Hydrologic Function

Surface Water – Forest Cover
Target –Hydrologic Function

This value is related to the amount of mature forest cover in the study area.

The purpose of setting a target on this value is to ensure that the preferred scenario includes a minimum amount of forest cover by Watershed Planning Area to mitigate peak flows and run-off, and maintain good water quality and quantity.

The basic principle related to the hydrologic function of forest cover is that a mature forest acts as a sponge in the system which in turn helps to mitigate flooding and increase base flow to streams by slowly releasing water over time.

Datasets

1. NPCA NAI ELC Community Series Mapping
2. NPCA Watershed Planning Areas

The Niagara Watershed currently has 18.85% of its land base in forest cover, which constitutes 60% of all existing natural cover (totaling 30% across the land base). It is significant to note that 56% of all forest cover in Niagara is actually swamp (wetland) communities.

Forest cover is determined by combining all of the mature wooded area community types from the ELC mapping. This means that most mature tree dominated communities like Woodlands, Savannahs and Plantations are included with the ELC 'Forest' community and considered part of the broader and more general concept of 'forest cover' as it pertains to hydrologic function.

Discussion
It was decided that the group would consider only mature forests and not the hedgerows and upland thickets given the differences in how they attenuate water.

Based on the best available science, the group considered a target of 30% and much discussion ensued about the feasibility of attaining such a lofty target in many of the Watershed Planning Areas.

There was also a lengthy discussion about the state of forest cover across the watershed. Niagara is heavily fragmented and there are also areas where due to conflicting land uses, there is very little cover.

There was a great deal of concern expressed by the agricultural sector about how the targets would impact their crops and their ability to farm.

Data Gap
None noted.

Decision
Date: April 7, 2011

Forest Cover as Baseline, not including hedgerows and thickets.
30% of land area in forest cover as Baseline, where we are below that, target is 100% of existing forest cover.
Representation in the Learning Scenarios
Most of the natural cover in the study area is forest cover. It contributes roughly two thirds of all natural cover.

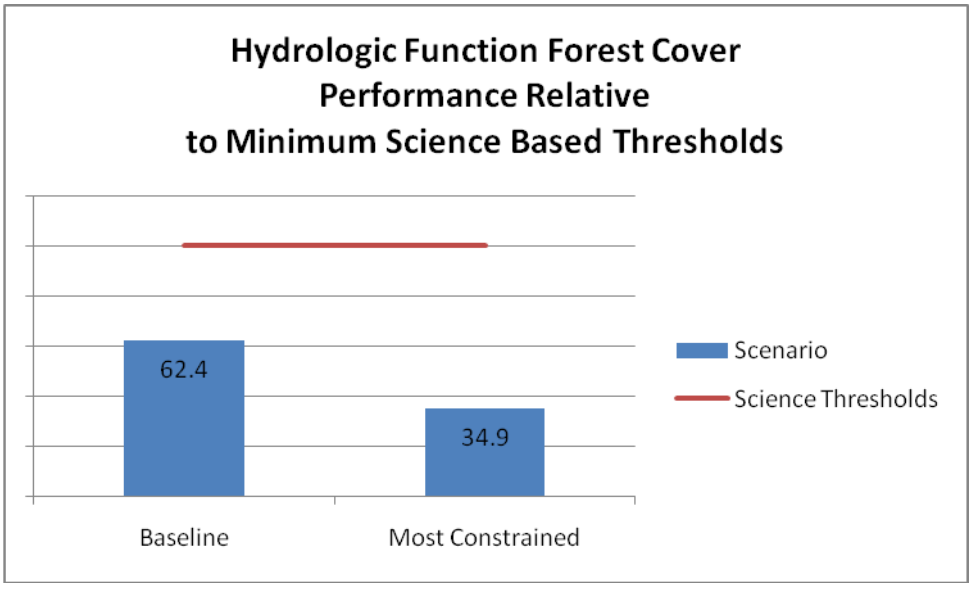
Given the condition of the landscape at 18% forest cover, and the scientific target being much higher at 30%, the spatial component of all scenarios was driven largely by forest cover.

In many cases, the same features contributed to multiple targets. As it pertains to hydrologic function, there is a direct correlation between mature forest cover and the ability of an area to attenuate water, reduce the impacts of peak flow and run off and the protection of water quality.

Representation in the Final Scenarios

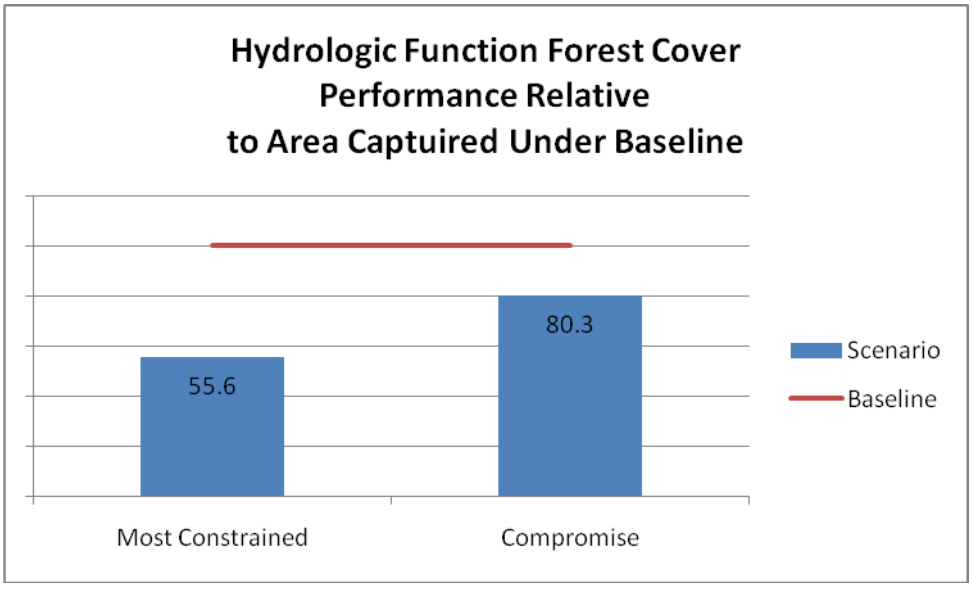
Under the Baseline Scenario, forest cover was a driving factor for the spatial configuration. This was based once again on the shortfall of the existing natural cover relative to the scientific target. Baseline Scenario, Forest Cover for Hydrologic Function achieved 62.4% of the target value.

Figure 29: Forest Cover Surface Water Performance Relative to Science Thresholds



Under the Most Constrained Scenario, forest cover was limited to those areas that were not found on agricultural capable soils or in urban areas. Under this scenario, the exclusions were the driving factor not the fragmented natural cover. Forest Cover, Hydrologic Function under the Most Constrained Scenario achieved only 34.9% of the target value which is 55.6% relative to the value held by the Baseline.

Figure 30: Forest Cover Surface Water Performance Relative to Baseline Comparator



Within the Compromise Scenario, forest cover was a determining factor in the spatial configuration even though under this scenario, the model was seeking only 80% of what exists on the landscape. Forest Cover, as it relates to the Hydrological Function targets in the Compromise Scenario achieved 80.3% of the value in the Baseline Comparator scenario.

Recommendations
None.