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Town of Chapel Hill
Proposed Development Ordinance – Design Workshop
Saturday May 11, 2002

STORMWATER - Workgroup #2

Participants

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Subject Project: Hillsong Baptist Church

Description of project: A Special Use Permit for Hillsong Baptist Church was approved in 1998. The site is located on the south side of Culbreth Road, west of US Highway 15-501. The 11.5 acre site is located in the Residential-2-Conditional (R-3-C) zoning district. Approximately 3.9 acres of the site is located in the Town's Resource Conservation District. A 38,636 square foot place of worship was approved with 164 parking spaces. The site is located in the Town's Watershed Protection District. Approximately 2.3 acre (20%) of the site is covered with impervious surface.

The workgroup considered the following question: *How would design of this project have been different if it needed to comply with standards proposed in the Second Draft of the new Development Ordinance?*

In regard to the specific project reviewed by the workgroup, recommendations of the group focused on water quality and stormwater techniques.

Recommendations

- A. Proposed regulations should focus more on water quality including:
- Greater use of Best Management Practices where appropriate;
 - Decreased land disturbance;
 - Maintaining natural buffers adjacent to impervious surface area; and
 - Working with existing topography.
- B. Stormwater management techniques should consider:
- The development location in the overall drainage basin;
 - Proximity of site to floodplain, drainage way, Resource Conservation District; and
 - Use of underground storage facilities.

Concerns/Questions: Concerns and questions expressed by some in the group are listed below.

- Inserting specific performance criteria in the Development Ordinance restricts flexibility in situations where a better design solution is available or preferred. For example, designing for a 50 year storm may not be necessary in all situations and would result in unnecessary clearing

- Ordinance does not consider the location of a development site within a drainage basin or near drainage ways. Design solutions for a stormwater management at the top of a drainage basin are different from a site in the middle or bottom of a basin.
- The area's native soils not well suited for some Best Management Practices.
- Discharge of water from BMP's should be minimized in areas adjacent to or near Resource Conservation District.
- What is the impact of the proposed regulations on single family developments?
- Is the threshold of 40,000 square feet of land disturbance too high?

Group Discussion

The discussion generally centered on: 1) Today's regulations and the existing development; and 2) How the design may have been different under the proposed regulations. The below summary will briefly discuss existing and proposed regulations. Findings of the group under each option are also listed.

1. The existing development and today's regulations.

When the development was approved in 1998, stormwater management requirements were contained in the Development Ordinance. Specifically, Article 14.7 of Development Ordinance (Drainage and Storm Water Management) required the following for stormwater performance criteria:

- a) Provide for natural infiltration of storm water;
- b) Control velocity of run-off flows;
- c) Extend the time of concentration of storm water run-off; and
- d) Collect and transmit excess storm water flows into either the Town drainage system or into a natural drainage system.

The Development Ordinance does not specify address how the design or construction of the project would achieve these four requirements. It is up to the applicant and staff, during the review of final plans, to determine how best to achieve the requirement of the Development Ordinance as they relate to Article 14.7. In making this determination, the applicant and staff refer to the Town's Design Manual.

This project is also located within the Town' Watershed Protection District and was subject to impervious surface limits and water quality requirements.

FINDINGS (Existing development under current regulations):

- The project design included a stormwater facility capable of handling a 10 year frequency storm (as recommended by the Town's Design Manual in 1998).

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[Current Design Manual recommends that the facility handle a 1 year and 50 year storm.]

- The stormwater facility was constructed in a natural drainage way resulting in extensive clearing and filling in the drainage way. The construction involved land disturbance to the area surrounding the facility.
- The project contained less than 24% impervious surface and was not subject to Article 10 – Watershed Protection District (requirements to control runoff pollution sources).
- The project did not include any facilities for water quality treatment.
- Topography of site suitable for various Best Management Practices (rain gardens, landscape islands in parking area, grass swales, natural buffers).
- Use of underground storage facilities and BMP's would decrease need for extensive clearing and impact on drainage way and vegetative cover.

2. How the design may have been different under the proposed regulations.

If the development was designed under the propose regulation, the Development would require that the following performance criteria shall be address for stormwater management at all sites:

- a) Stormwater treatment of the volume of post-construction stormwater runoff resulting from the first 1-inch of precipitation;
- b) Stormwater treatment shall be designed to achieve 85% Total Suspended Solids (TSS) removal and:
- c) Post-development runoff conditions shall be such that:
 - (1) The runoff volume stored in any stormwater management facility must draw down to the pre-storm design stage within 5 days, but not less than 2 days, and
 - (2) The peak discharge rate shall be no larger that the peak pre-developed discharge rate for the 1-year, 24 hour storm event; and
 - (3) The peak discharge rate shall be no larger that the peak pre-developed discharged rate for the 50-year, 24-hour storm event.

FINDINGS (Design under proposed regulations):

- The project design would include a single stormwater facility capable of handling a 1 year and a 50 year frequency storm.
- Construction would likely occurring in the natural drainage way and result in more clearing, grading and a larger facility.
- Impervious surface area would likely remain under 24%
- Best Management Practices would be recommended but not required.