

# **Input Regarding Proposed Terrell's Ridge Subdivision**

**By Walter Durham, adjacent property owner  
Presenter: Don Rayno**

## **Summary of Contents**

**I. History of site**

**II. Terrell's Creek**

**III. Sedimentation**

**IV. Community Septic Systems**

**V. Well Field**

**VI. Conclusions**

**VII. Recommendation**

**I. History of site**

The area adjacent to, and perhaps inclusive of, the proposed site, is rich in local history. On Terrell's Creek, near the northwest corner of the site and across the creek, is the location of Moses Atwater's mill. Significant remnants of this mill are still extant (see Photo #1). Moses Atwater is considered to be the ancestor of all of the North Carolina branches of Atwaters, including State Senator Bob Atwater and a national political advisor, the late Lee Atwater.

## **II. Terrell's Creek**

Terrell's Creek, upon which the proposed development borders, is a WS-IV protected-area watershed. A protected area is defined as land within five miles and draining to the normal pool elevation of water supplies/reservoirs, or within ten miles upstream and draining to a river intake. It is an exceptionally attractive creek, with a wide flood plain (extremely wide for most of the length of the proposed subdivision). Large rocks lie along the creek banks and in the creek itself, and in the floodplain, spring wildflowers, such as trout lilies, hepatica, spring beauty, and windflower, grow in profusion. This is an ecosystem that is both beautiful and delicate and of a type that are rapidly disappearing in Chatham County and the North Carolina piedmont. It is certainly worthwhile to do all that is within our power to protect it (see Photos #2 and 3).

**Terrell's Creek flows into the Haw River, which in turn flows into Jordan Lake, a primary drinking water supply for the region.**

## **III. Sedimentation**

One of the most frequent and serious deleterious effects of development near creeks or rivers is sedimentation. This occurs as disturbed soil during the construction phase runs off during moderate or heavy rains into the creek bed, loading the creek with suspended and bedded sediment and thereby severely altering its water quality and adversely affecting or in some cases, even eliminating water biota. The flood plain is also highly impacted, as the rich bottomland soil is buried by overflowing sediment that will not support the above-cited wildflower and other distinctly riparian vegetation. In short, such runoff arising from development in close proximity to creeks and rivers results in major, negative ecological changes.

**In the particular case of the proposed Terrell's Ridge subdivision, a substantive concern is the slope of the land leading down to the east side of the creek.** The gradient is very steep, especially along the areas where the proposed community septic systems 4 and 5 are to be located (See sketch design map—Attachment 9). Much of community septic system 5 would be on a steep slope. This area is laden with rocks and the insertion of the septic pipes using a wing-tip plow would not be feasible. **For both septic site leveling and pipe installation, considerable grading and rock removal would be necessary for the installation of both community septic systems 4 and 5. The potential for massive runoff is very great at these areas. To install these community septic systems at these steep gradient is an invitation to disaster.**

**An additional issue regarding potential runoff, leading to creek sedimentation is the proposed future right-of-way near the northwest corner of the proposed subdivision.** This, as indicated on the sketch design map (Attachment 9), is proposed to be constructed perpendicular to slope. The construction of such a road would undoubtedly lead to significant runoff into Terrell's creek. The same is true for some of the proposed subdivision roads. The westernmost portion of the road ending at plot 59, for example, is perpendicular to gradient and ends close to the creek flood plain.

The issue of sedimentation is a serious one. Many of us are undoubtedly aware of the recent severe runoff problem with the large Chapel Ridge subdivision off Old Graham Road. Dry Creek will never be the same. **We do not want this development to lead to "Dry Creek #2."**

#### IV. Community Septic Systems

There is deep concern regarding the proposed community septic systems. The developer has proposed that 70 of the 106 lots would be served by five community subsurface drip septic systems. From the size of the proposed systems on the sketch design map, it is clear that by far, the majority of these lots would be served by septic systems 4 and 5. These would be located on some of the steepest slopes on the east side of Terrell's Creek. System 5, the largest of the community septic systems, would be located on a very steep slope, and at one point, adjoins the 100-year flood plain. All of this gives rise to serious concerns, not only because of potential soil runoff during the construction of these systems (see above), but also regarding possible failure of these systems.

It should be noted that the soil on this slopeland is Tatum or Georgeville soil. In speaking with David Heck of the Orange County Environmental Health, he indicated that this type of soil, is erodable. If it is not sufficiently deep where the septic system is being installed, there can be considerable erosion, which could lead to the release of waste effluent down the slope and into the creek. In addition, with septic system lines stacked in a row as designed, the lines on the lower slope will take a heavier load of effluent due to gravity, and this can lead to waste release problems. Orange County has not approved this type of subsurface drip septic system.

