



**WMCPDR – ROLESVILLE, WENDELL, ZEBULON WATERSHED MANAGEMENT  
 CONSTRUCTION PLAN DISAPPROVAL AND REVIEW COMMENTS**

<b>Project Name</b>	<u>Pine Glo</u>	<b>Watershed</b>	<u>Lower Neuse</u>	<b>Jurisdiction</b>	<u>Rolesville</u>
<b>Date Received</b>	<u>6/4/2024</u>	<b>Date Processing Initiated</b>	<u>6/4/2024</u>	<b>Disturbed Acreage</b>	<u>4.33</u>
<b>S&amp;E Permit Number</b>	<u>SEC-126025-2024</u>	<b>S&amp;E Plan Review Fee</b>	<u>\$1082.00 PAID</u>	<b>S&amp;E Permit Fee</b>	<u>\$1082.00 PENDING</u>
<b>SW Permit Number</b>	<u>SWF-126026-2024</u>	<b>SW Plan Review Fee</b>	<u>\$1082.50 PAID</u>	<b>SW Permit Fee</b>	<u>\$1082.00 PENDING</u>

**Financial Responsible Party (FRP):**

Name Optimal Glo LLC  
 Address: 1021 Forestville Rd, Ste 200  
 Phone: 610-295-3699  
 Email: Shaar@myoptimalequity.com

**Engineer:**

Name: FLM Engineering, Inc.  
 Address: PO Box 91727, Raleigh, NC 27675  
 Phone: 919-423-8975  
 Email: jfrazier@flmengineering.com

**Plan Date/Revision Date:** 7/29/2024

<b>Review Status:</b> 8/9/1024	<input type="checkbox"/>	<b>Construction Plan Not Approved and Incomplete (Items 1-4 required to be a complete submittal)</b>
	<input checked="" type="checkbox"/>	<b>Construction Plan Not Approved and requires additional information</b>

**Construction Plan Review Comments**

Items marked with an "X" were noted as either insufficient or not provided. Engineer comments are in RED and provide the necessary requirements for construction plan approval.

References for Erosion and Sediment Control: [Wake County Unified Development Ordinance \(UDO\) Article 10](#)

References for Stormwater Management are as follows:

**ROLESVILLE:** *Town of Rolesville Land Development Ordinance Appendix B: Flood Damage Prevention and Stormwater Management, Section 1.2 Stormwater Management* effective June 1, 2021.

**WENDELL:** *Town of Wendell Unified Development Ordinance (UDO) Chapter 6: Environmental Protection, adopted 7/26/10.*

**ZEBULON:** *Town of Zebulon, NC Code of Ordinances: Chapter 151*

<input type="checkbox"/>	1.	<a href="#">Erosion Control and Stormwater Joint Application</a> (Required to initiate processing)
<input type="checkbox"/>	2.	<a href="#">Review Fees</a> (Required to initiate processing) <b>RESUBMITTALS:</b> The first resubmittal is free, but all subsequent Stormwater resubmissions require a \$150 Resubmission Fee and Erosion Control resubmissions require a \$75 Resubmission Fee.
<input type="checkbox"/>	3.	Notarized <a href="#">Wake County Financial Responsibility/Ownership Form</a> (Required to initiate processing)
<input type="checkbox"/>	a.	The application must include the owner's notarized written consent for the applicant to submit an erosion and sedimentation control plan and to conduct the anticipated land-disturbing activity if the applicant is not the owner of the land to be disturbed [10-30-2-(B)-(2)-(c)]



