EARTH SC/ENVIR SC/GEOG 2GI3

Exercise 4: Overview

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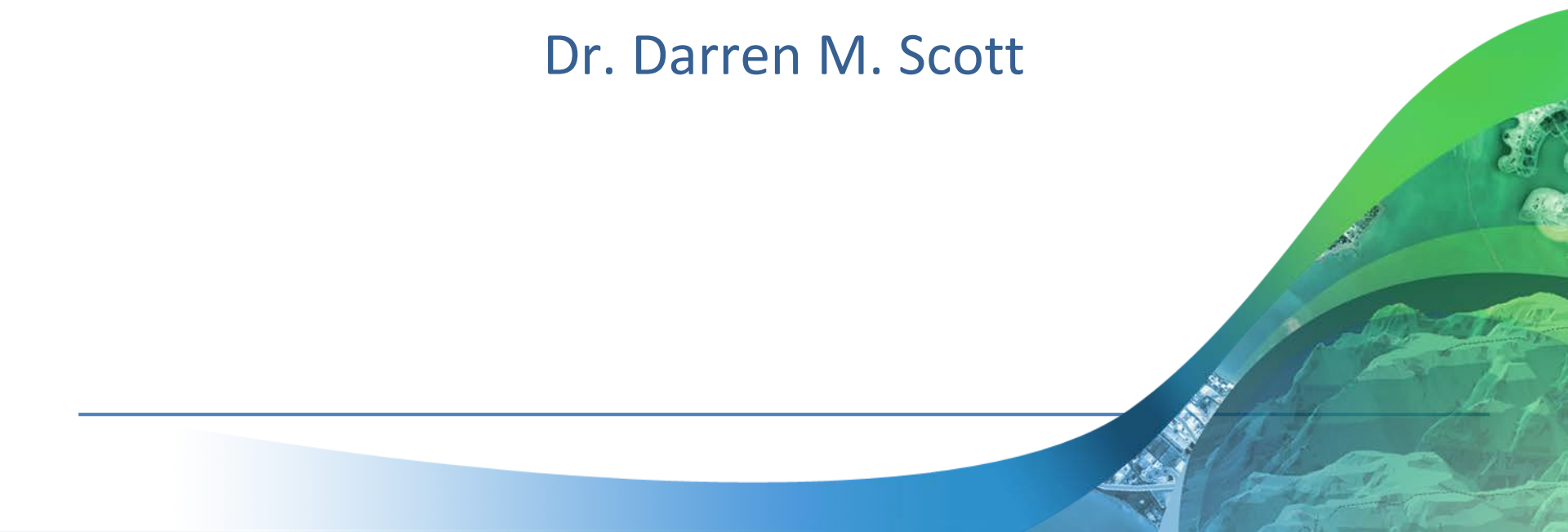


