

## GEOG 204: Tutorial 5

### Spatial Analysis

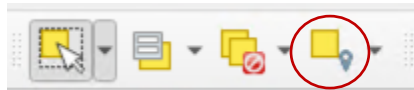
The main objective is to go through some of the common spatial analysis functions by answering a series of questions that would help us better understand the City of Prince George using the data provided.

At the end of this tutorial you should be familiar with some of the basic functions used in spatial analysis.

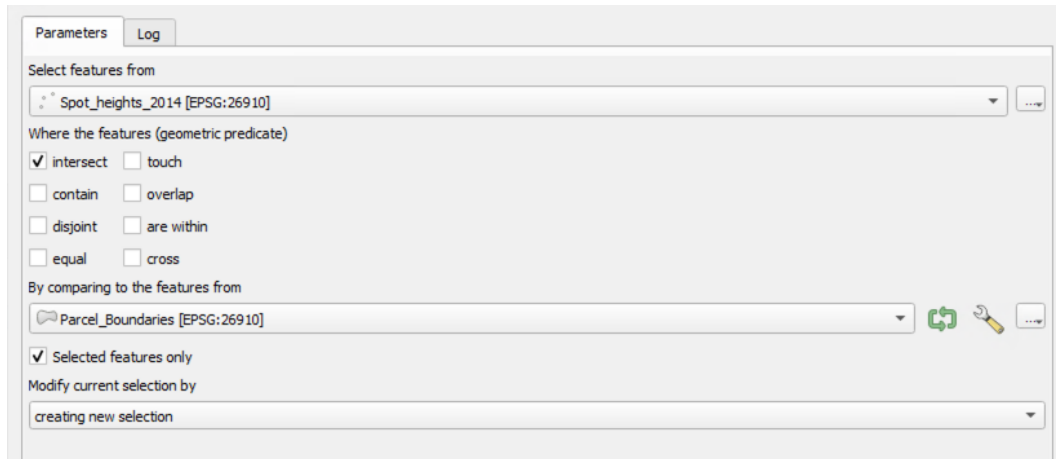
1. Load the all data for this tutorial in QGIS. In what your coordinate system are your data?
2. What is the highest point in the City of Prince George?
  - Use the shapefile with the spot heights elevations.
    - Open the attributes table
    - Right click in the columns table to sort
3. What is the lowest point in the City of Prince George?
4. Let us assume that UNBC is situated on parcels with PID #s 007972890, 015287467, 023384697, and 028806077. What is the average elevation at the UNBC campus? The objective is to select the points with spot heights that fall withing those parcels and then average their height values.
  - Firstly, select all the features with the above PIDs in the parcel boundaries layer
    - Open the attribute table, click the “select features using an expression” button
    - In the expression window, type the SQL code for selecting the features by following the syntax below

PID = '007972890' OR PID = '015287467'

- Secondly, on the Selection toolbar, choose Select by Location



- In the dialog window that pops up
- Select features from: **Spot heights**
- Where the features: **intersect**
- By comparing features from: **Parcel Boundaries**
- **Check Selected Features only**



How many points were selected?

- Next in the Processing toolbox
    - Vector Analysis >> Basic Statistics for fields
      - Input Layer >> spot heights
      - Check selected features only
      - Field to calculate >> Elevation
  - Using the Count points in polygon function to determine the number of points that fall within parcels within PID #s 007972890, 015287467, 023384697, and 028806077.
    - Vector Analysis >> Count points in polygon
5. The Exhibition Park (Fields) is comprised of multiple legal parcels. Use the selection by location tool to determine how many they are.
    - Please note that for our purposes here the selection tool is not perfect, so you will have to be resourceful to get the right selection
  6. Let us assume that the width of Ospika Blvd is 10m from the center line. How much surface area is does this particular road cover in square kilometers
    - a. Use the buffer tool
    - b. Use the dissolve function the layer resulting from the buffer function
    - c. Calculate the area
  7. Extra work: On your own can you do this tutorial in ArcGIS pro?