**WMCPDR – ROLESVILLE, WENDELL, ZEBULON WATERSHED MANAGEMENT  
 CONSTRUCTION PLAN DISAPPROVAL AND REVIEW COMMENTS**

<input checked="" type="checkbox"/>	<b>4.</b>	Other documents:	
	<input checked="" type="checkbox"/>	<b>a.</b>	Engineering Approval: Copy of approval notification for projects in a municipality’s zoning jurisdiction
	<input type="checkbox"/>	<b>b.</b>	401/404 Documentation (Buffer determination letters, PCN application, comments, and approval) Documentation of wetland delineations.
	<input checked="" type="checkbox"/>	<b>c.</b>	NCDOT Approval (Temporary Construction Entrances, Encroachment Agreements)
	<input checked="" type="checkbox"/>	<b>d.</b>	Encroachment agreement(s) completed, signed and notarized for all off-site construction. <b>-Consent from Duke Energy for land disturbance in the buffer.</b>
<input checked="" type="checkbox"/>	<b>5.</b>	Cover letter stating the purpose of the submission, describing site drainage, stormwater management objectives, and how the proposed stormwater management plan will meet the objectives and be implemented <b>RESUBMITTALS:</b> A letter detailing any changes, comments, proposed solutions to review comments, etc.	
<input type="checkbox"/>	<b>6.</b>	Copy of the USGS Quad Map with delineated project limits	
<input type="checkbox"/>	<b>7.</b>	Copy of the Wake County Soil Survey map with delineated project limits from 1970 manuscript	
<input type="checkbox"/>	<b>8.</b>	One (1) electronic copy of a complete set of construction drawings for 1st resubmission, number (#) copies for final approval.	
<input type="checkbox"/>	<b>9.</b>	One (1) electronic copy of the Municipal Stormwater Design Tool ( <a href="#">click here</a> ); submit Excel workbook (Site Data Sheet, Drainage Area Sheets, Site Summary Sheet, BMP Sheets, and BMP Summary sheet)	
<input type="checkbox"/>	<b>10.</b>	Drainage Area Maps with stormwater discharge points and Tc flow paths (existing/post construction/post BMP)	
<input type="checkbox"/>	<b>11.</b>	Drainage Area Map showing drainage areas to erosion control devices (can delineate on plan sheets)	
<input type="checkbox"/>	<b>12.</b>	Stormwater and Erosion Control Calculations:	
	<input type="checkbox"/>	<b>a.</b>	Sediment basin design (See website for <a href="#">Wake County Design Criteria</a> )
	<input type="checkbox"/>	<b>b.</b>	Ditches, swales, and channels: Q10/V10. Tractive force (shear stress), capacity and geometry
	<input type="checkbox"/>	<b>c.</b>	Dissipaters: Q10 velocities, stone size and dimensions
	<input type="checkbox"/>	<b>d.</b>	Velocity calculations for stormwater runoff at points of discharge resulting from a 10-year storm after development were not provided or do not comply
	<input type="checkbox"/>	<b>e.</b>	Support data for all stormwater practice designs, such as inflow/outflow rates, stage/storage data, hydrographs, outlet designs, infiltration rates, water elevations, design output, summary, etc.
	<input type="checkbox"/>	<b>f.</b>	Other hydraulic and hydrologic computations critical to the plan/designs
	<input type="checkbox"/>	<b>g.</b>	Signature, Date and Professional Seal: for all Stormwater design management proposals, i.e., calculations, BMP designs, operations/maintenance/budget/as built/inspections/manuals
<input type="checkbox"/>	<b>13.</b>	Draft Stormwater Agreement and draft Maintenance Agreement	
<input type="checkbox"/>	<b>14.</b>	Proposed Site Plan:	
	<input type="checkbox"/>	<b>a.</b>	<a href="#">Combined Erosion Control, Stormwater and Floodplain Approval Block</a> (Cover Sheet)