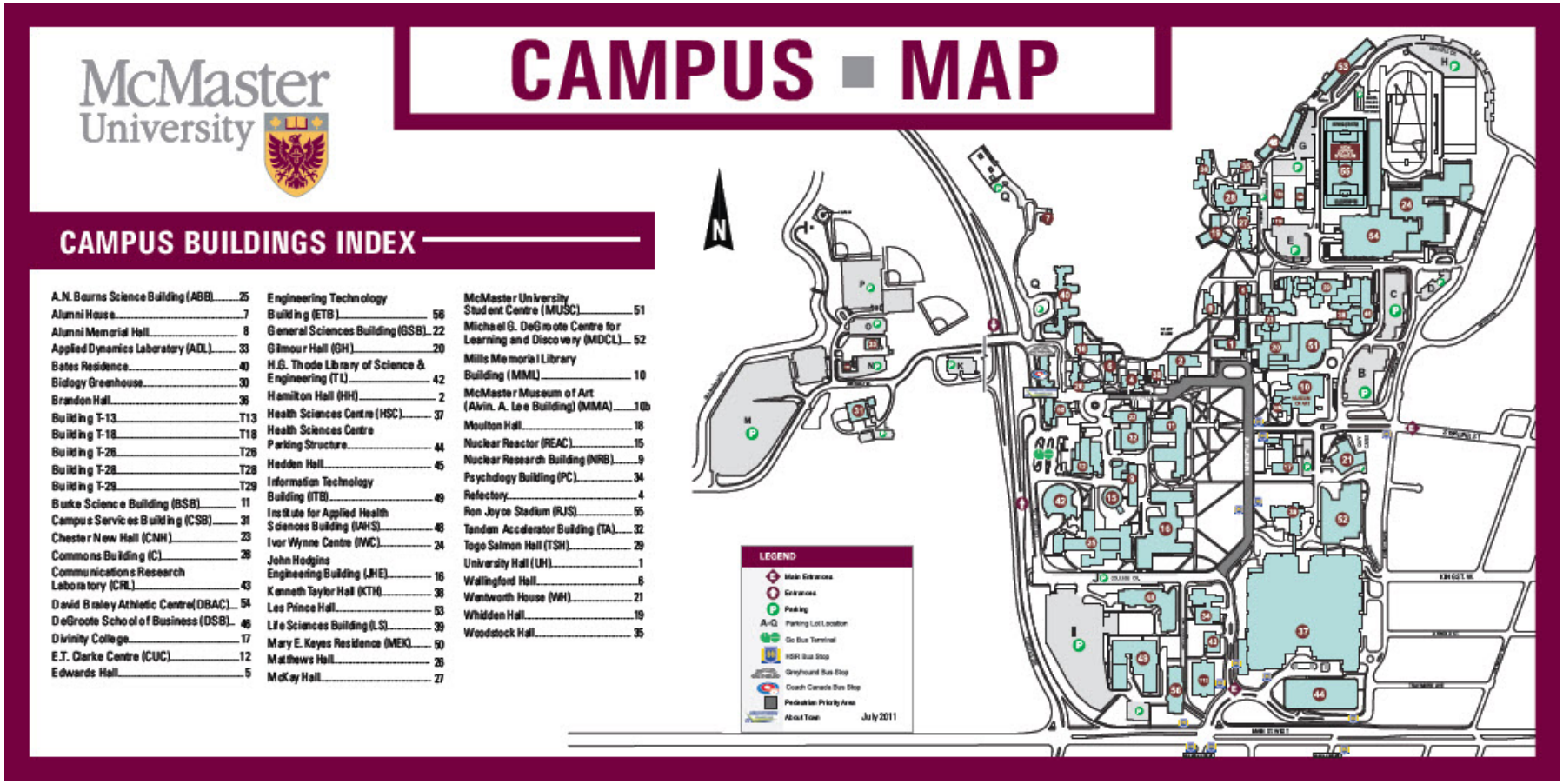
Learning Objectives

- Learning how to georeference a satellite image
- Learning how to digitize and edit spatial features
- Learning how to incorporate GPS data into ArcMap

Details About Part A

- You are given the following shapefiles for McMaster campus:
  - CampusBuildings
  - RoadCurbs
- You are also given a satellite image of McMaster campus that has not been georeferenced

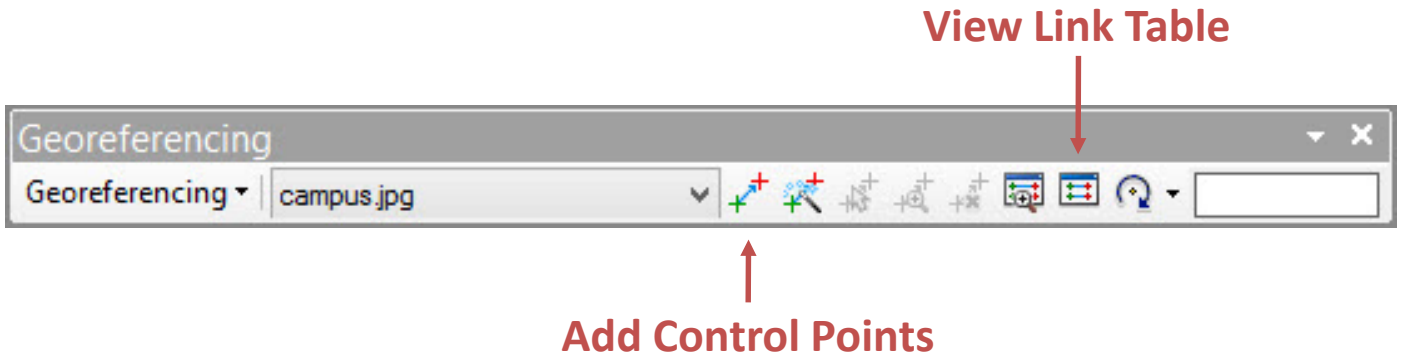
McMaster Campus Map



Satellite Image of McMaster Campus

Georeferencing: Major Steps (1)

