



# Urban Characterization for Anchorage, Alaska

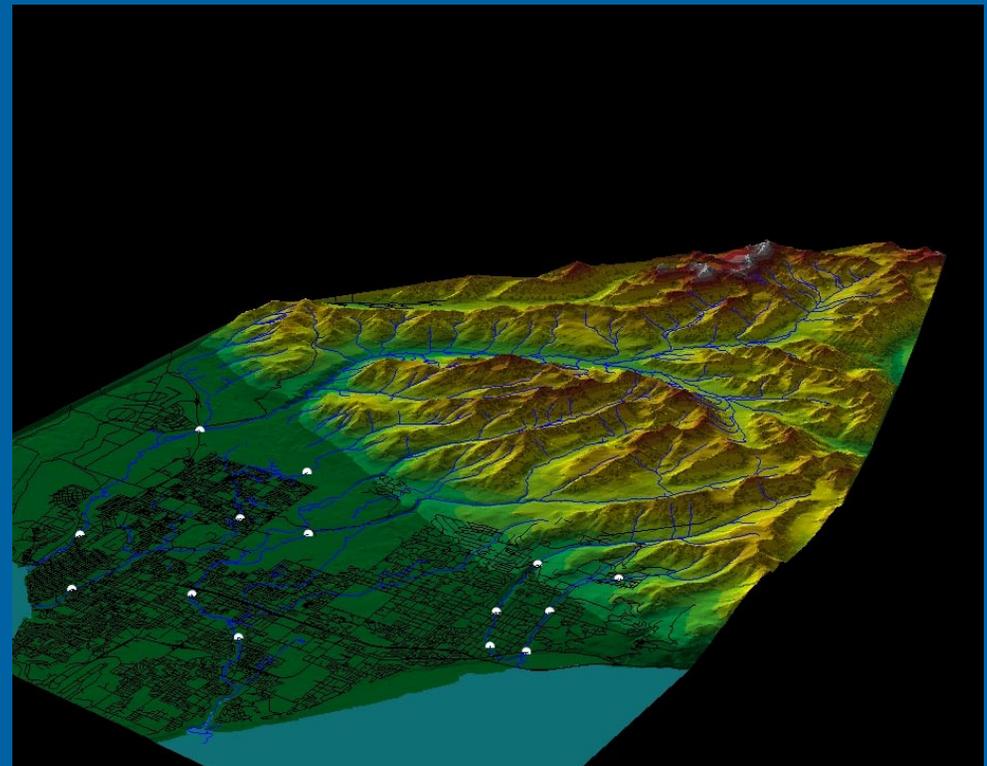
*GIS Data for Five Anchorage Bowl Streams*

by: Ted Moran

Cook Inlet Basin NAWQA

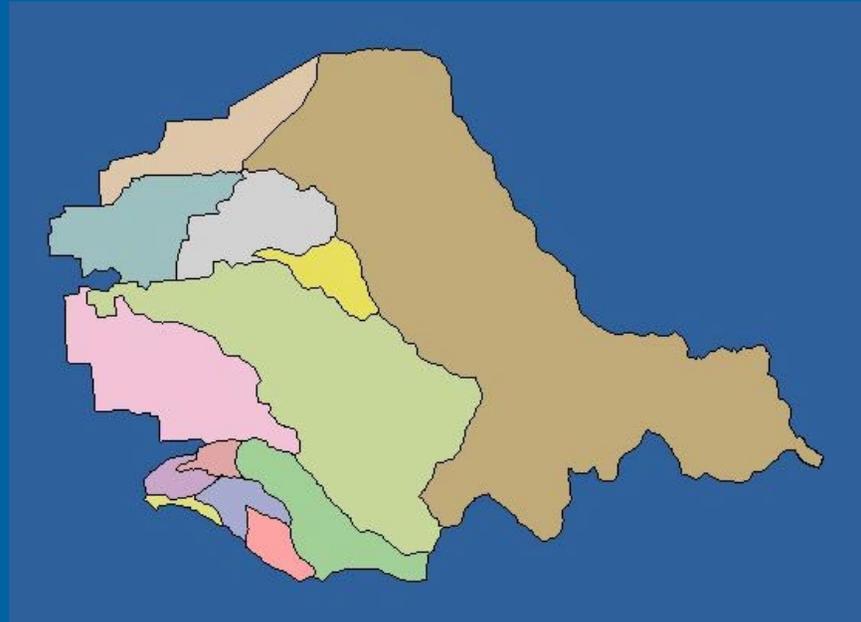
<http://ak.water.usgs.gov/Projects/Nawqa>

