



# Case Study- Successful E&SC at Wendell Falls

**Brookfield  
Properties**





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*Creating exceptional places and experiences  
where people connect, are inspired, and thrive.*



Vision



Commitment



Innovation



Quality

- **Vision** – a long term vision is what sets us apart. The uniqueness of the land, nuance of each market and evolving customer preferences drive the diverse style and mix of products and amenities in the communities we build.
- **Commitment** – experienced, multi-disciplinary teams integrate themselves into our communities to understand their needs and ensure our projects benefit everyone, positioning our projects for success.
- **Innovation** – bring together the best aspects of community and amenities to create developments where people truly want to be.
- **Quality** – holding our projects to high standards to ensure we enhance quality of life throughout a community's life cycle.

# Successful E&SC at Wendell Falls

## Key Factors

- Preconstruction Meeting
- Open Communication
- Consistency in Implementation
- Aggressive Approach to Ground Cover
- Early Grading Plans (Stage 1 & 2)
- Monitoring & Inspections
- Homebuilder Engagement



# Preconstruction Meeting

An aerial photograph of a large-scale construction project. The site is dominated by several large, rectangular basins or pads, some of which are covered with a dark, textured material, possibly geotextile or mulch. A network of dirt roads and paths crisscrosses the site. In the background, there are more construction materials, including large piles of earth and some temporary structures. The surrounding landscape is a mix of green grass and bare trees, suggesting a late autumn or winter setting. The sky is clear and blue.

- The Preconstruction process lays the foundation for the construction project's success by making critical decisions that will maximize project efficiency and minimize potential obstacles
  - In-person preconstruction meeting for every project
  - Design engineer prepared to review the plans and specs in detail
  - Proactively identify any foreseeable issues so that corrections can be made prior to project start
  - Discuss unique challenges of this particular project and what environmental resource concerns may be involved
  - Establish construction & development timelines and protocols
  - Discuss contractor's approach to mass grading in attempt to accomplish the timelines
- **Benefits of a comprehensive preconstruction process:**
  - Saves time & money by minimizing issues and avoiding costly errors
  - Addresses issues before they occur
  - Establishes an open line of communication between the Owner, Contractor, Regulator and Engineer

# Open Communication

- Weekly construction meetings between Owner, General Contractor & Engineer
- Preparation ahead of inclement weather
  - Onsite meeting to review how preparation is coming
  - Preparation to begin up to a week prior to weather event if projections show NC will be impacted significantly
- Discuss unforeseen challenges requiring additional measures or design changes
  - Developer, General Contractor, Designer, and Regulator get back together and meet onsite to discuss
- Sanford engagement during preliminary design & engineering



# Consistency in Implementation

- Clear and repeatable process that can be followed with every project
  - Team has a clear understanding of the erosion process and an approach to force all 3 steps to occur within the project footprint
- GC initially limits the clearing to what is needed to install the perimeter erosion and sediment control measures
- Leave the site ‘Storm ready’
  - At the end of the work day, the grading is pitched to the E&SC measures AND in such a way that construction may proceed shortly after a storm has passed
  - Contractor provides additional storage in the diversion ditches in front of check dams to slow the runoff
- SCMs (minus the plantings) are installed during early stages of construction
- Development team is supportive of providing additional groundcover and measures to stay in compliance





