WATERSHED RESPONSE TO URBANIZATION

Rationale:

- Urban sprawl - in US between 1992 and 1997 conversion of 13.7 million acres of farmland to non agricultural use
- Approximately 50% of world's population currently resides in urban areas (in the US this is 81%)
- Increased coverage of impervious areas linked to localized flooding and degraded water supplies.
- Urban construction site erosion, fuel spills, oil leaks, lawn chemicals, all contribute to water pollution

Goal:

- Quantify the water quality impacts of urbanization and develop mitigating practices

Objective: Compare and contrast the water quality signatures from watersheds possessing different levels of agricultural and urban landuse

Approach: hydrology and water quality samples are collected from watersheds each having different levels of agricultural, urban, and wooded landuse

Findings:

✓ 5-years of hydrology and water quality data have been collected from multiple subwatersheds of UBWC possessing varying amounts of urban, agricultural, and wooded landuse

Objective: capture the watershed water quality changes stemming from conversion of agricultural land to urbanization

Approach: collect hydrology and water quality data from a subwatershed within UBWC watershed that is currently being converted from an agricultural watershed to urban golf course community

Findings:

✓ 5 years of water quality and hydrology data collected in a subwatershed of UBWC

✓ Particular watershed is undergoing transition from agricultural landuse to urban/turf landuse

✓ Golf course is currently operational and plans have been approved for housing development

Objective: Relate hydrology and water quality findings to impervious areas within identified subwatersheds of UBWC

Approach: utilize aerial imagery to develop temporal impervious indices and relate those indices to measured hydrology and water quality

Progress:

✓ Impervious areas from aerial imagery in 1994, 2006, and 2008 have been quantified for select subwatersheds within UBWC

Cooperators: Delaware County SWCD, NorthStar Development

For more information: Dr. Kevin W. King, Soil Drainage Research Unit, Columbus, OH 43210
Phone: (614) 292-9806 email: kevin.king@ars.usda.gov