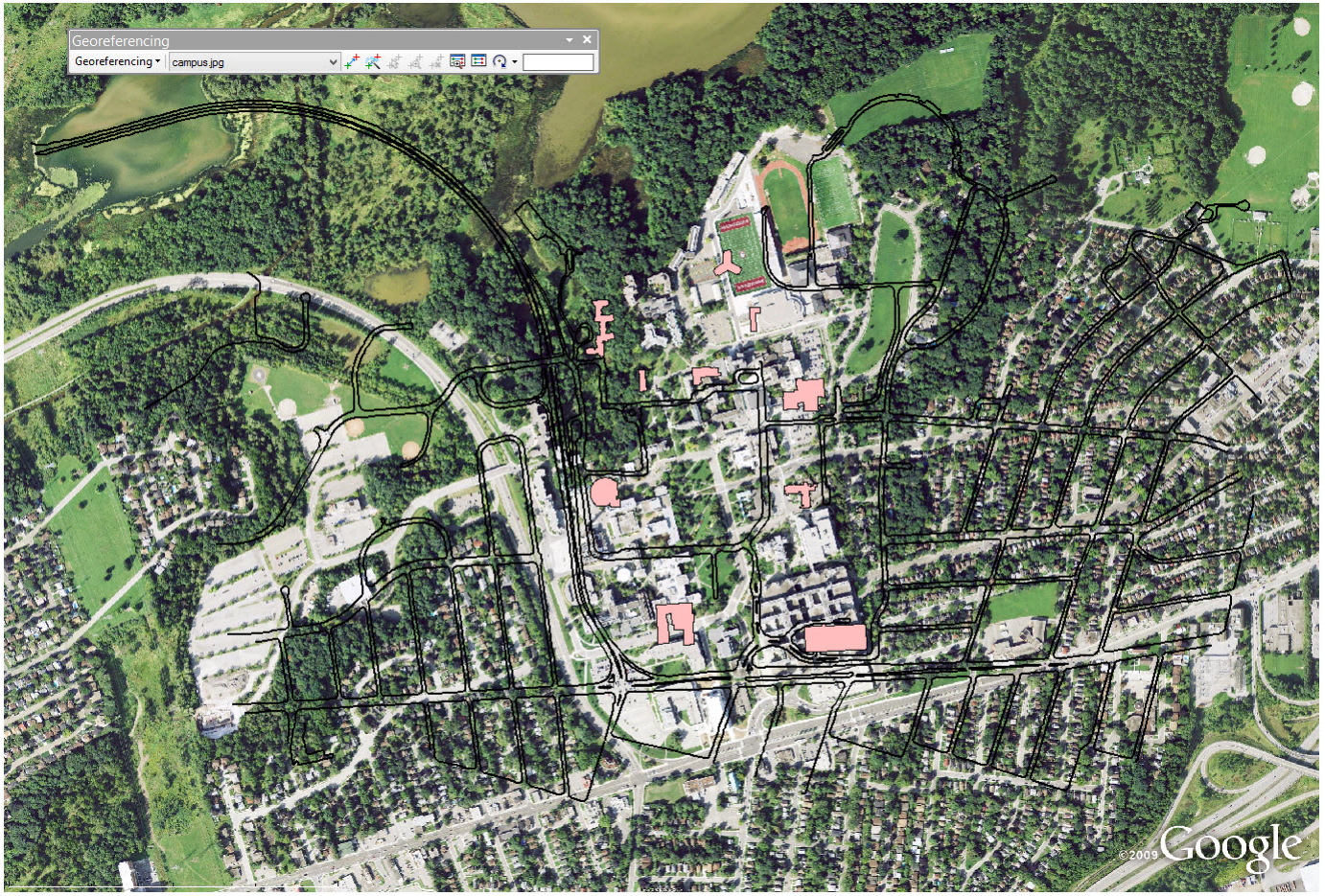
- Load shapefiles first
- Load satellite image next
- Make sure that the data frame has the same coordinate system as that of the shapefiles
- Load the Georeferencing toolbar



Georeferencing: Major Steps (2)

