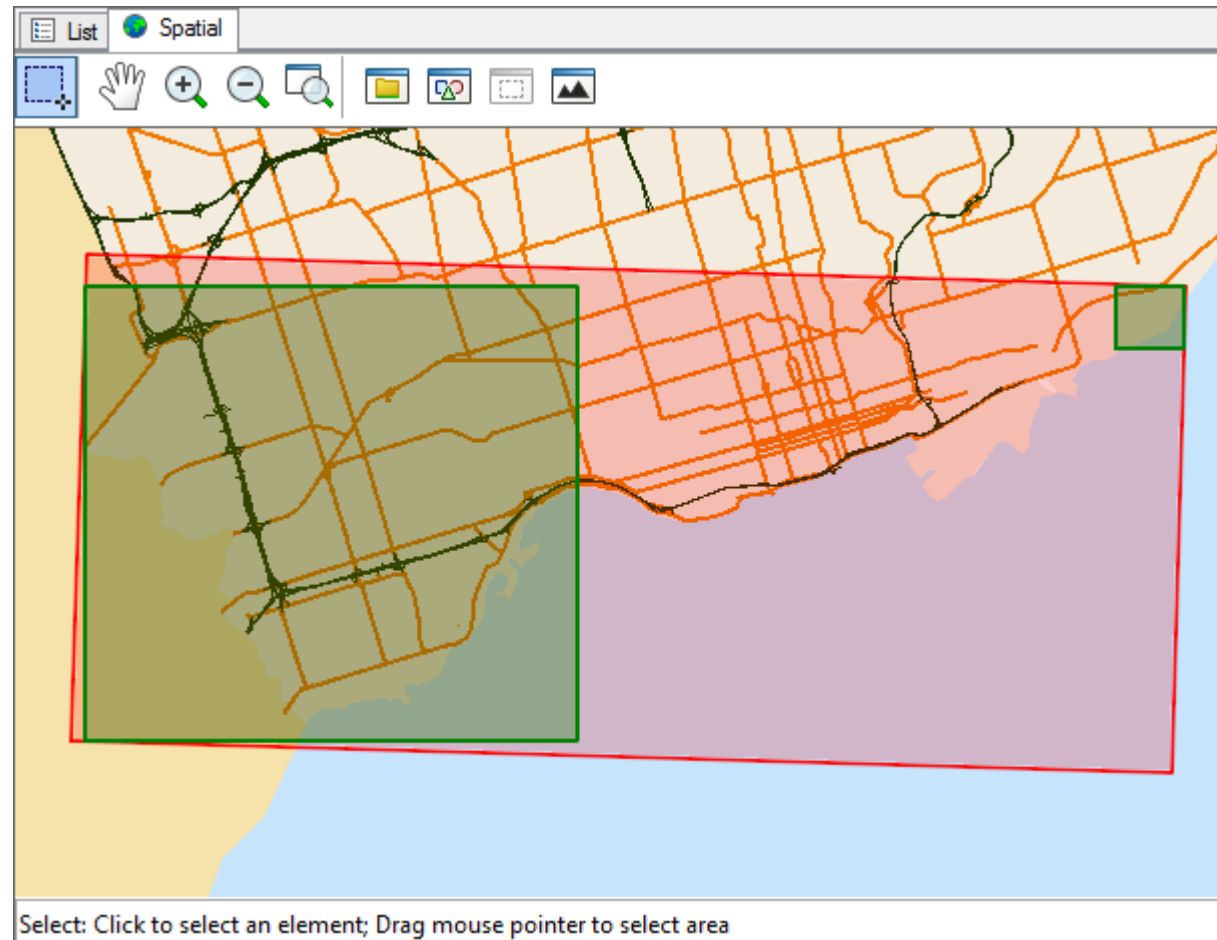
- In Pr



Assign Spatial Location – Calculate Folder Spatial Location



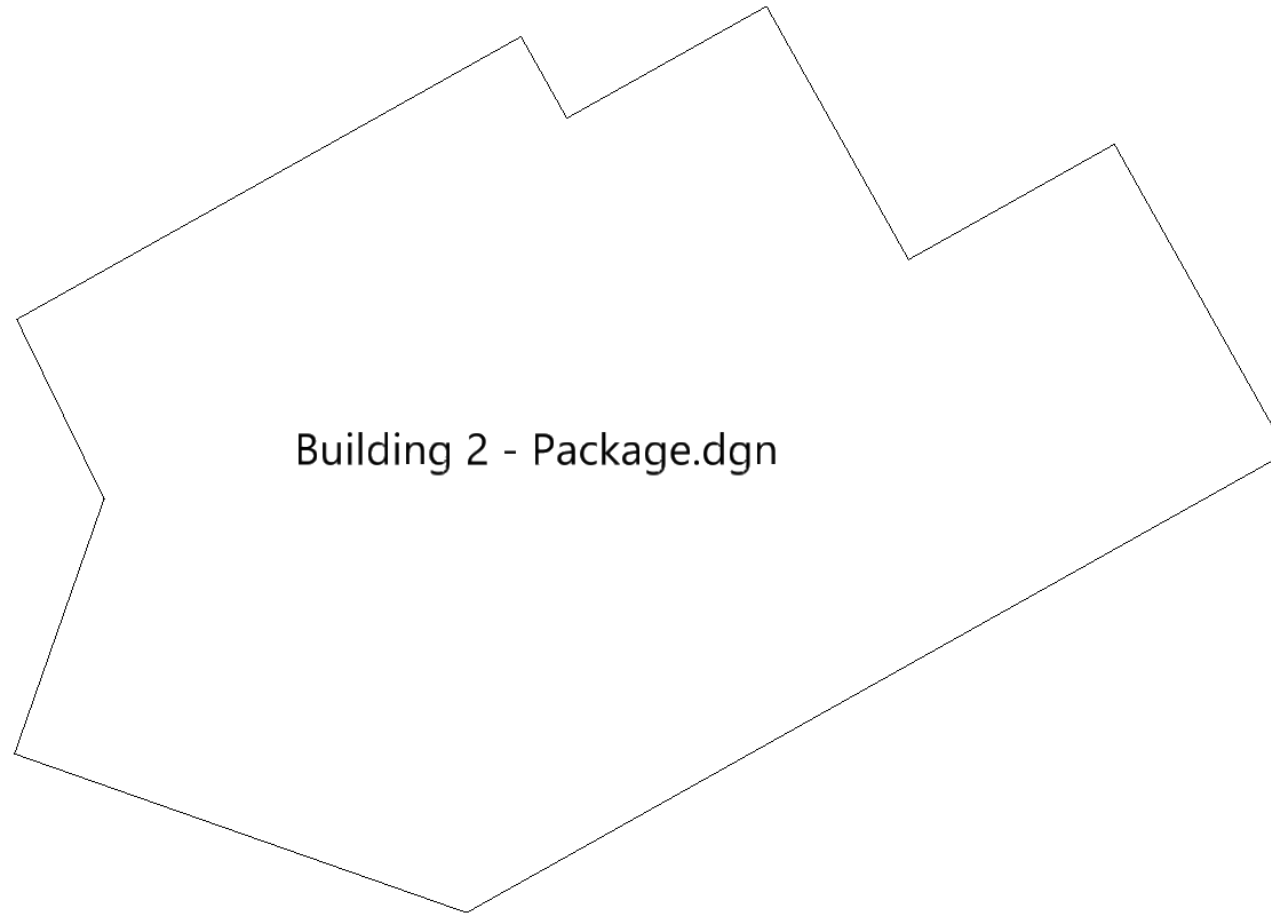
Assign Spatial Location – Calculate Folder Spatial Location



Assign Spatial Location – Spatial Location Files

- A Spatial Location File is an XML document which stores geometries that have been extracted from MicroStation.
- The geometries represent the geographic location of specific documents or folders within a project.

Assign Spatial Location – Spatial Location Files



Assign Spatial Location – Spatial Location Files



Questions?