

Identifying the Risk to Water Quality in Urban Areas Using an Impervious Surface Analysis

The problem:

Impervious surface areas cover much of urban landscapes. These surfaces restrict the ability of storm water to soak into the soil. Instead, water runs off directly into our streams or into our storm drains which then discharge into streams. This runoff contains a heavy pollutant load which can lead to water quality impacts.

Percent impervious area - a new planning tool:

The percent of impervious surface in a small watershed is a good indicator of potential water quality impacts in streams draining that area. The streams in watersheds with more than 10% impervious cover will probably have impacted water quality. The more the impervious cover the greater the risk.

Maps can really tell the story:

GIS mapping technology is available to most towns today. Maps can be made which show the risk to water quality from different parts of a city. This helps direct attention to areas at risk and gives us new insights into planning decisions.

What we can do:

The maps indicate the risk to water quality, but there are many actions that the city can take to reduce this risk.

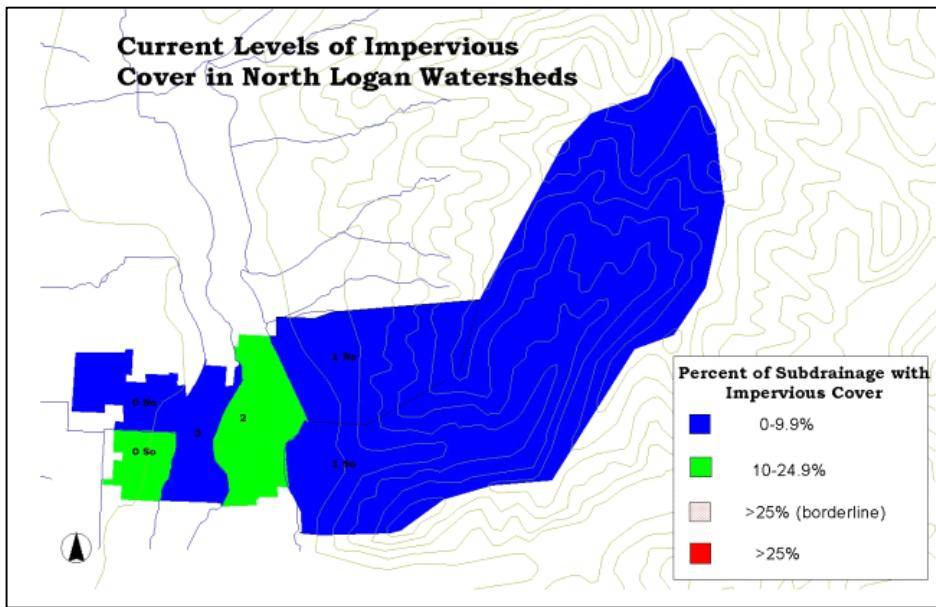
- Reduce the impervious area associated with roads and parking (60% of the impervious surface in an urban area is transportation associated).
- Identify and protect critical habitat areas, including wetlands, sensitive waters and areas with highly erosive soils.
- Manage development and redevelopment to reduce runoff and protect water quality through better design and best management practices.
- Encourage landscaping using plants with low water needs
- Educate the public on how they can reduce water pollution from yards, automobiles and pets.
- Encourage open space development and the use of buffer strips.



The City of North Logan Example

Current Conditions:

Using aerial photographs, we calculated the existing percent impermeable surface in the small watersheds that fall within the City of North Logan.



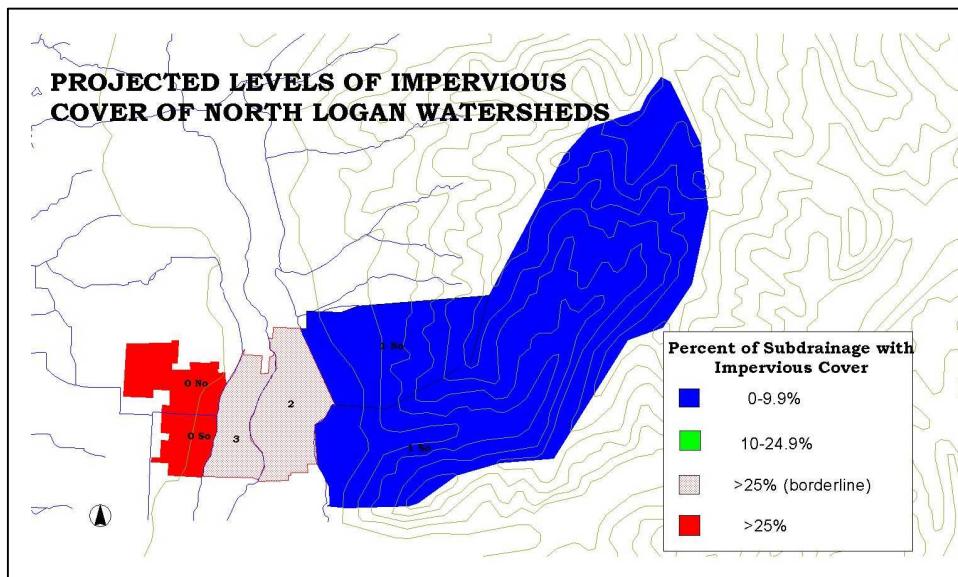
Studies show that the streams in watersheds with less than 10% impervious surface (blue) are generally protected from impacts.

In watersheds with 11-25% (green), the water quality in streams may be at risk.

A map such as this helps identify those areas which are sensitive or may need additional protection

Where we're headed:

Using zoning maps, we calculated the predicted percent impermeable surface in the small watersheds of North Logan, under a “buildout” scenario.



Over 25% impervious cover in a watershed indicates that streams will most likely be degraded.

This map shows that current zoning practices in North Logan will likely threaten water quality **unless** preventative steps are taken.