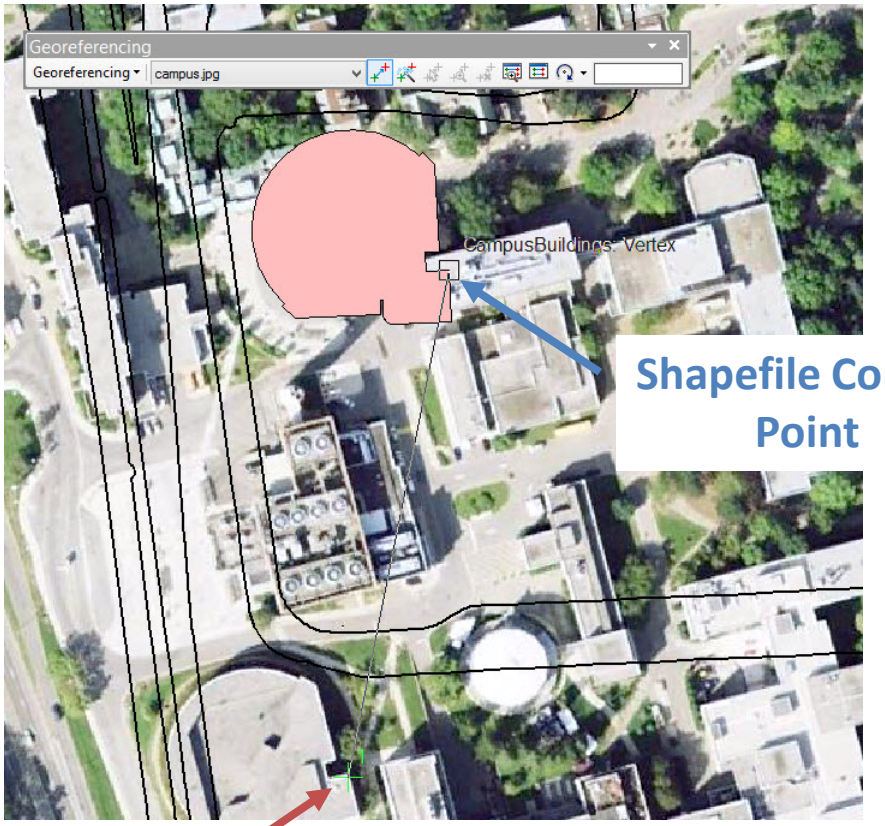
- Display satellite image in the same area as the shapefiles
  - Right click on a shapefile and Zoom to Layer
  - Click Georeferencing | Fit to Display

Georeferencing: Major Steps (3)



Georeferencing: Major Steps (4)