**It is very important to stress that community subsurface drip septic systems, one of the alternatives to conventional septic systems, are still largely untried in large-scale application in North Carolina.** In Attachment 7, Trish Angoli, State Wastewater Engineer, indicates that she is unaware of any of these systems in use in North Carolina. **While there may be some in use, there are not many, if any, currently in use in a large-scale subdivision.** This relatively-new technology is still unproven in the long-term. That the State of North Carolina is exercising considerable caution in the approval and application of community subsurface drip septic systems is clear from Ms. Angoli's description of the permit process: a multi-stage process involving soil evaluation by a Chatham County Environmental Health Division soil scientist, subsequent review and approval by the state wastewater engineer, an on-site joint meeting of the soil scientist, the plan engineer, the contractor, a certified subsurface operator, and a representative from the Environmental Health Office. An operation permit is not issued until several site visits are made by the approval personnel during installation. Even after that, a private, state-certified subsurface operator must be engaged to monitor and maintain the systems. On top of all of this, operation permits must be renewed every five years.

Clearly, the use of community subsurface drip septic systems is not viewed lightly by the State of North Carolina. As now proposed, the developer simply states that the "wastewater is biologically pretreated in a series of treatment tanks and recirculation tank. Treated wastewater is then pumped by the dosing pumps to the subsurface infiltration fields for disposal." (see Attachment 3). The key concern here is that "biological" treatment typically means either the use of organic-decomposing bacteria, chlorine, or ultraviolet light in the treatment tank. **This treatment is highly inadequate for use with subsurface drip systems near a watershed. The effluent released through the drain pipes would still contain nutrient-rich nitrogenous and phosphorous compounds, would when released in this steep slope area with varying soil depth, has a very good chance of reaching Terrell's Creek. This, if it occurred, would have a very destructive effect on the creek—eutrophication, with its resultant algal and aquatic plant life buildup and subsequent oxygen depletion in the water and loss of animal life in the creek.**

The consequences of possible failure of the community septic systems should be carefully considered at this site. The release of sewage into a watershed is quite disastrous. One incident, which occurred in Wake County, emphatically illustrates this point. In late June of 2006, heavy rains caused the collapse of a 60-foot hole that had been excavated for a future storage tank and a pipe to a large community septic system pump station near the Swift Creek watershed was dislodged. In excess of three million gallons of sewage spilled out into the creek, a protected watershed of considerable beauty which flows into two recreational lakes (see attached article). While this system was considerably larger than the one proposed, what the two share in common is their proximity to a creek and a significant potential for catastrophic sewage release.

Regarding the reliability of alternative community septic systems, another incident is noteworthy. Some years ago in North Raleigh, a low-pressure pipe subsurface septic system similar to the one proposed by the developer failed, because it wasn't properly maintained. The consequences were devastating. The upscale subdivision where the septic failure occurred was ruined. Houses previously valued at \$750,000 became worthless.

## V. Well Field

**Finally, related to the above, attention should be given to the existing well field. The failure of the subsurface drip community septic systems—again, it should be stressed that there is little history of the reliability of this technology—could pollute the well field.** This would be calamitous, not only for the residents of the subdivision but also, potentially, for the adjoining property owners.

## VI. Conclusions

**The Terrell's Ridge subdivision proposal is not an environmentally-friendly proposal. In fact, it is an environmentally *unfriendly* proposal.** Locating community septic systems on a steep slope adjacent to a watershed is an invitation to disaster. The unproven methodology of the subsurface drip septic system adds further to this risk. Considerable grading will surely be required for the installation of these septic systems and this will most certainly, given the steep gradient, lead to considerable soil runoff, which will be extremely and irreparably injurious to the Terrell's Creek water quality and its surrounding ecosystem. As the proposal now exists, construction of some of the subdivision roads and the future right-of-way road, which are perpendicular to steep slopes, would contribute to additional soil runoff. There is an extensive flood plain that needs protection. With regard to the community subsurface drip septic systems, considerably more rigorous treatment is required prior to effluent release to prevent the introduction of nitrogenous and phosphorous compounds into the creek, which would lead to debilitating eutrophication of the watershed. Strong consideration should be given to the potential for failure of this alternative septic system approach, which could lead not only to pollution of the creek, but also the existing aquifer upon which local wells would draw.

## VII. Recommendation

***In view of all of the above, a careful, detailed environmental review by a qualified and certified governmental body should be done before consideration of sketch design approval.*** Chatham County has such a group—the Environmental Review Board. Many important questions have arisen regarding the potential of an extensively harmful environmental impact on the creek, its surrounding ecosystem, and the groundwater of this region if the subdivision proposal is approval as it stands. Surely these issues are more than sufficiently important to mandate such an environmental examination.