[ehmoran@usgs.gov](mailto:ehmoran@usgs.gov)

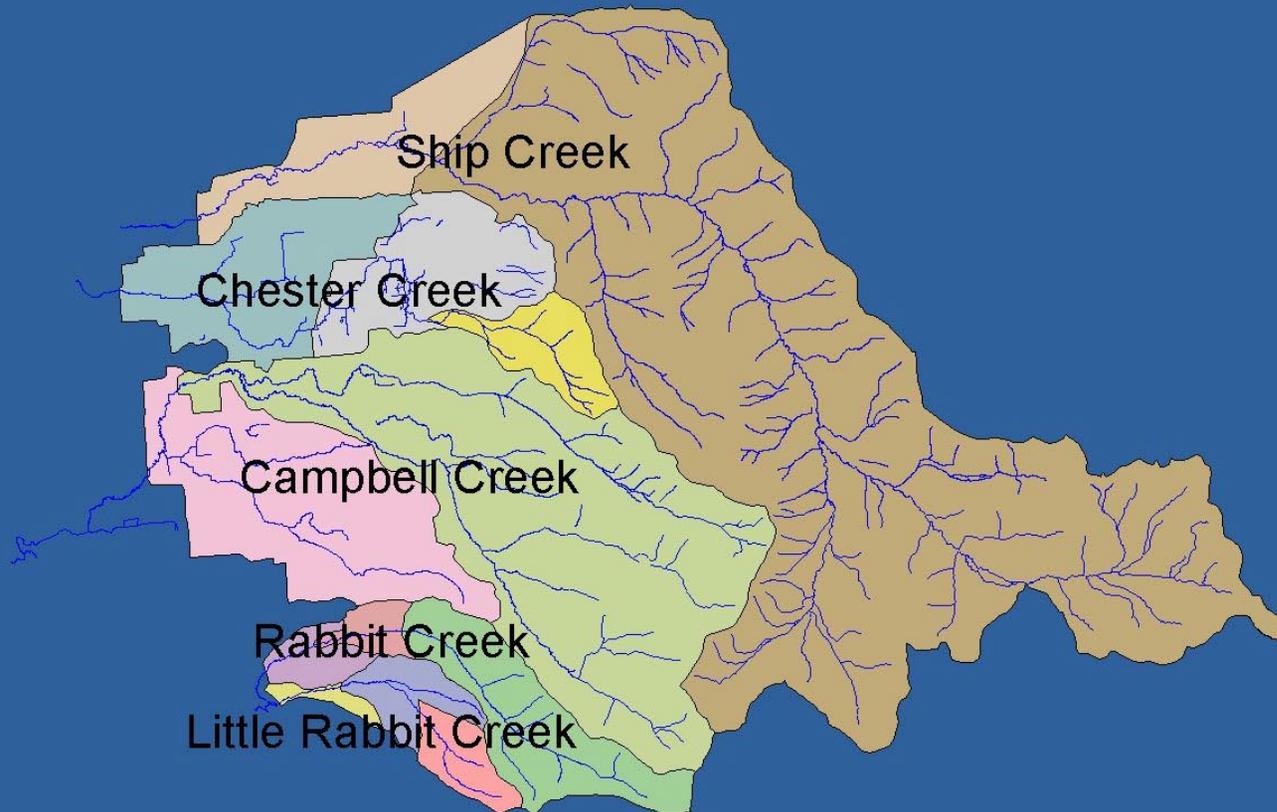


# Objectives

- Provide NAWQA Scientists with GIS Spatial Data for 14 Watersheds within 5 Anchorage Area Stream Basins
- Investigate relationships between various spatial data and environmental, biological, water-quality factors