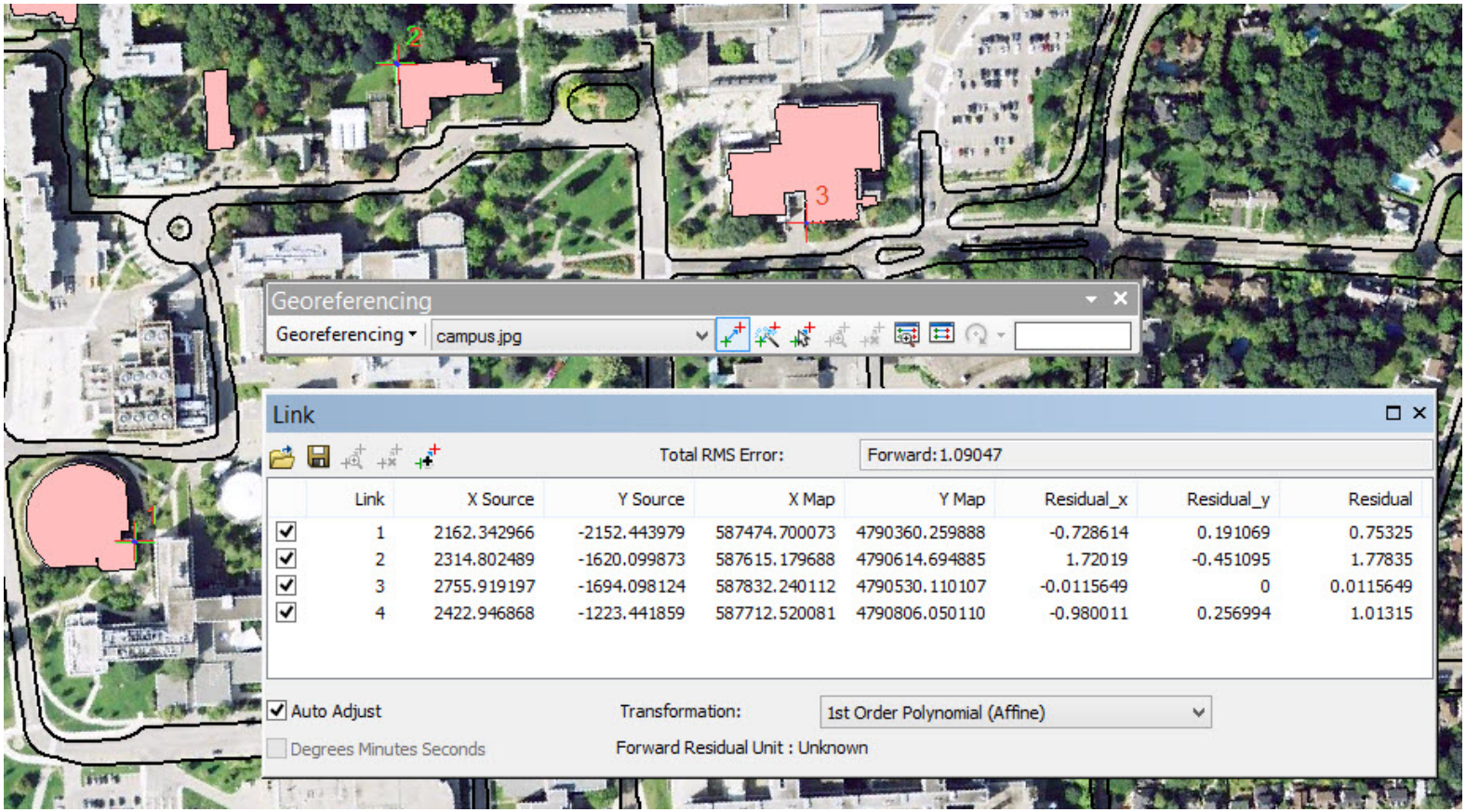
- Establish ground control points between image and shapefiles using identifiable features



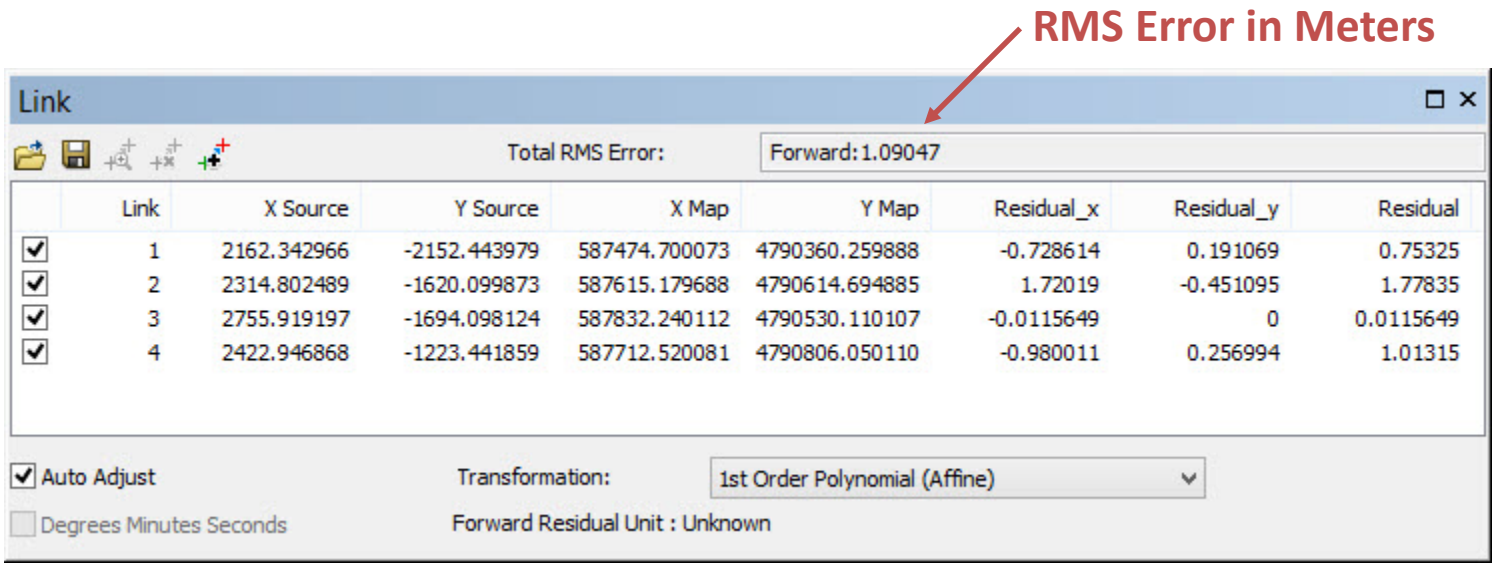
Georeferencing: Major Steps (5)

