

Essential Geoprocessing Tasks

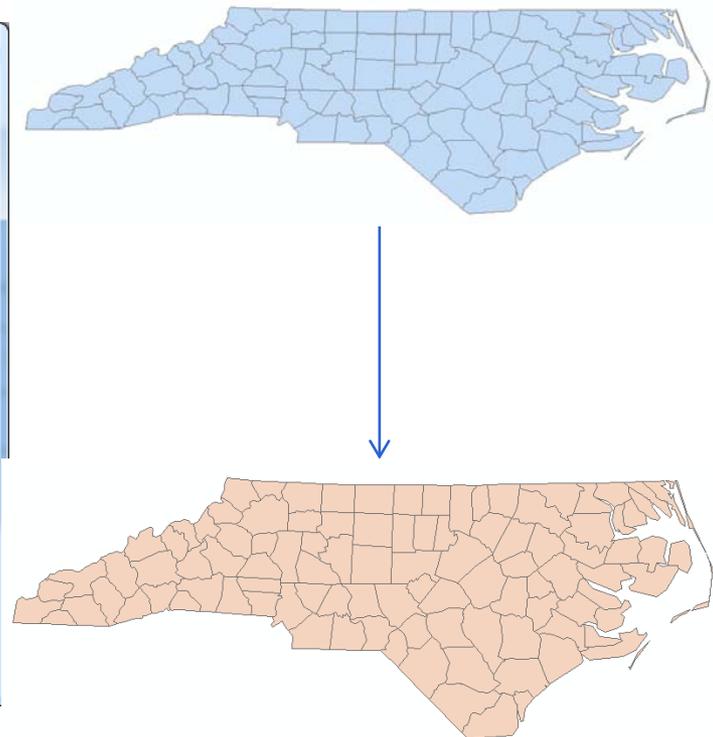
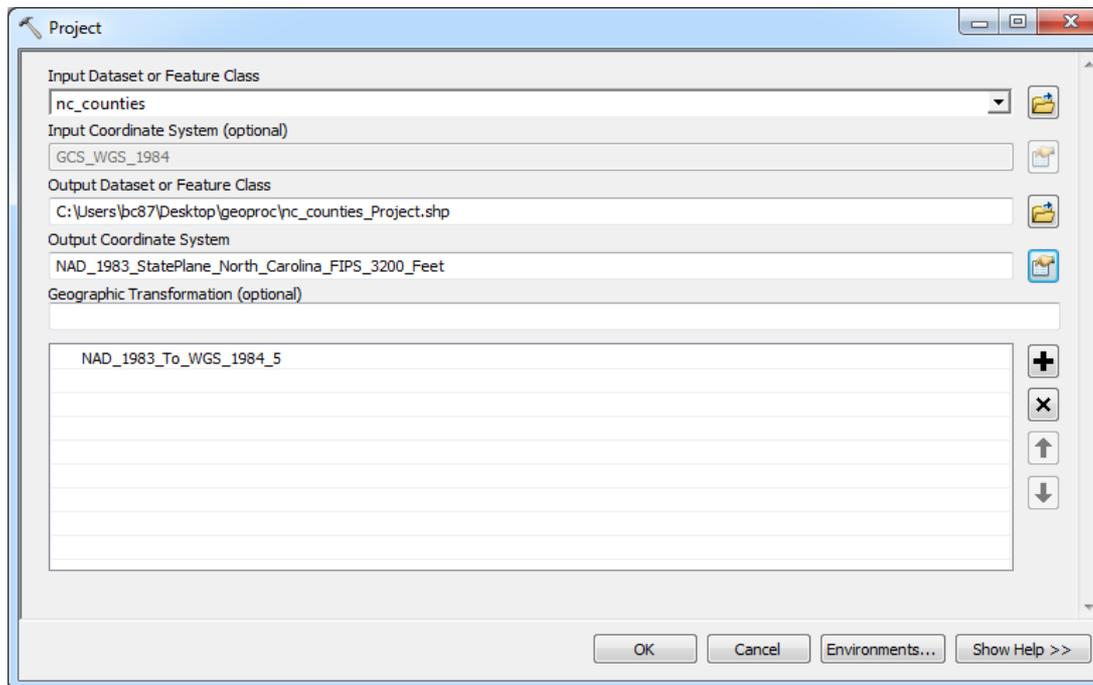
GIS II: Data Management



- **Geoprocessing is a catch-all term for the manipulation of geographic data**
- **Take one or more input geographic datasets, perform some operation, return an output geographic dataset**
- **Operation can be simple or complex**
- **We've already seen some examples of geoprocessing**

A familiar example

- The Project tool takes an input dataset, transforms its coordinate system, and returns an output dataset.