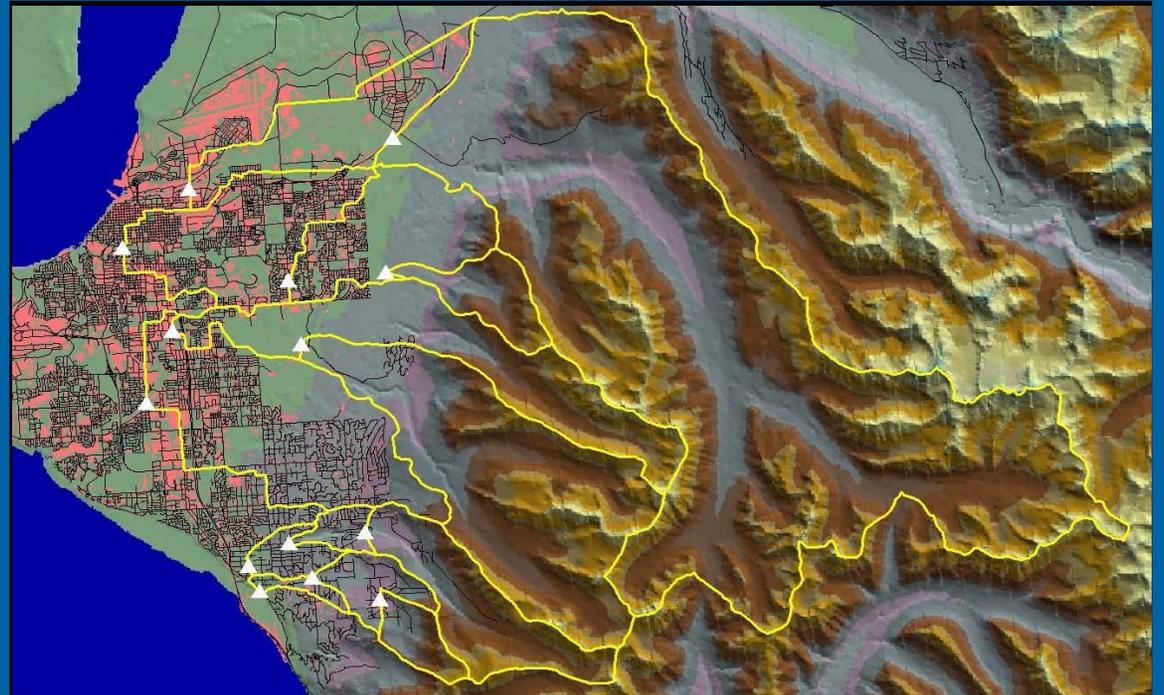


# Anchorage Stream Basins



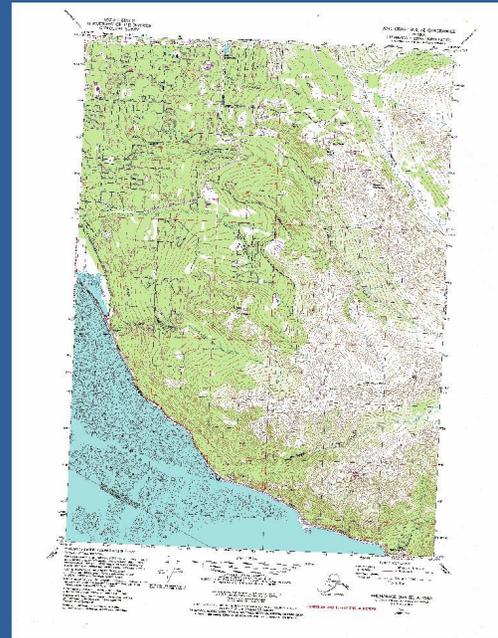
# Spatial Data

- Basin Boundaries
- Storm/Sanitary Sewers
- Roads
- Landuse
- Impervious Area
- Waterbodies
- Population
- Climate
- Soils