**WMCPDR – ROLESVILLE, WENDELL, ZEBULON WATERSHED MANAGEMENT  
 CONSTRUCTION PLAN DISAPPROVAL AND REVIEW COMMENTS**

<input type="checkbox"/>	<b>b.</b>	Location/Vicinity Map
<input type="checkbox"/>	<b>c.</b>	North arrow, graphic scale, drafting version date, legend and professional seal
<input type="checkbox"/>	<b>d.</b>	Existing and proposed contours: plan and profiles for roadways
<input type="checkbox"/>	<b>e.</b>	Boundaries of tract: including project limits
<input type="checkbox"/>	<b>f.</b>	Table with impervious calculations - existing and proposed impervious surfaces: roads, well lots, recreation sites, single family residences, etc. (consistent with the Municipal Stormwater Design Tool inputs)
<input type="checkbox"/>	<b>g.</b>	Proposed improvements: roads, buildings, parking areas, grassed, landscaped and natural areas
<input type="checkbox"/>	<b>h.</b>	Lot lines, lot numbers, road names, and impervious limit on each lot rounded to nearest whole number
<input type="checkbox"/>	<b>i.</b>	Utilities: community water and sewer, plan/profiles, easements and sediment controls
<input type="checkbox"/>	<b>j.</b>	Stormwater Network: inlets, culverts, swales, ditches, channels and drainage easements
<input checked="" type="checkbox"/>	<b>k.</b>	<p>TEMPORARY SEDIMENT CONTROLS: locations and dimensions of gravel entrances, diversion ditches, silt fence, sediment basins, inlet protection, etc.</p> <p>-Sediment basin design- Temporary Diversion is going uphill. Provide temporary sediment storage if needed.</p> <p>- Phase 2 should show infrastructure without the building – Why are stormwater pipes gray here? The stormwater network gets installed in Phase 2 without the building. The plans should show building pad here.</p> <p>-Phase 3 – It looks like the only difference from Ph 2 is parking lot paint. This phase should show conversion of sediment basin to SCM and construction of building.</p>
<input type="checkbox"/>	<b>l.</b>	Sediment Basin Dewatering Bags: Provide a dewatering bag and location pad adjacent to all sediment basins for maintenance and closeout. Label the bag and pad with dimensions.
<input type="checkbox"/>	<b>m.</b>	Stream Culvert Construction Phasing: Provide a detailed construction sequence for installation of culverts at streams and show the stream crossing(s) on the erosion control plan sheets. Include all applicable details related to managing the stream flow during the culvert installation (silt bags, pumparound, impervious dikes, etc.).
<input type="checkbox"/>	<b>n.</b>	Stream Protection: Design temporary sediment storage during the construction phase of stream culvert installation on all four-corners of the stream crossing (where applicable) and show on the erosion control plan sheets. Provide erosion control blankets on all permanent slopes of culvert at stream crossing.
<input type="checkbox"/>	<b>o.</b>	PERMANENT EROSION CONTROLS: locations and dimensions of dissipaters, ditch linings, armoring, level spreaders, retaining walls, etc.
<input type="checkbox"/>	<b>p.</b>	DETAILED COMMENTS REGARDING PERMANENT SEDIMENT CONTROLS:
<input type="checkbox"/>	<b>q.</b>	Location and requirements for stockpiles (see website for <a href="#">Stockpile Requirements</a> )
<input type="checkbox"/>	<b>r.</b>	<a href="#">Wake County Construction Sequence</a> (Provide project specific details as needed)
<input type="checkbox"/>	<b>s.</b>	<a href="#">Wake County Construction Details</a>



**WMCPDR – ROLESVILLE, WENDELL, ZEBULON WATERSHED MANAGEMENT  
 CONSTRUCTION PLAN DISAPPROVAL AND REVIEW COMMENTS**

<input type="checkbox"/>	t.	<a href="#">Wake County Stabilization Guidelines</a>
<input type="checkbox"/>	u.	<a href="#">Wake County Basin Removal Sequence</a> Wake County must grant permission to convert the sediment basin over to stormwater use prior to completing any related work (construction sequence or note elsewhere on the plan should indicate this).
<input type="checkbox"/>	v.	Show all Riparian Buffers (Neuse: [15A NCAC 2B .0714])
<input type="checkbox"/>	w.	Delineation of current FEMA boundaries (floodway, non-encroachment areas, flood fringe and future/0.2%)
<input type="checkbox"/>	x.	PERMANENT STORMWATER MANAGEMENT STRUCTURES: locations and types of all proposed stormwater management structures ( <i>grass swale, wet/dry detention basin, filtering/infiltration basin, bioretention, etc.</i> )
<input type="checkbox"/>	y.	DETAILED COMMENTS REGARDING PERMANENT STORMWATER MANAGEMENT:
<input type="checkbox"/>	z.	Proposed stormwater easements, access lanes and backwater easements. Provide and label minimum 20 ft. Access easement and 10 ft. Maintenance easement from toe of stormwater pond embankment.