- View Link Table
  - Can delete control points from this table (click on point and hit DELETE on your keyboard)
  - Review Total RMS error and determine whether the error is within a tolerance level you establish
- Save image with coordinate system
  - Two options: Update Georeferencing, Rectify
- Save map document

Georeferencing: Major Steps (6)



Georeferencing: Major Steps (7)



Details About Part B

- Compare the CampusBuildings shapefile to the buildings shown on the satellite image
  - Identify and digitize eight missing buildings
- Update the attribute table of the CampusBuildings shapefile
  - New fields for building numbers and building abbreviations (abbreviations must be unique)
  - Add names of buildings to Name field
  - Delete ID, Code, and Category fields

Feature-based Editing (1)

- The process of creating features and correcting feature errors in a vector data set

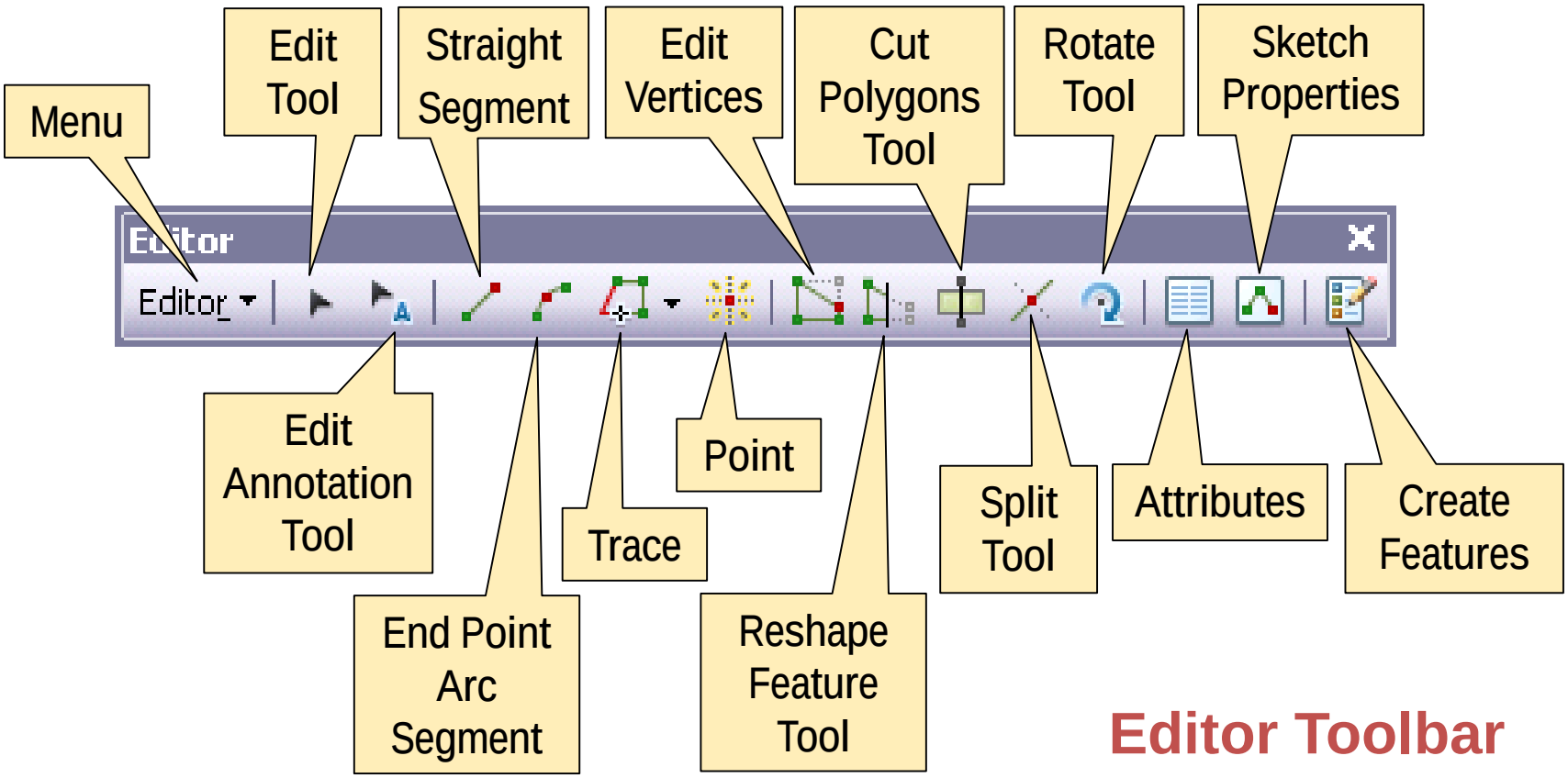
- Editing is feature specific
  - You must tell the software the feature type that is to be changed; then proceed with editing