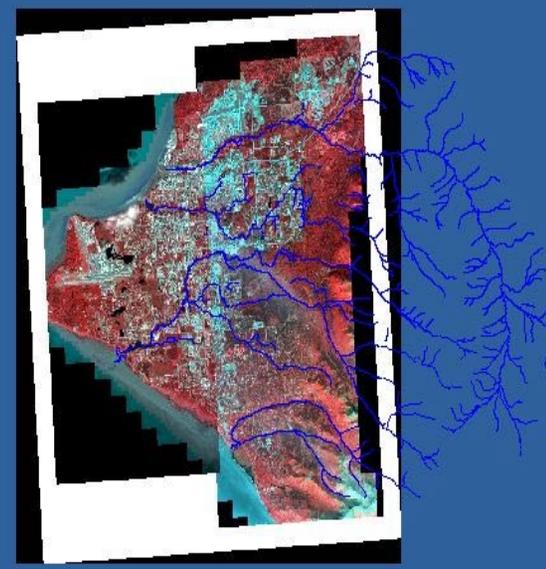
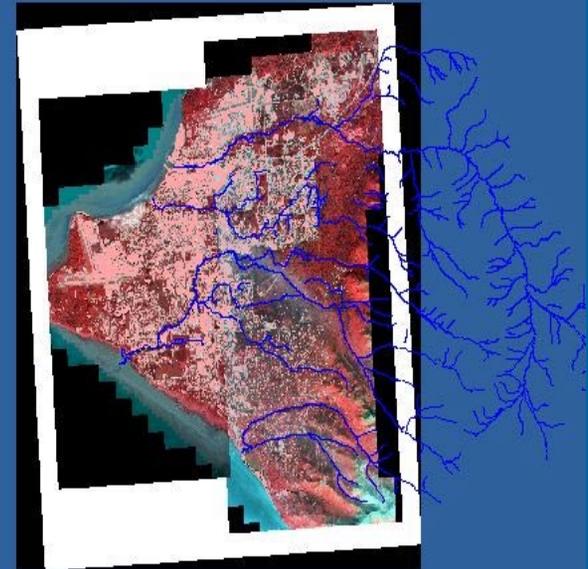
# Basin Boundaries

- Municipality of Anchorage Maps
  - Storm sewer maps
- U.S.G.S. Topographic Maps
  - Based on contours