**Standards and Requirements**

Items marked with an "X" note relevant standards to be applied to the proposed development. Notes in RED provide review comments and/or any required elements to comply with standard.

Ordinance references are shown in brackets.

<input checked="" type="checkbox"/>	15.	<b>Stormwater Review Required</b> – All residential subdivision development must submit a plan to comply with the applicable municipalities' stormwater ordinance. Office, institutional, commercial or industrial development that <u>disturbs</u> greater than 20,000 square feet is required to comply with the stormwater management regulations. Development and redevelopment that disturb less than 20,000 square feet are not exempt if such activities are part of a larger common plan of development or sale, even though multiple, separate or distinct activities take place at different times on different schedules. <b>Rolesville</b> [1.2.1.(E)], <b>Wendell</b> [ 6.5(F)], <b>Zebulon</b> [151.05]
<input checked="" type="checkbox"/>	16.	<b>Stormwater Permit</b> – is required for all development and redevelopment unless exempt pursuant to the Code of Ordinances. A permit may only be issued subsequent to a properly submitted, reviewed and approved stormwater management plan and permit application. <b>Rolesville</b> [1.2.3.(B)(2)], <b>Wendell</b> [6.5(F)(3)], <b>Zebulon</b> [151.21(A)] Note: A permit may not be required if there are no post-construction requirements (i.e. SCMs).
<input checked="" type="checkbox"/>	17.	<b>SCMs</b> – For projects requiring stormwater treatment for quality and/or quantity control, the applicant must 1) comply with the <a href="#">NC Stormwater Design Manual</a> <b>Rolesville</b> [1.2.4.(B)(2)], <b>Wendell</b> [6.5(N)(2)], <b>Zebulon</b> [151.07] 2) as well as <i>Completion of Improvements and Maintenance</i> , prior to issuance of a certificate of compliance or occupancy. <b>Rolesville</b> [1.2.5], <b>Wendell</b> [6.5(O)], <b>Zebulon</b> [151.50 – 151.56]
<input type="checkbox"/>	18.	<b>Standards Based on Project Density</b> – In accordance with the definitions, projects are identified as Ultra Low-Density (15% or less Built-Up Area, referred to as BUA, and less than one dwelling unit per acre), Low-Density (more than 15% BUA and no more than 24% BUA), and High-Density (24% or more BUA). <b>Rolesville</b> [7.5.4], <b>Wendell</b> [ 6.5(E)], <b>Zebulon</b> [151.10]



