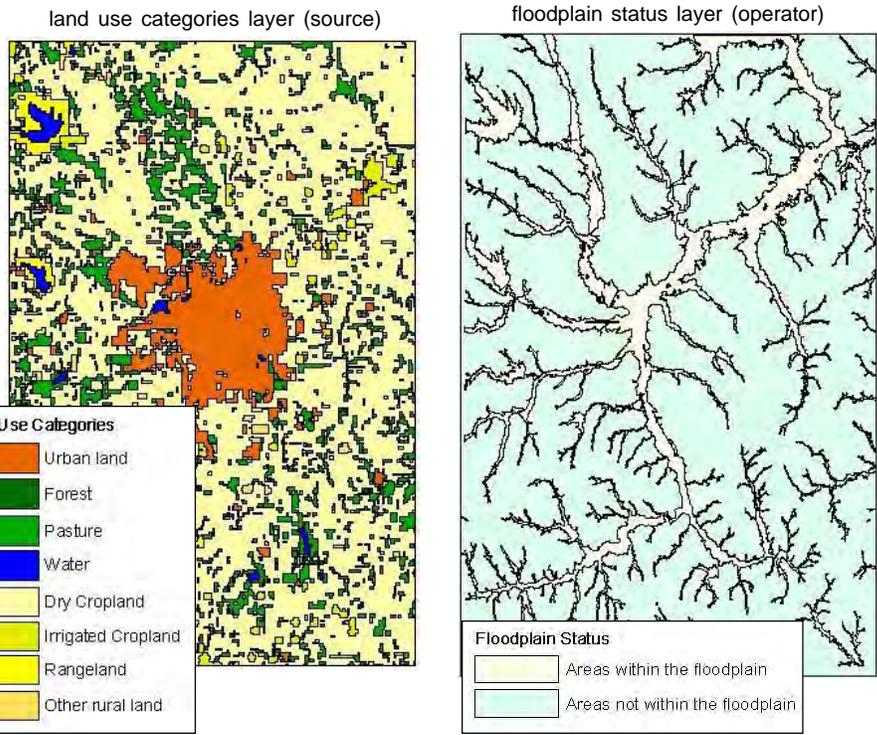


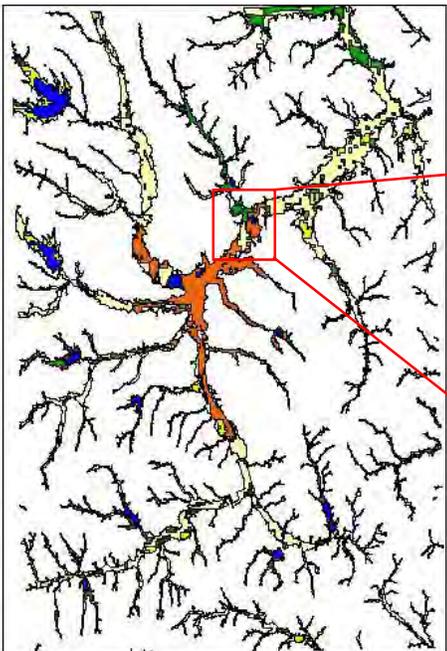
Overlay Analysis Using Vector Combinations

Overlay analysis is the most common technique used in urban and regional studies to derive new information from two or more layers of data covering the same area. The map layers are combined to form a new layer that provides new information derived from the attributes of the input layers. TNTmips provides powerful tools to overlay two or more layers, which can be either in raster or geometric format. Among many robust tools that can be used for overlay analysis, the Vector Combination process is most widely used because of its flexibility to select a subset of the vector elements and/or select less than the full object extents. The Vector Combinations process includes 14 different operations to choose from depending on the questions to be answered. More detailed information on Vector Combinations can be found in the *Vector Analysis Operations* tutorial booklet.

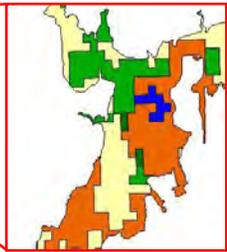
The simple problem addressed in this example is to derive the percentage of urban land developed over floodplain in Lancaster County, NE. There are two types of input objects for vector combinations: the source and the operator. The illustration at the right shows the two input vector objects required for this analysis: land use categories and floodplain status. Using the land use layer as the source object and the floodplain status layer as the operator, we can remove the areas that are not within the floodplain from the land use layer. The new vector object that shows the land use categories within the floodplain was generated using the subtract operation, which retains only those source elements that fall within the area of the operator.



land use categories within the flood plain



The illustration at the left shows this new layer, where the areas outside the floodplain were extracted from the land use layer. The automatically generated polygon standard attributes table and the land use attributes table from the source layer provide the necessary information to derive the area of each land use category developed over floodplain in Lancaster County, NE.



detail from the land use categories within the floodplain layer

As shown in the illustration below, the total urban land developed over the floodplain is 4284 hectares constituting 13.49 percent of the total floodplain area, which is 31754 hectares.

| LANDUSE | AREA (ha) | PERCENT_AREA (%) |
|--------------------|--------------|------------------|
| Dry Cropland | 16498 | 51.96 |
| Pasture | 5653 | 17.80 |
| Urban land | 4284 | 13.49 |
| Water | 1752 | 5.52 |
| Irrigated Cropland | 1254 | 3.95 |
| Forest | 981 | 3.09 |
| Rangeland | 917 | 2.89 |
| Other rural land | 414 | 1.30 |
| Σ | 31754 | 100.00 |

This database table shows percentage area devoted to each land use developed over the floodplain.