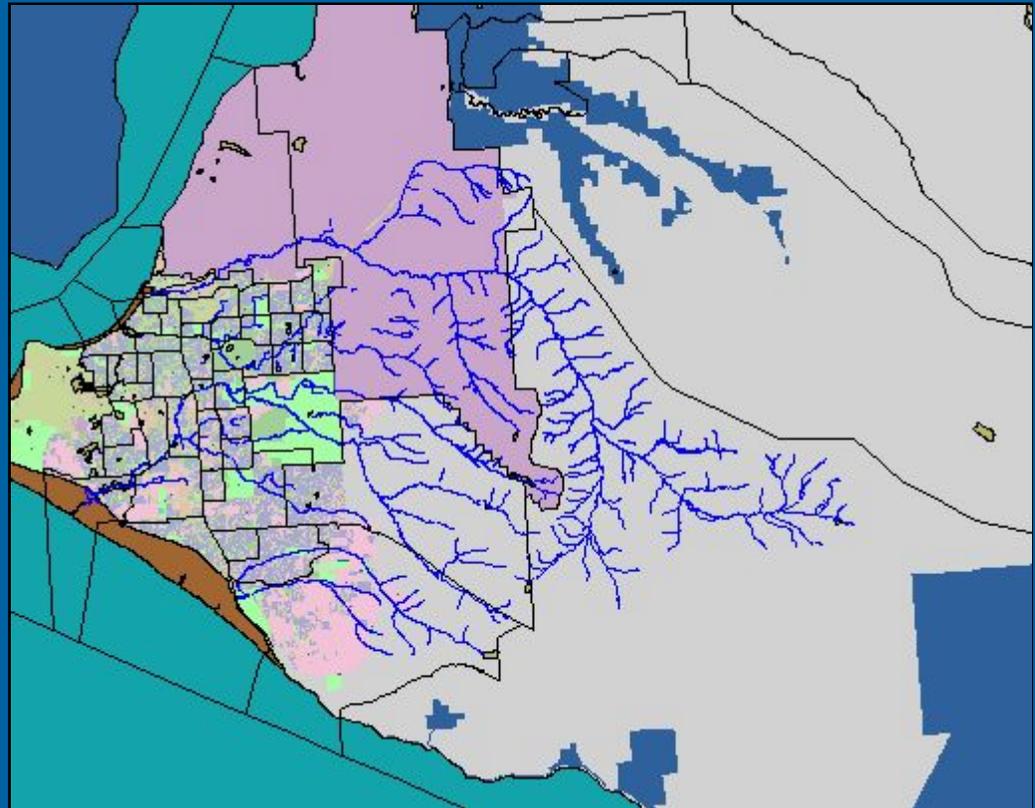
# Impervious Area

- Based on 4m IKONOS satellite data
  - 5-band
    - Blue, Green, Red, Near Infrared, Gray scale
- Calculated using vegetation index
  - Modified Normalized Difference Vegetation Index (TNDVI)
    - $[(\text{Near Infrared} - \text{Red}) / (\text{Near Infrared} + \text{Red})] = \text{NDVI}$
    - $(\text{NDVI} + 0.5) / 2 = \text{TNDVI}$
  - Values below 0.32 indicate impervious area



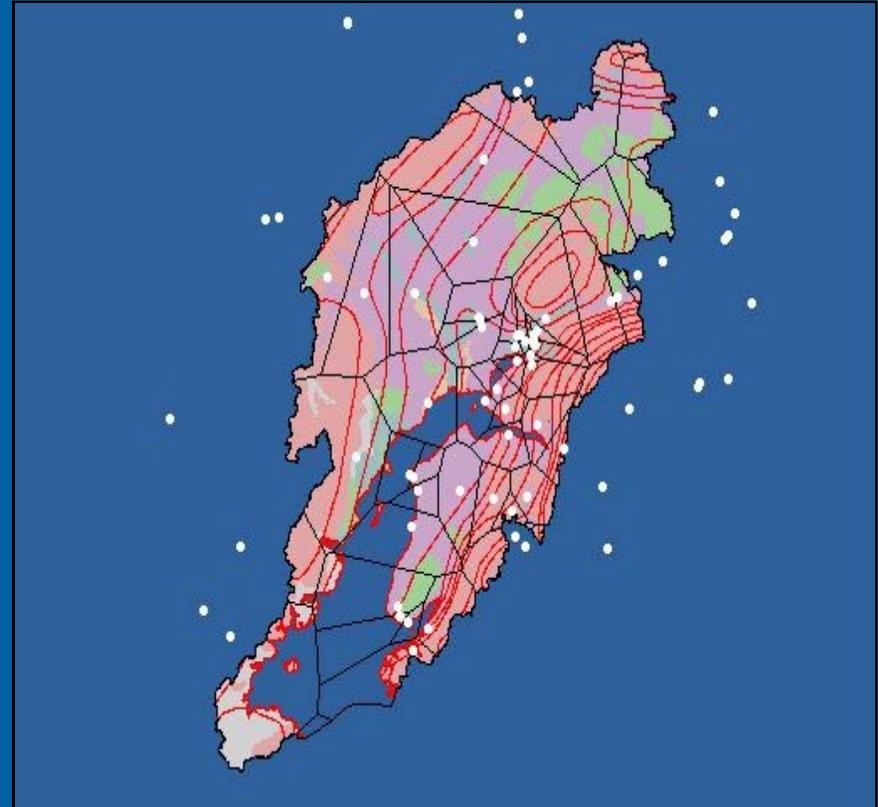
# Municipality Of Anchorage Spatial Data

- Roads
- Sanitary/Storm Sewers
- Landuse
- Census Tract
- Population
- Waterbodies
- Addresses
- Shores



# Other Spatial Data

- The **Western Regional Climate Center**
- The **Natural Resource Conservation Service**
- The **Alaska Geospatial Data Clearinghouse**



# Data Availability

- CD-ROM Publication
- Data will be available on AGDC website
  - <http://agdc.usgs.gov/>



# Future Spatial Data Analysis

- **Urban Gradient Study**
  - Further spatial analysis using impervious area
  - Analysis of riparian buffer zones
- **Cook Inlet Basin**
  - Federal and State Mining sites
  - National Uranium Resource Evaluation (NURE) chemical data analysis
- **Kenai Peninsula Spruce Bark Beetle Study**