

**NORTH CAROLINA  
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**



**Guidance for the Submission of Mapping and Associated Statistics for  
Full Delivery RFPs**

In order for EEP to improve upon the objective scoring/ranking of proposed projects for their uplift and mitigation potential some mapping and associated statistics related to existing conditions and proximity to planning areas will be required. The features that should be mapped and summarized with simple reach percentages are as follows:

Metric or Item	Sub-Item	Mapping	Statistics (%)
1. Channel Incision		X	X
2. Channel Bedrock Control		X	
3. Channel Widening (Bank Erosion)	Bank Scour	X	X
	Mass Wasting Bank	X	X
4. Forested Buffer Width			X
5. Longitudinal Forest Continuity			X
6. Prior Floodplain Alteration		X	X
7. Active Direct Water Quality Stressors		X	X
8. Pre-Monitoring Features	Geomorphological	X	
	Hydrological	X	
	Sedimentological	X	
	Biological	X	
	Physico-Chemical	X	

The following list includes maps that are required for all submissions. This list should be considered a minimum requirement and any other additional maps necessary to convey the value and benefit of the proposed project should be considered for inclusion by the offeror.

Map(s)	Metric or Item(s) From Above Table
1. Time-Series of Historical Air Photos	
2. Recent Air Photo with Topography	
3. Recent Air Photo with Proposed Mitigation Features/Measures (1 map for each option/scenario offered)	
4. Channel Stability Mapping	1,2,3
5. Site Floodplain Alteration and Water Quality Stressors	6,7
6. Pre-Monitoring Feature Locations	8
7. Watershed Planning Contextual Map	
8. Map of Adjacent and Proximal Planning Elements	
Maps 2-8 should include Project Boundary	

## Map Guidance

1. The proposal should include a series of available historical air photos that demonstrate the changes and activities in the valley, LULC and any alterations to planform, channel adjustments and channel evolution.
2. Provide a recent air photo with contours and the project boundary.
3. Provide the proposed mitigation features with reach breaks and; any wetlands with symbology that describes the level of restoration/intervention.
4. Channel Stability Mapping

### Incision –

Bankfull stage relative to the top-of-bank will need to be assessed prior to submission for each reach proposed for channel modification. Depict the locations of any measured cross-sections, etc. on map number 6. Show the locations of any measurements-and be prepared to discuss the bankfull channel cross-sectional area as it applies to the rest of the reach being proposed for modification. These estimates of cross-sectional area should be used to determine the proportion of the reach length proposed for modification that exhibits a Bank Height ratio in excess of 1.5. This should be mapped in map number 4 and percentages (footage incised with a BHR >1.5 as a proportion of the total reach footage) by reach provided in a table or table inset in the figure.

### Bedrock –

Map bedrock outcrops providing channel grade control.

### Channel Widening (Bank Erosion)

The mapping should apply to the reaches proposed for channel modification. Widening for the purposes of this assessment will go into 2 process type categories; active **scour** and **mass wasting**, for the purposes of mapping and summary statistics. Care should be taken to try and differentiate prior erosion from apparently active erosion. The former may exhibit steep bank angles but appear to have arrested based on the presence of good vegetative cover and/or rooting mass. Likewise, undercut bank that possesses good stabilizing root mass and apparently sustainable geometries will be viewed more as viable habitat than an imminent mass wasting threat. Careful judgment should be applied when mapping such objects and including them in statistical tallies. Map these features with distinct symbology for the 2 categories described. Provide statistics (footage eroding as a proportion of the total bank footage – i.e. 2 times the reach footage) as a map inset or in a table.

5. Prior Floodplain Alteration and Water Quality Stressors -

Prior Floodplain Alteration – Map and catalog floodplain alterations that will impact floodplain effectiveness such as dredge spoil levees, floodplain ditches and large amounts of legacy sediments on the floodplain from prior anthropogenic impoundment, which has likely diminished stream-floodplain connection. Apply a footage estimate which represents the proportion of the total reach length proposed for modification and include in a table or table inset in the figure.

Direct Water Quality Stressors - Map and catalog active, direct water quality stressors on the site. These are stressors that have a direct hydrological connection to a water quality stressor source. Examples can include pasture with direct livestock herd access, livestock exclusion but with poorly managed crossings serving as wallows, hydrologic bypass of buffers (e.g. tile drains, discharge outfalls, hydrologic connections to livestock wallows or CAFO ponds,), floodplain ditches, stormwater outfalls, adjacent (<15 feet) row crop, maintained vegetation, or impervious surfaces. Features such as these should be mapped as well as any footage within the project boundary subject to these stressors sources. The combined footage subject to any combination of these stressors is to be represented as a proportion of the total footage proposed for some level of channel modification. Proposed footage at or below the contact points/zones for any identified stressor source will be considered 'effected' for the purposes of this metric. Provide statistics in a table or map inset.

6. Pre-Monitoring Features – Map with distinctive symbology any pre-monitoring features (any cross-sections, bank erosion assessment areas, hydro monitoring features such as gauges, substrate assessment locations, biological or physico-chemical measurement features/locations, photo point locations etc). The above table for metric/item 8 describes example categories.
7. Watershed Planning Contextual Map – Recent aerial image showing where the project exists within the 12- to 14-digit scale hydrologic unit. It should include the proposed project boundary overlaid with the following: the HU boundary(ies), the Targeted Local Watershed (TLW) boundary if applicable, the Local Watershed Plan (LWP) boundary if applicable, and the LWP Focus Area boundary if applicable. These watershed boundaries are published in the RFP.
8. Map of Adjacent and Proximal Planning Elements – This map is intended to illustrate how the project will contribute to existing conservation measures in the watershed. In addition to the project boundary, elements on this aerial may include: Significant Natural Heritage Areas (SNHAs), protected riparian corridors, Important Bird Areas (IBAs), Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply Watersheds (WSW), Wildlife Resources Commission Priority Watersheds, Nature Conservancy Priority Watersheds, State Park lands, Land Conservancy lands, State or National Forests, other designated conservation lands, fish nursery areas, Strategic Habitat Areas (SHAs), and priority areas documented in other watershed plans. Map should show that the project boundary is adjacent to (abuts the) conservation element or that it is significantly close to the conservation element to contribute to its function. The narrative project description should corroborate and clarify the mapped relationship.