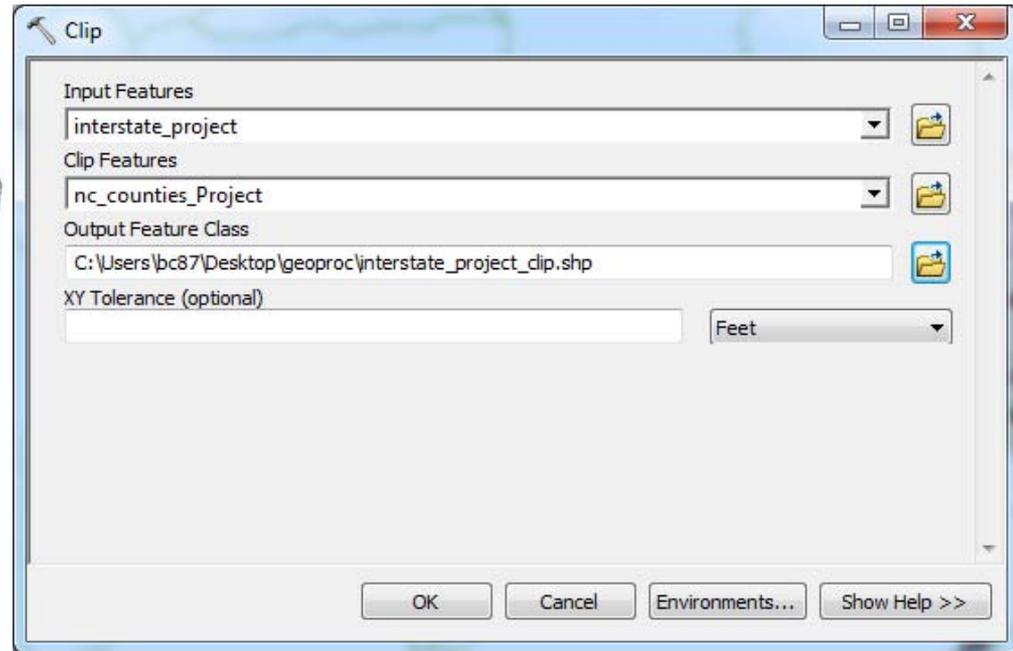
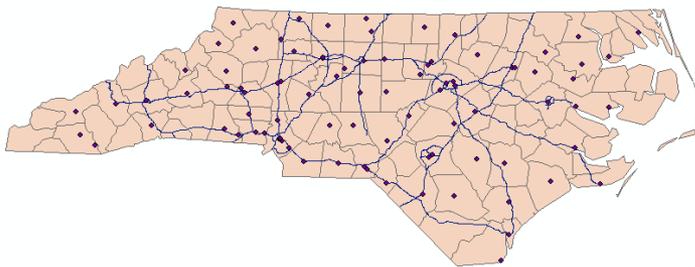
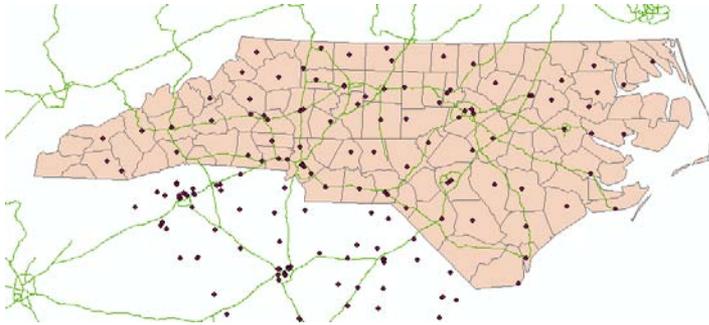


The Project tool

- **Converts a shapefile from one coordinate system to another**
- **Does not modify the original shapefile**
- **Only works on shapefiles with a known coordinate system**