Feature-based Editing (2)

- Load Editor toolbar by right clicking on Campus Buildings shapefile followed by Edit Features | Start Editing

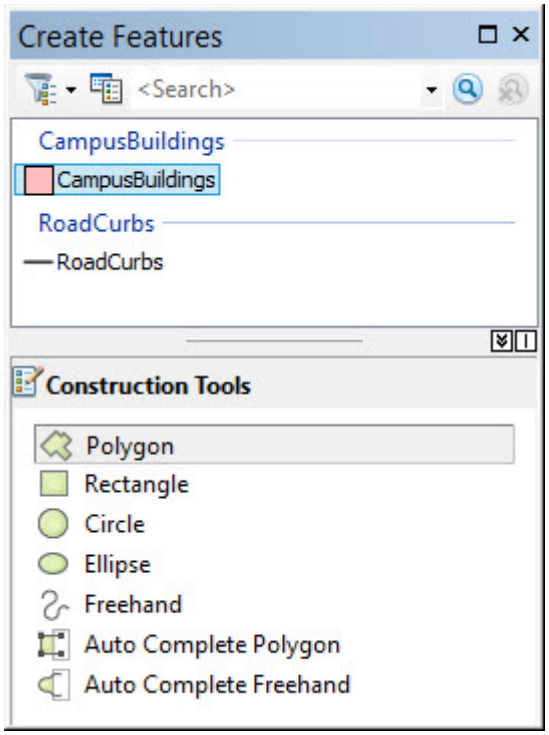
- Remember to Save Edits periodically and Stop Editing when task is completed

Feature-based Editing (3)



Feature-based Editing (4)

- Construction Tools for digitizing new features are accessed through Create Features
- Attributes can be added and updated in two ways:
  - Attributes button
  - Buildings attribute table



Details About Part C

- Record locations of all entrances to three buildings using a Garmin eTrex Legend H GPS receiver
- Record whether an entrance is wheelchair accessible (1) or not (0) on a sheet of paper (field notes)
- Download GPS data using the GPS Utility and export the data as a shapefile
- Add a new field to the shapefile called ACCESS for recording the accessibility of the entrance from your field notes
- A different colored icon must be used to distinguish between accessible and non-accessible entrances (e.g., a blue point for accessible, a red point for non-accessible)

Style and Format Guidelines (1)

- Answers must be typed using MS Word, OpenOffice, or some other word-processing package; otherwise your grade = 0
- Style and format is worth 20% of your mark or 7 marks out of 37 for this exercise
- 1 mark is deducted for each unique mistake

Style and Format Guidelines (2)

- To avoid losing marks, ensure the following:
  - Title page contains the exercise number and name (Exercise 4: Georeferencing, On-screen Digitizing, and GPS), your name and lab section, submission date, and your TA's name
  - Staple your submission in the upper left-hand corner
  - Use 12 point font
  - Use 1.5 spacing between lines
  - Use 1 inch borders
  - Pages must be numbered in the bottom right-hand corner
  - Correct all spelling and grammatical mistakes
  - Do not use ink or pen on the submission