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 CONSTRUCTION PLAN DISAPPROVAL AND REVIEW COMMENTS**

<input type="checkbox"/>	<p><b>Standards for Ultra-Low and Low-Density Projects:</b></p> <ul style="list-style-type: none"> <li>• Use of vegetated conveyances to maximum extent practicable</li> <li>• Location of development and redevelopment outside Riparian Buffer and Flood Protection Zones</li> <li>• Recorded deed restrictions or protective covenants to ensure future development maintains consistency with approved project plans</li> <li>• Permanent SCMs (Stormwater Control Measures) are to be designed in accordance with and as specified in the North Carolina Department of Environmental Quality’s Design Manual.</li> <li>• For Low-Density only, no net increase in peak flow leaving the site from the pre- development conditions for the 1 yr-24hr storm. Runoff volume drawdown time shall be a minimum of 48 hours, but not more than 120 hours.</li> <li>• Residential runoff after development must not exceed the Target Curve Numbers listed in the chart “Maximum Composite Curve Number, by Soil Group”.</li> <li>• Ultra-Low and Low-Density projects may be eligible for target curve number credits.</li> </ul> <p><b>Wendell Only:</b> Nitrogen export limited to 3.6 pounds per acre per year unless project achieves classification as an LID Project.</p> <p><b>Rolesville</b> [1.2.4(A)(1-3)], <b>Wendell</b> [6.5(M)(1)], <b>Zebulon</b> [151.35(A-C)]</p>
<input checked="" type="checkbox"/>	<p><b>Standards for High-Density Projects:</b></p> <ul style="list-style-type: none"> <li>• Measures shall control and treat runoff from the first inch of rain. Runoff volume drawdown time shall be a minimum of 48 hours, but not more than 120 hours.</li> <li>• Structural measures shall be designed to have a minimum of 85 % average annual removal for Total Suspended Solids (TSS)</li> <li>• Permanent SCMs (Stormwater Control Measures) are to be designed in accordance with and as specified in the North Carolina Department of Environmental Quality’s Design Manual.</li> <li>• No net increase in peak flow leaving the site from the pre -development conditions for the 1 yr-24hr storm. Runoff volume drawdown time shall be a minimum of 48 hours, but not more than 120 hours.</li> <li>• Location of development and redevelopment outside Riparian Buffer and Flood Protection Zones</li> </ul> <p><b>Rolesville</b> [1.2.4(A)(4)], <b>Wendell</b> [6.5(M)(4)], <b>Zebulon</b> [151.35(D)]</p>
<input type="checkbox"/>	<p><b>Low Impact Development (LID) Classification:</b></p> <ul style="list-style-type: none"> <li>• All development or redevelopment may be submitted for LID classification</li> <li>• Development must mimic the pre-developed hydrologic conditions of the site, as defined as “woods in good condition” for the 2-yr, 24 hr storm, within 10%.</li> <li>• Techniques required to achieve LID classification             <ul style="list-style-type: none"> <li>➤ Natural site design</li> <li>➤ Bio-retention systems or on-site infiltration (at least one must be used)</li> <li>➤ At least <b>two</b> other techniques from the list provided in Rolesville [1.2.4.(B)(5)(e)], and <b>Zebulon</b> [151.36(E)(5)]</li> <li>➤ At least <b>one</b> other technique from the list provided in <b>Wendell</b> [6.5(N)(5)(e)]</li> </ul> </li> </ul>
<input checked="" type="checkbox"/>	<p><b>19.</b> <b>Downstream Impact Analysis</b> – Required analysis using the “10% rule” drainage area evaluation of the 10-year, 24-hour peak flow of the pre/post development to determine if the project will have any impacts on flooding or channel degradation downstream of the project site in accordance with <b>Rolesville</b> [1.2.4.(B)(1)] <b>Wendell</b> [6.5(N)(1)], <b>Zebulon</b> [151.36(A)].</p>