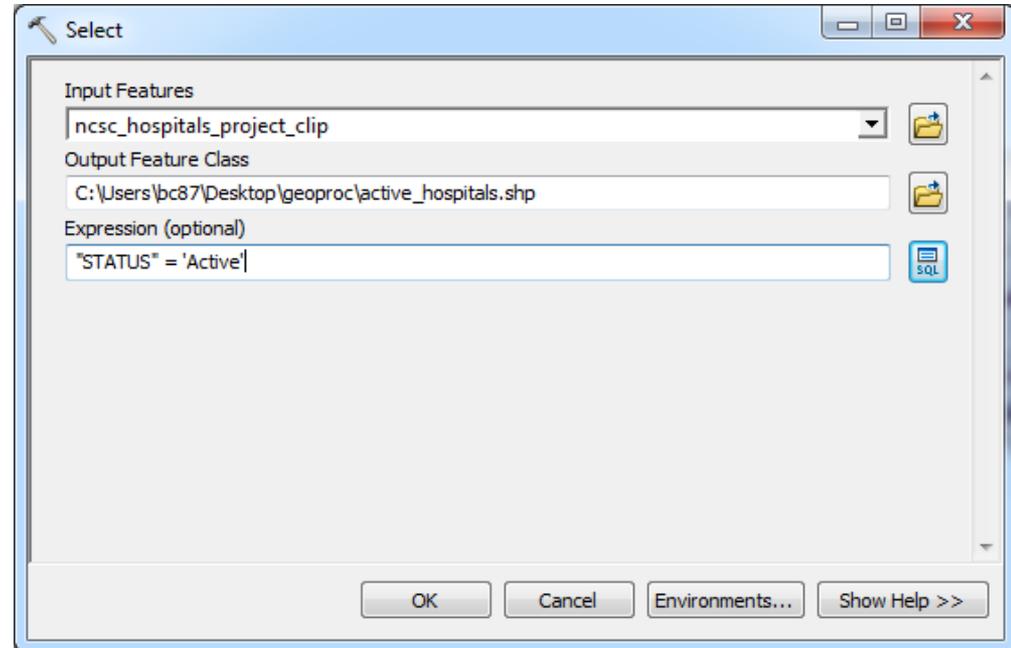
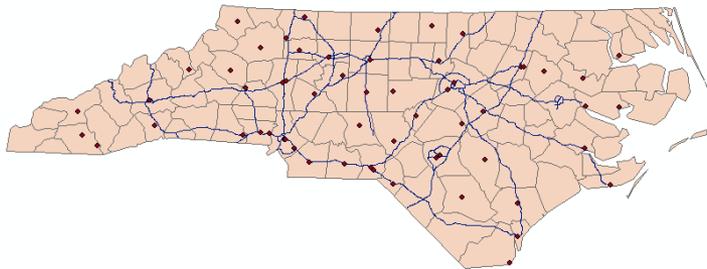
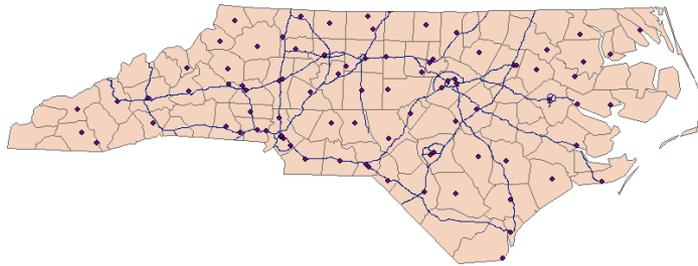
- **Used to limit the extent of one shapefile to the extent of another shapefile**
- **Requires two inputs:**
 - **Features to clip (may be points, lines, or polygons)**
 - **Clip features (must be polygons)**
- **Does not modify either original shapefile**

Clip examples

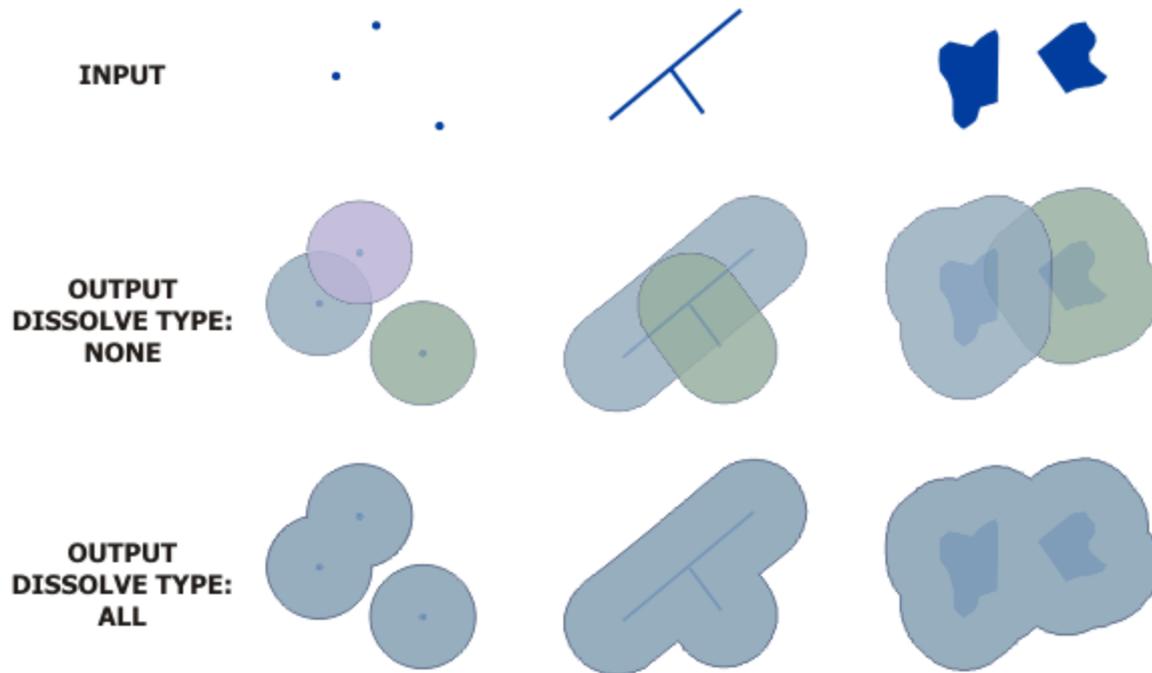


- **Used to create a new layer based on an attribute query**
- **Similar functionality to the “Select by attributes”**
- **Does not modify original shapefile**

