Release Notes for Phase 1 Results

This document provides a succinct list of known "bugs" in the phase 1 results of the Landscape Change, Assessment and Design (LCAD) model applied to the pilot study areas.

1. **Issue:** Private logging roads are often misclassified as local roads in the TIGER roads data.
   
   **Implications:** All years have higher traffic rates (settings variable) than they should. The result is that the traffic intensity intactness metric is greater than it should be in the vicinity of these logging roads, which ultimately lowers the Index of Ecological Integrity (IEI) near logging roads. In addition, this may also impact the wood turtle habitat capability model. Note, this is probably only a big problem in the Kennebec River watershed study area, but it may have subtle impacts in the middle Connecticut River watershed and the Pocomoke and Nanticoke Rivers watershed study areas.
   
   **Solution:** We are seeking a method for discriminating between public local roads and private logging roads so as to be able to model traffic rates separately.

2. **Issue:** Aqueducts and pipelines were included in the stream grid as streams.
   
   **Implications:** Disrupts the stream network in complex ways that invalidates the stream-related ecological settings in the corresponding watersheds, which ultimately invalidates the watershed-based ecological integrity metrics, including the Index of Ecological Integrity (IEI). In addition, this may also impact the wood turtle and Louisiana waterthrush habitat capability models. Note, this is significant issue in the eastern half of the middle Connecticut River watershed study area owing to the major Quabbin Reservoir aqueduct. This is not a problem in the Kennebec River watershed study area and the Pocomoke and Nanticoke Rivers watershed study areas.
   
   **Solution:** We have removed the aqueducts and pipelines from the stream network which remedies this problem. However, it does not solve the issue of accounting for water withdrawals, especially out-of-basin withdrawals such as the Quabbin aqueduct.

3. **Issue:** No data for the settings variables in Canada.
   
   **Implications:** Disrupts the calculation of the ecological integrity metrics for cells close to the buffer with no data. Because all of the ecological integrity metrics involve evaluating the spatial context of each cell, the absence of data in the buffer biases the results. Note, this is an issue in the northwest corner of the Kennebec River watershed study area along the border with Canada.
Solution: We modified the integrity metrics to account for no data cells in the settings variables.