**Hydrologic Modeling and Watershed Delineation**

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**Project Overview**

This lab involved the use of hydrological tools in GIS to model surface water flow, delineate watersheds, and assess flood vulnerability in the vicinity of Georgia Tech. Using a Digital Elevation Model (DEM), students processed terrain data to simulate flow direction, accumulation, and length. Key steps included filling sinks in the DEM (RasterFill), identifying flow paths, locating pour points, and delineating watersheds. The lab also introduced snapping pour points to high-flow accumulation cells and analyzing the impact on watershed size and shape. Additionally, flood hazard zones and surface water travel times were mapped and labeled.

These techniques are crucial for environmental risk assessment, water resource management, and floodplain planning.

**Graphic 1: Watersheds and Pour Points Map**

**Description:**  
This map shows delineated watersheds and their associated pour points over the terrain surrounding Georgia Tech. Watersheds are outlined based on raster flow direction and flow accumulation inputs. Pour points are represented as vector markers and serve as the outlets for each watershed. The visualization helps identify hydrologically distinct areas and drainage basins across the study site.

A map of different colors

AI-generated content may be incorrect.

**Graphic 2: Surface Travel Time to Pour Points**

**Description:**  
This map visualizes modeled water travel time across the surface to reach each snapped pour point, with labels indicating travel time in minutes. The analysis uses a flow length raster to estimate the time water would take to drain into each pour point, revealing hydrologic lag across varied terrain. This aids in evaluating flood response times and basin drainage efficiency.

A map with a black square

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**Graphic 3: 0.2% Annual Flood Hazard Zone near Georgia Tech**

**Description:**  
This screen capture highlights areas within the Georgia Tech campus that fall under a 0.2% annual chance flood hazard (also known as the 500-year flood zone). Only relevant polygons are shown in blue or hashed symbology, providing a clear visual of flood-prone areas. This spatial analysis supports risk management and urban flood planning.

A map of a city

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