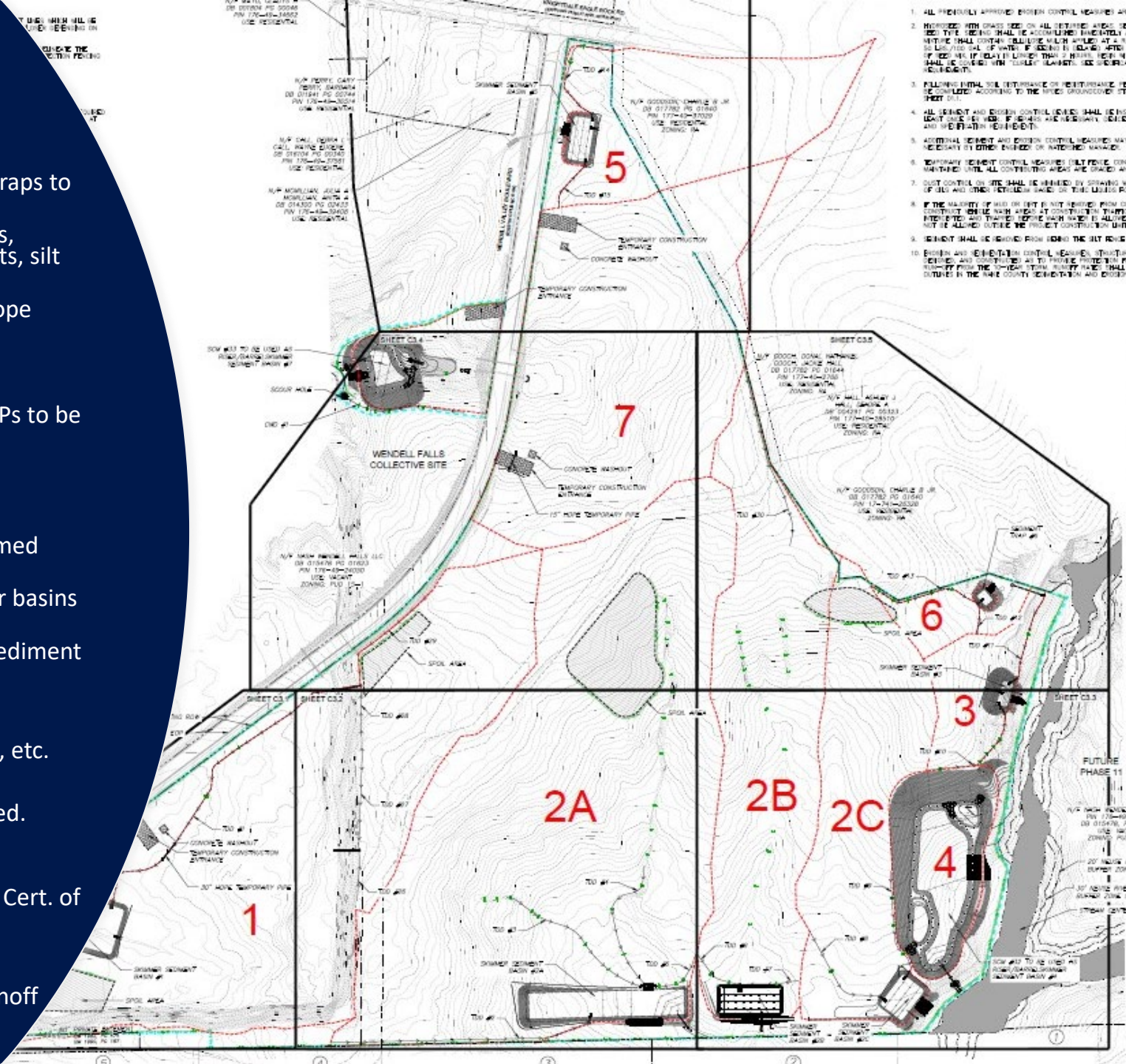
# Aggressive Approach to Groundcover

- Erosion Control Process:
  - Detachment
  - Transport
  - Deposition
- Implement RECP on basins & diversions
  - Ensure a “green barrier”, including the area downstream of these devices to contain the site
  - Minimize skimmer clogging while vegetation establishment is underway
- Staged Seeding
  - Seeding of areas where grading has been completed
- Rolled Product / Matting
  - Matting of slopes and diversion ditches whenever possible
- Clean Water Bypasses
  - Utilize dura-skrim rolled product and mulch harvested from brush grinding onsite
- Oversized Construction entrances and employee parking areas
  - Ensures the transfer of silts and wet soils from site to public roadways are minimized