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 CONSTRUCTION PLAN DISAPPROVAL AND REVIEW COMMENTS**

<b>Wake County UDO Article 10 - Erosion and Sedimentation Control Requirements (Applies to Rolesville, Wendell and Zebulon)</b>		
<input checked="" type="checkbox"/>	<b>20.</b>	<b>Erosion Control:</b> This project will require a Land Disturbance Permit if it involves <u>greater than one acre of disturbance</u> . <b>Note:</b> If the land disturbance is part of a common plan of development that is greater than one acre of disturbance, an Approved Erosion and Sediment Control Plan and Land Disturbance Permit are required for each individual tract or parcel disturbance within the common plan of development, regardless of land disturbance acreage in each tract/parcel.
<input checked="" type="checkbox"/>	<b>21.</b>	<b>Minimum Standards [Article 10-20-1]</b> – All soil erosion and sedimentation control plans and measures must conform to the minimum applicable standards specified in <i>North Carolina’s Erosion and Sediment Control Planning and Design Manual</i> . Erosion control devices must be installed to prevent any offsite sedimentation for any construction site regardless of the size of the land disturbance.
<input type="checkbox"/>	<b>22.</b>	<b>Operation in Lakes or Natural Watercourses [Article 10-20-3]</b> – Land disturbing activity in connection with construction in, on, over, or under a lake or natural watercourse must minimize the extent and duration of disruption of the stream channel. Where relocation of a stream forms an essential part of the proposed activity, the relocation must minimize unnecessary changes in the stream flow characteristics.
<input type="checkbox"/>	<b>23.</b>	<b>Standards for High Quality Water (HQW) Zones [Article 10-20-11]</b> Land-disturbing activities to be conducted in High Quality Water Zones must be designed as follows:
<input type="checkbox"/>	<b>a.</b>	Uncovered areas in High Quality Water (HQW) zones must be limited at any time to a maximum total area of 20 acres within the boundaries of the tract.
<input type="checkbox"/>	<b>b.</b>	<b>Maximum Peak Rate of Runoff</b> – Erosion and sedimentation control measures, structures, and devices within HQW zones must be planned, designed and constructed to provide protection from the runoff of the 25-year storm.
<input type="checkbox"/>	<b>c.</b>	<b>Settling Efficiency</b> – Sediment basins within HQW zones must be designed and constructed so that the basin will have a settling efficiency of at least 70% for the 40 micron (0.04mm) size soil particle transported into the basin by the runoff of that 2-year storm which produces the maximum peak rate of runoff.
<input type="checkbox"/>	<b>d.</b>	<b>Grade</b> – The angle for side slopes must be sufficient to restrain accelerated erosion (side slopes no steeper than two (2) horizontal to one (1) vertical if a vegetative cover is used for stabilization unless soil conditions permit a steeper slope or where the slopes are stabilized by using mechanical devices, structural devices or other acceptable ditch liners)
<input type="checkbox"/>	<b>24.</b>	<b>Senate Bill 1020; "SECTION 3.(h) Additional standards for land-disturbing activities in the water supply watershed":</b>
<input type="checkbox"/>	<b>a.</b>	Erosion and sedimentation control measures, structures, and devices shall be planned, designed, and constructed to provide protection from the runoff of the 25-year storm
<input type="checkbox"/>	<b>b.</b>	Sediment basins shall be planned, designed, and constructed so that the basin will have a settling efficiency of at least seventy percent (70%) for the 40-micron size soil particle transported into the basin by the runoff of the two-year storm that produces the maximum peak rate of runoff
<input type="checkbox"/>	<b>c.</b>	Newly constructed open channels shall be planned, designed, and constructed with side slopes no steeper than two horizontal to one vertical if a vegetative cover is used for stabilization unless soil conditions permit steeper slopes or where the slopes are stabilized by using mechanical devices, structural devices, or other acceptable ditch liners.



**WMCPDR – ROLESVILLE, WENDELL, ZEBULON WATERSHED MANAGEMENT  
 CONSTRUCTION PLAN DISAPPROVAL AND REVIEW COMMENTS**

<b>Neuse Riparian Buffer Rules</b>		
<input type="checkbox"/>	<b>25.</b>	Due to the location of this project, it should be noted that a rule to protect and maintain existing buffers along watercourses in the Neuse River Basin became effective on July 22, 1997. The <b>Neuse River Riparian Area Protection and Maintenance Rule (15A NCAC 2B .0714)</b> applies to all perennial and intermittent streams, lakes, ponds and estuaries in the Neuse River Basin with forest vegetation on the adjacent land or “riparian area”.
<b>North Carolina General Statute § 113A-61 (c) - Right to Appeal the Decision</b>		
<input type="checkbox"/>	<b>26.</b>	The applicant has the right to appeal this decision per North Carolina General Statute § 113A-61 (c).
<b>Additional Suggested Changes/Comments</b>		
<input type="checkbox"/>	<b>27.</b>	
<b>Environmental Consultant:</b>	<b>Jeevan Neupane, PE</b>	<b>Contact Info:</b> <a href="mailto:jeevan.neupane@wake.gov">jeevan.neupane@wake.gov</a> 919-819-8907
<b>Environmental Engineer:</b>	<b>Janet S Boyer, PE, CFM</b>	<b>Contact Info:</b> <a href="mailto:janet.boyer@wake.gov">janet.boyer@wake.gov</a> 919-856-7422