

# 2024 TARGETED RESOURCE AREAS

## DATA CREATION

The Division of Mitigation Services (DMS) develops River Basin Restoration Priorities (RBRPs) for each of the 17 river basins in North Carolina by conducting a detailed screening for each service area within a river basin. This screening results in the identification of Targeted Resource Areas (TRAs): adjacent clusters of catchments that exhibit the greatest need for restoration and protection. The TRAs receive priority for DMS planning and restoration project funds.

In order to quantify potential for restoration at a watershed scale, DMS first identifies spatial datasets that are available statewide, and which fall into three major categories: watershed stressors, potential for ecological resilience, and social attributes that may contribute to restoration success. These are further organized into three functional categories: water quality, hydrology, and habitat. Input variables are sourced from the most recent, vetted highest quality, and highest spatial resolution data available, including the National Land Cover Dataset, US EPA's StreamStats, and USGS' NC SPARROW water quality model. A complete list of input datasets, sources, and model function served is available [here](#).

All spatial data are then aggregated to National Hydrography Plus Dataset (NHD+v2) catchment watershed units, which are derived from NHD Medium Resolution (1:100K) data and serve as the scale of analysis. NHD+ catchments are networked to nest within the National Watershed Boundary Dataset (WBD) HUC8 and HUC12 grouping units. An average catchment size in North Carolina is approximately 0.5 square miles.

## DATA NORMALIZATION

Once data creation is complete, the metrics need to be input into the Recovery Potential Screening (RPS) Tool. This tool is developed by the EPA and is utilized to compare watershed conditions and predict restorability. Details on the tool can be found [here](#). Catchments for the chosen watershed are input into the tool along with the appropriate metrics indicated from the RPS data spreadsheet. Once a run of the tool has been successfully completed, results will be available in a table format and also through a bubble plot visualization. The results table can be exported into an Excel table that will be compatible with ArcGIS for further processing. The tool needs to be run for each Habitat, Water Quality, and Hydrology function individually.

Once an Excel table is created with the RPS tool results, it can be joined with a layer of the chosen catchments in GIS. This allows for the results to be viewed spatially and also allows for the data to be processed through a cluster analysis tool. The cluster analysis tool is developed by ESRI and is used to identify the locations of statistically significant hot spots, cold spots, spatial outliers, and similar

features. Details on this process can be found [here](#). In this case, the cluster analysis is looking for catchments with high index scores resulting from the RPS Tool run that are adjacent to each other. The final index score for each catchment was calculated by adding the Social, Ecological and Stressor Indexes from the RPS tool results together, with a double weight on the Stressor Index. Once these scores are run through the cluster analysis in ArcGIS, the resulting clusters are utilized as starting points for TRA selection.

## DATA INTERPRETATION AND METHODOLOGY

Data from the cluster analysis is displayed in GIS using quantiles with 10 classes. The lowest five quantiles are set to hollow (so they are not symbolized on the map) and the remaining top five quantiles are then symbolized in color gradient, so the classes can be discerned. A visual evaluation is conducted to build upon cluster analysis results and develop the TRAs. Catchments that are within the three highest quantiles and are also adjacent to clusters identified in the analysis will be added to the TRA. Catchments within other quantiles can be added if they fill in or connect TRAs or are otherwise determined to be necessary. The 1:100 National Hydrography Dataset was also utilized to develop targets that are hydrologically connected and/or that provide opportunity to protect and improve upstream watershed networks.

The goal for each TRA within a given service area is to capture catchments in the top 30% of uplift scores as well as to include around 30% of the total area. Depending on the distribution of the scores in the service area, some service areas identify more than 30% of the area coverage as TRAs. Other restrictions and considerations include but are not limited to eliminating “donut holes” within TRAs, avoiding land cover such as open water and forest, and requiring TRAs to not include clusters smaller than 13 SqKm, or roughly three catchments.