# Early Grading Plans

- **Stage 1**
  - Raw site divided into individual watersheds with basins/traps to serve each area as needed. No mass grading.
  - Plans show temporary construction entrances, spoil areas, diversion ditches, slope drains, wattles, concrete washouts, silt fence, TPF.
  - Berm upstream side of basins to divert runoff to temp slope drains.
  - Utilize large earthen berms as diversion ditches where appropriate.
  - With diversions in place, begin construction of larger BMPs to be used as basins in Stage 2.
  - Slopes of basins and diversions provided with RECP
- **Stage 2**
  - Once all stage 1 devices are installed, inspected and deemed fully operational, proceed to Stage 2.
  - Initial site mass grading underway and removal of smaller basins as site brought to grade.
  - Redirect diversion ditches to larger BMPs to be used as sediment basin.
- **Stage 3**
  - Final grading for roadways, residential lots, parking areas, etc.
  - Storm piping installed as roads are brought to grade.
  - Inlet protection installed and maintained. Curbing installed. Paving.
  - Seeding and mulching as required.
  - Inspections. Removal of devices. Final inspection. Obtain Cert. of Completion.
- **Benefits of early grading plans:**
  - Allows us to establish the site perimeter and total site runoff without permanent storm drain or final BMPs in place.



1. ALL PREVIOUSLY APPROVED EROSION CONTROL MEASURES ARE TO BE MAINTAINED THROUGHOUT CONSTRUCTION.
2. INTERFERE WITH GRASS SEED OR ALL OTHER VEGETATION TO BE PLANTED OR REPLANTED. ALL VEGETATION TO BE PLANTED OR REPLANTED SHALL BE PROTECTED BY EROSION CONTROL MEASURES. ALL VEGETATION TO BE PLANTED OR REPLANTED SHALL BE PROTECTED BY EROSION CONTROL MEASURES. ALL VEGETATION TO BE PLANTED OR REPLANTED SHALL BE PROTECTED BY EROSION CONTROL MEASURES.
3. FOLLOWING INITIAL SOIL SETTLEMENT OR SETTLEMENT, THE EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
4. ALL EROSION AND EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION. ALL EROSION AND EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
5. ADDITIONAL EROSION AND EROSION CONTROL MEASURES MAY BE NECESSARY AT OTHER LOCATIONS OR INTERFERED MEASURES.
6. TEMPORARY EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION. ALL EROSION AND EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
7. DUST CONTROL ON SITE SHALL BE MAINTAINED BY SPRAYING WATER OR OTHER EROSION CONTROL MEASURES OR OTHER MEASURES.
8. IF THE MAINTENANCE OF ANY OR MORE OF THE EROSION CONTROL MEASURES IS INTERFERED AND TRAFFIC CONTROL MEASURES IS ALLOWED TO NOT BE MAINTAINED THROUGHOUT CONSTRUCTION.
9. EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
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# Monitoring & Inspections

- Hire a 3<sup>rd</sup> party inspector to complete self-monitoring and self-inspections every seven days or after a storm event of one inch of rain or more within 24 hours
- Read the reports!!
- Review status of outstanding E&SC issues at weekly construction meetings
- Complete your own site assessment – there are items that you may see that the inspector does not and vice versa
- Take photos of items that may not be failing, but are worth keeping an eye on
- Don't wait for inspection reports – if you see something, fix it
- “Ounce of prevention, pound of cure”
  - Correctly functioning EC devices save time and money in the long run
  - Allows contractor to focus on moving forward with minimal rework required after significant weather events



# Homebuilder Engagement

- Quarterly Lunch & Learn
  - Meeting hosted by Owner with representatives from each homebuilder in the community in attendance
  - Spotlight on best practices within the development (often focused on E&SC measures)
  - Guest speaker (e.g.: Wake County Environmental Services, dry utility rep, South Energy Management rep)
- Semi – Annual Wake County “Walk & Talk”
  - Onsite meeting to include homebuilder representatives, Wake County Environmental Services and Owner
  - Walk active builder sites, review E&SC measures, and discuss best practices
  - Review overall appearance of community and create open dialogue between different homebuilders
- Owner engagement and oversight of builder compliance
  - Construction Manager onsite 3-4 days per week
  - Drive builder construction and addresses issues with builder superintendents

# Q&A



# Thank you!

Please Remember to Complete the End of Workshop  
Evaluation



<https://bit.ly/2022EscEval>