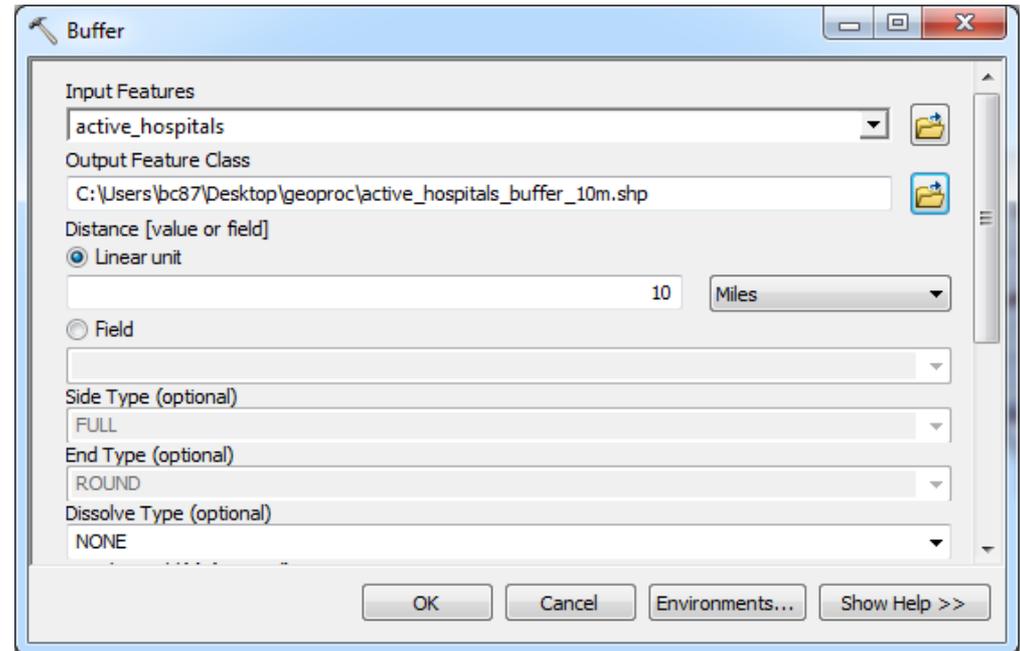
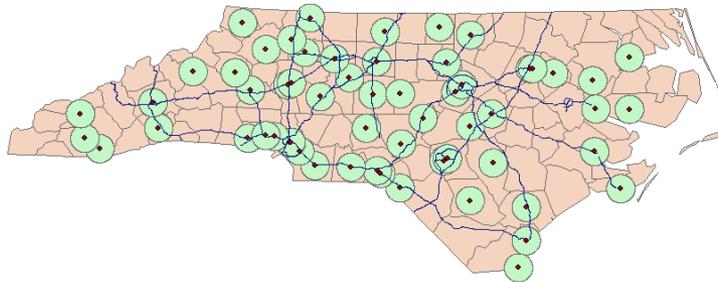
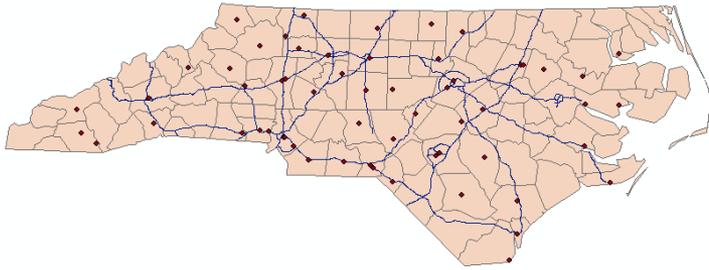
Select example



- Used to find the area within a given distance of a set of features
- Input features can be points, lines, or polygons
- Output feature will always be polygons
- Does not modify the original shapefile



Buffer example



- **When working with unprepared data, a typical workflow is:**
 - **Acquire data**
 - **Make sure all the data uses the same, appropriate coordinate system, using the Project tool**
 - **Limit all the data to the desired geographic area, using the Clip tool**
 - **Limit all the data to relevant features, using the Select tool**
 - **Begin analysis (possibly using the Buffer tool)**