UDO Gold Standard Priorities

Sediment and Erosion Control Practices

- Adopt turbidity standards for effluent from the dewatering of sediment ponds on construction sites–this would prevent the discharge of sediment-laden waters that exceed the state turbidity standard and result in the pollution of surface waters.
    - Adopt the existing **EPA 2022 Turbidity Benchmark Monitoring Recommendation for Dewatering Operations**
        - Effluent from sediment pond dewatering operations sampled for turbidity/TSS to ensure sediment levels in exceedances of state water quality standards are not being discharged
- Require monitoring of receiving surface waters in triassic basin areas–Require third-party upstream/downstream turbidity monitoring of receiving waterways on development sites > 10 acres
- Plan for bigger storms: to prepare for more precipitation due to a changing climate, to mitigate impacts from significant rain events
    - Increase wet or dry storage volume
        - Stormwater devices shall be so planned, designed and constructed as to provide protection from the calculated maximum peak of runoff from the 50 or 100yr storm

Riparian Buffers

- Require 100ft riparian buffers for all perennial surface waterways (not just in watershed overlays)
    - Science backed studies demonstrate that 100ft riparian buffers are the minimum best management practice to achieve the goals articulated above. Some environmentally sensitive areas, like aquatic Natural Heritage sites, require larger riparian buffers in order to protect sensitive habitat and species.
        - Durham's current rule: 100ft buffer on perennial & intermittent streams in the Falls/Jordan watershed A overlay.
        - Ex from Apex: In Apex a 100-foot buffer is required on any stream that flows year-round (perennial stream) and a 50-foot buffer is required on any stream that only flows during rain events (intermittent stream). The lengths are measured from the top of bank.

        - **Protecting and Maintaining Trees: A Guide for Municipalities in North Carolina**

Post-Construction Stormwater

- Impervious Surface Cover: Impervious surfaces should be minimized to reduce stormwater runoff, mitigate flooding impacts and protect water quality. The impervious surface is calculated over the entire tract and includes the conserved area.
    - Maximum 15% impervious surface on whole tract (Duke Ordinance)
    - Studies indicate that water quality and aquatic habitat begin to degrade when impervious cover area exceeds 10% (Schueler, 2009)
    - Runoff from *impervious surfaces:*
        - *Runoff from* the parcel shall not be discharged directly to the *significant natural resources* without vegetated filtration and energy dissipation (Duke Ordinance)

- Require Green Stormwater Infrastructure
    - Require that on-site green infrastructure be considered/ implemented as part of site development approval processes. Examples include but are not limited to:
        - Bioretention
        - Cisterns
        - pocket wetlands
        - green roofs in urban areas, etc.

Natural Resource Protections:

- Create Natural Resource Overlay Districts
    - Use the Biodiversity and Wildlife Habitat Assessment map created by the NC Department of Environment and Natural Resources as a baseline for delineating parcel boundaries
    - Require developers to follow the recommendations outlined in the NC Natural Heritage Program. While recommendations offered by the NC Natural Heritage Program are non binding, following these recommendations is the best way to protect documented natural resources if they exist in project areas.
        - Durham's current UDO: "To the maximum extent possible, subdivisions shall be designed to preserve structures and sites of

historic or cultural significance, small family cemeteries, and to protect habitats of rare or unusual plants or wildlife as documented in the established Durham Inventory, the State Natural Heritage Listing, or the National Register of Historic Places."

        - This could be strengthened to require subdivisions follow Natural Heritage recommended riparian buffers & tree retention in mapped natural heritage areas: If there is a federally listed aquatic species present, the Natural Heritage recommendation is for a 300 ft no-development buffer along waterways and a 100ft buffer for streams that feed into that habitat.
    - Use additional wildlife, habitat and other natural resources conservation data available to communities in North Carolina
    - Conservation data is compiled by the NC Wildlife Resources Commission in the Green Growth Toolbox
- Establish Conservation Management Districts
    - Duke Environmental Law Clinic Model ordinance

- Require Wildlife Impact reports whenever a project is located within critical wildlife habitats, significant natural areas, or wildlife corridors shown on conservation maps in the county's comprehensive plan
    - (ex. Boulder County, CO, p.293)

Greenspace/Tree Retention

- Habitat Connectivity: The post-development condition should maintain connectivity of all *significant natural resources*, both within the tract and between adjacent tracts.
    - Reducing fragmentation
    - Implementing wildlife corridors
    - Direct development to existing towns/cities, away from boundaries of managed areas
    - **Green Growth Toolkit**
- Tree Retention Requirements–Values existing tree canopy over clearcutting and planting young trees, which are less beneficial for water quality and climate resiliency.
    - Require or do more to incentivise tree retention over tree replacement.
- Redefine Conservation Subdivision requirements–require conservation of more than riparian buffers, wetland areas and floodplain, which developers are already required by Durham's UDO and NC state law to protect.

Triassic Basin Specific Protectections

- Adopt NC Sensitive Watershed design standards in Durham's Triassic Soils–Adopt a simple 20 acre limit on mass grading in triassic basin soils

    - **15A NCAC 04B .0124 DESIGN STANDARDS IN SENSITIVE WATERSHEDS**
        - (a) Uncovered areas in HQW zones shall be limited to a maximum total area of 20 acres within the boundaries of the tract.
        - (b) Erosion and sedimentation control measures, structures, and devices within HQW zones shall be planned, designed, and constructed to provide protection from the runoff of the 25-year storm that produces the maximum peak rate of runoff as calculated according to procedures in the United States Department of Agriculture, Natural Resources Conservation Service's "National Engineering Field Handbook 630 for Conservation Practices."
    - Reference examples: Town of Cary–20 acres. Charlotte 25 acres limit.

Utility Infrastructure

- Sewer lines, water lines, and other utility *infrastructure* shall not be constructed within 100 feet of perennial and intermittent streams to the maximum extent possible. All utility crossings shall be minimized. The directional bore stream crossing method (installation of utilities beneath the riverbed avoiding impacts to the stream and protection area) shall be used for utility crossings wherever practical, and the open stream crossing method shall only be used when water level is low and stream flow is minimal. (Duke Ordinance)
- Use bridges for all permanent roadway crossings of streams and associated wetlands. (Duke)

Wetland Protections

- Wetland buffers & setbacks: The U.S. Army Corps determines whether wetlands qualify as "waters of the U.S." using their delineation manual. This process continues to evolve as the definition is debated in the courts. Local governments have the right to determine what areas are important to flood mitigation and water quality in their communities. A local wetlands ordinance can offer needed consistency in determining which wetland areas are entitled to protection.
    - Minimum 75ft wetland buffer
    - No-build setback of 15ft around wetland buffers
    - Local example: Georgetown County, SC Wetland Protection Ordinance

Construction Enforcement and Oversight

- Increase utilization of Stop Work Order penalties when on-site violations resulting are found by inspectors, to reduce the occurrences of buffer tree removal, off-site sedimentation and other violations of Durham's UDO .
    - Local ex: South Carolina: takes the additional step of attaching a notice or covenant to the deed indicating that if trees are removed from protected buffers, no building permit, site plan, or subdivision plan will be approved by the local governing authority for a period of five years after harvesting: