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QUALIFICATIONS

Ms. Allison Weakley received a Bachelor's degree in Plant Biology from University of Maryland, and a Master's degree in Biology from the University of North Carolina at Chapel Hill. She also earned an Associates in Arts degree in Business Administration from Montgomery College in Rockville, Maryland.

Ms. Weakley is currently a Consulting Biologist working on projects relating to water quality, landscape integrity, rare species conservation, and wildlife habitat. She has worked for the US Forest Service (USFS), National Forests of North Carolina, for the past six years, both as an employee and as a contractor, conducting biological evaluations, analyzing the impact of Forest management alternatives on biological resources, and reviewing and providing expert opinion on species viability for conservation planning. Ms. Weakley's most recent USFS project involved the identification and description of high quality plant communities and rare plant populations to aid in the Forest planning process on the Uwharrie National Forest near Asheboro.

In addition to working as a field biologist for many years, Ms. Weakley has professional experience writing, reviewing, and editing scientific documents, including Environmental Assessments and Environmental Impact Statements.

As a Chatham County citizen, Ms. Weakley has been an active participant in county planning and development issues for the past several years, attending public meetings, reviewing subdivision proposals, and providing information on environmental impacts for her community. She also is a member of and serves on the River Watch Steering Committee for the Haw River Assembly. Ms. Weakley lives in the Boothe Hill neighborhood in northern Chatham County with her husband, Alan Weakley, and their two children.

COUNTY LINE PLAZA

Comments on the Conditional Use Permit Request by Lee Moore Oil
Public Hearing before the Chatham County Board of Commissioners
18 September 2006
Allison E. Weakley, Biologist

Good evening. Thank you for the opportunity to speak tonight on the County Line Plaza proposal by Lee Moore Oil Company. My name is Allison Weakley, and I live at 311 Boothe Hill Road in north Chatham. I am a biologist (see qualifications attached) and Chatham citizen who has professional experience reviewing impacts to natural resources at the County, State and Federal levels, including conducting, writing and reviewing environmental assessments. I serve on the River Watch Steering Committee for the Haw River Assembly (HRA), and am an active volunteer in the HRA River Watch Program. I have been asked by the Bob Murdock, adjacent landowner, to review the application for this project for potential environmental impacts.

From my review of the application and supporting documents, I have the following comments, questions and recommendations, all of which focus primarily on Findings #3, 4 and 5.

FINDING #3 states that the requested permit will not impair the integrity or character of the surrounding or adjoining districts, and will not be detrimental to the health, safety or welfare of the community.

I have a number of concerns that relate to Finding #3, including:

- Soils and Wastewater Capacity
- Hazardous Materials
- Stormwater Management
- Sedimentation and Erosion Control
- Threatened and Endangered Species
- Stream and Wetland Buffers
- Landscaping

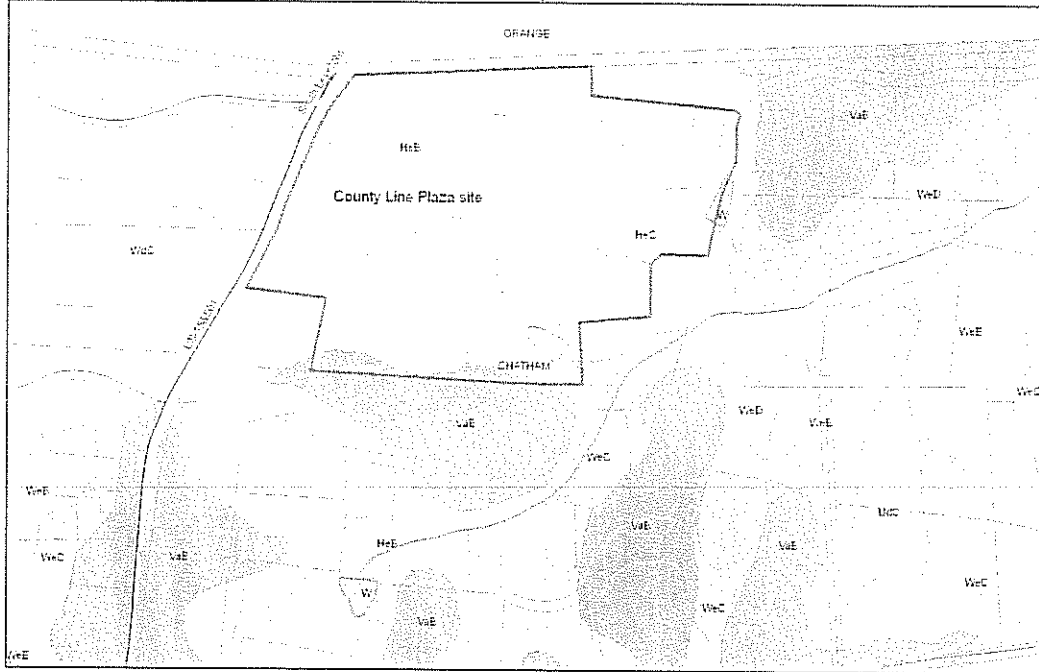
Soils and Wastewater Capacity

I conducted a quick analysis of soils present on the Lee Moore Oil site on the Orange/Chatham County line just east of US15-501 using the County soils data (USDA-NRCS 2006) and found that the majority of the soils present on site are mapped as Helena sandy loam soils (represented as map units HeB and HeC; see Figure 1), which are considered to have a "very limited" capacity for sewage disposal and have the potential for a seasonal high water table within depths of 1.5-2.5 feet. The HeB map unit in particular is considered a "hydric" soil type.

Other soil types found on the Lee Moore Oil site, according to current Chatham County soils data (USDA-NRCS 2006), ~~the soils mapped on the Lee Moore Oil site~~ include Wedowee (WeD and WdC) and Vance (VaB) sandy loam soils, which are present in the western and southern portions of the site (see Figure 1). Basic descriptions of these soil map units may be found in Appendix 1 attached to this document.

According to USDA-NRCS (2006), the capacity for sewage disposal via septic absorption of the Helena and Vance soils is considered to be "very limited" (Appendix 1); septic absorption on Wedowee is "somewhat limited."

Figure 1. Soils map of proposed County Line Plaza development site on Chatham County/Orange County border. Soil map unit symbols are shown per current Chatham County soils data (USDA-NRCS 2006); see also Appendix 1 for descriptions for soil map units.



The HeB (Helena) soil map unit is considered to be a "hydric" soil type. Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation (see attached table with information on Hydric Soils from USDA-NRCS 2006). It's no surprise, then, that the existing ponds found on the Lee Moore Oil site, as well as the stream that drains the site within hydric soil types.

The proposed County Line Plaza shopping center therefore is proposed for an area with significant land area composed of hydric soils.

The County Line Plaza application shows a drip irrigation wastewater system proposed for Helena soils in the northeastern corner of the property. As I just mentioned, Helena soils have "very limited" capacity for sewage disposal via septic absorption. These soils also have a seasonal high water table within depths of 1.5 to 2.5 feet of the surface, and are considered "hydric soils," which are prone to flooding.

The soils data presented in the application show more refined assessment of the soils present on the site, but still show Helena soils in the northeastern corner of the site where more than 8 acres of wastewater drip irrigation are proposed.

The Detailed Soil/Site Evaluation conducted by Soil & Environmental Consultants (S&EC), included in the application shows a slightly more refined assessment of soils on site in the proposed sewage disposal areas, but still show Helena soils in the northeastern corner of the site where more than 8 acres of wastewater drip irrigation are proposed. The Evaluation specifically states that "areas outside of proposed wetted areas were not evaluated," and notes that changes to the wastewater system proposed were made just prior to the submission of the application. S&EC acknowledges that field verification of soils present on site as well as Ksat analyses

needed to determine application rates, had yet to be done. Based on the outcome of the field verification, S&EC states that "any changes in the application rates will affect the amount of wastewater that can be applied to this site."

Given the lack of details given with regards to the wastewater system proposed, and the last minute changes proposed by the CE Group, the information in the application is not adequate to determine whether or not the proposed system will negatively impact surface and groundwater; therefore there is not sufficient information to support Finding #3. There is also no mention is made as to the status of wastewater system permitting with the DENR, as is required under Finding #5 (see Submission Materials Checklist, pg. 7; see also discussion below under Finding #5).

Hazardous Materials

The Submission Materials Checklist for Conditional Use Permits specifically requires the applicant to identify the types and amounts of chemicals that will be utilized by the requested use, and also asks that the applicant "*identify the potential for discharges or runoff of liquids that would pollute the surface and/or groundwater sources.*"

Submission Materials Checklist, page 6:

7) Chemicals, Biological and Radioactive Agents <Required>. Identify types and amounts of chemicals, explosives, biological and radioactive materials that will be utilized by the requested use. What is the estimated amounts of these agents that will be generated as waste; how will they be disposed? Identify the possible biochemical or radioactive hazards that may be associated with this use; how will these be handled? Identify the potential for emissions into the air. Identify the potential for discharges or runoff of liquids that would pollute the surface and/or groundwater sources.

Though the applicant claims that no tenants have been identified for any of the retail shops or outparcels, other than a home improvement store, some of the supporting documents in the application refer to a 20-pump or 10-pump gas station.

The application fails to identify the potential for discharges or runoff of liquids that would pollute surface and/or groundwater, and fails to address how toxic or hazardous materials will be stored.

The Chatham County Watershed Protection Ordinance (pg 12) prohibits the storage of toxic and hazardous materials within the WS-IV-PA watershed unless a spill containment plan is approved and implemented.

A spill containment plan for the proposed home improvement store and potential gas station should be submitted before approval of the Conditional Use Permit can be given.

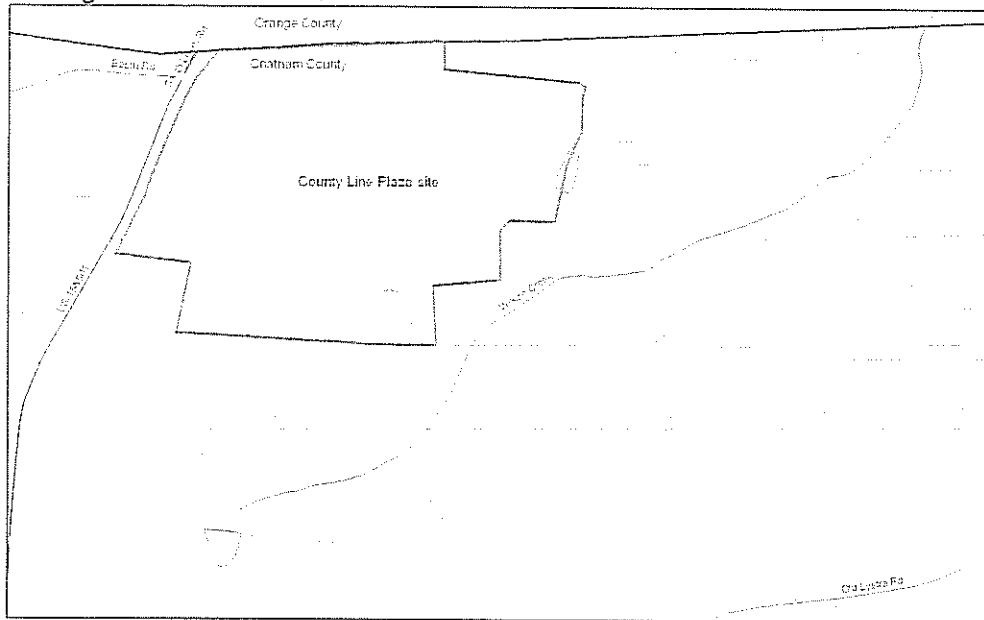
Without identifying potential hazardous materials and showing how potential impacts from hazardous materials will be avoided or mitigated, Finding #3 cannot be met, nor, arguably, can Findings #4 or #5.

Stormwater Management

Polluted storm water runoff is a major contributor to water degradation in North Carolina. Storm water can carry fertilizer, oil, fuels, animal and human waste, metals and other contaminants; this runoff contribute significantly to some of the leading causes for impairments to surface waters.

The entire County Line Plaza site drains to, and forms the headwaters of, Wilson Creek (see Figure 2 below).

Figure 2. Map showing County Line Plaza site draining to, and forming the headwaters of, Wilson Creek within the Morgan Creek watershed.



Wilson Creek drains north to its confluence with Morgan Creek in Orange County, and Morgan Creek then drains to the New Hope Arm of Jordan Lake. Morgan Creek is "impaired" just south of its confluence with Wilson Creek, as is the New Hope Arm of Jordan Lake and the entire Lake itself.

Stormwater is an issue we exceedingly need to address in Chatham County, especially given the land use changes occurring, particularly those that add significantly more impervious surface and potential pollution sources to our watersheds, such as large parking lots and gas stations.

As urbanization occurs, threats to watershed functions increase. Some of those threats include (Tetra Tech 2003):

1. increased stormwater discharges directly to streams, in terms of both volume and velocity;
2. increased overland flow of stormwater;
3. increased pollutant loading in stormwater due to build-up and wash-off, particularly from parking lots;
4. increased stream temperature due to lack of shading and heated stormwater runoff from ponds and impervious areas;
5. reduced groundwater recharge and baseflow due to increased imperviousness (impervious surfaces don't allow water to soak in); and
6. decreased number and diversity of plants and animals due to the lack—or poor quality—of habitat.

A local watershed plan was initiated for the Morgan Creek watershed by the NC Ecosystem Enhancement Program (NC EEP) and published in 2004 by Tetra Tech (see Tetra Tech 2003, 2004a, 2004b). The NC EEP selected the Morgan Creek watershed as a high-priority area for watershed planning due to two primary factors: 1. documented water quality and aquatic habitat problems in selected stream segments, including segments listed on the Clean Water Section 303(d) list of impaired waters; and ongoing threats to local watershed health which may be

attributed to impacts from urban/suburban development, clearing of riparian buffers, and/or other nonpoint sources. As part of the planning process, aquatic and terrestrial habitat assessments were conducted, and risk to the watershed by current and future land uses was evaluated.

From their comprehensive review of the Morgan Creek watershed and all available data, Tetra Tech (2003, 2004a, 2004b) found that the major factors that affect the severity of erosion, stream bank/channel instability, and pollutant loading in this watershed are:

1. rainfall frequency and intensity;
2. slopes;
3. soil structure and type;
4. vegetation; and
5. stormwater management control practices used.

Most of these factors reflect site design or development policy considerations. As land is converted from farms and forest to developed areas, Tetra Tech state that the use of more protective ordinances and performance standards as well as more effective site design (preferably with Low Impact Development techniques) will be needed to protect good quality streams and help mitigate existing impairment in the Morgan Creek watershed.

The importance of stormwater management control practices cannot be underestimated.

Nutrient Pollution

As I previously mentioned, Jordan Lake is "impaired," as is the New Hope Arm of the lake and the segment of Morgan Creek that extends to the lake (NCDWQ 2006). Jordan Lake is also considered a "Nutrient Sensitive Water" because high levels of nutrients are creating an imbalance and stimulating algal blooms in the lake. These blooms can cause dissolved oxygen levels to drop sharply, and may result in fish kills, and taste, odor, and toxin problems in the Lake. These problems, of course, affect our primary drinking water supply.

The NC Department of Environmental and Natural Resources (DENR) is currently developing phosphorus and nitrogen maximums called Total Maximum Daily Loads (TMDLs) for the Upper New Hope Creek arm of Jordan Lake, including the Morgan Creek Local Watershed Plan (LWP) study area (Tetra Tech 2004a). While the exact TMDL is still undecided, all parties have agreed that, at minimum, the total nonpoint source (pollution) loading should be capped at existing levels. Whether this load target or a more stringent load target is adopted, the TMDL will clearly require additional controls on new development and redevelopment. The final TMDL will determine the extent to which local governments must go beyond their existing regulations and Phase II stormwater requirements in reducing phosphorus and nitrogen loads from new development.

Given the impairment of Morgan Creek and Jordan Lake already, and the impact the TMDL regulations will have on development in Chatham in the near future, it's important to be proactive in preventing further damage to the extent we can.

Other Non-source Pollution

In addition to nutrient loading from stormwater runoff from this site, engine oils and gasoline from the parking areas as well as from the potential gas station pose a significant pollution risk to surface and groundwater.

For instance, MTBE (methyl-t-butyl ether), a fuel additive used as an octane enhancer in unleaded gasoline, is one of many chemicals found in road runoff. MTBE has been banned or is being phased out in 16 states as of December 2005 (www.epa.gov/safewater/MTBE). Potential health impacts associated with MTBE include cancer, developmental toxicity, gastrointestinal or liver toxicity, kidney toxicity, neurotoxicity, and skin sensitivity.

The potential for a gas station to become a tenant at one of the outparcels is of particular concern regarding water quality impacts on site and downstream of the site. In addition to chronic small spills that inevitably occur at a gas station, larger spills sometimes take place during the process of fueling vehicles and portable containers. Well designed and operated gas stations incorporate a number of measures to minimize the groundwater contamination risk from routine and accidental spills. However, given the limits of oversight and the state of the art technologies, local officials need to ensure that the appropriate restrictions and oversight are in place on the local level, to the extent that communities want to ensure protection of their groundwater resources. This applies to surface waters too. [Please find attached a fact sheet that can help ensure contamination from gas stations is prevented - NHDES 2006.]

Given the potential for a seasonal high water table on the majority of this site (associated with Helena soils) and the proximity of the parking areas and outparcels (with potential gas station) to the headwater streams of Wilson Creek, it is prudent for the County to consider the potential for groundwater and surface waters from the proposed (and potential) uses seriously.

An additional recommendation regarding hazardous materials, given that a home improvement store is proposed, is that pesticides, herbicides and fertilizers should be kept under shelter to prevent runoff from reaching the stormwater ponds or any groundwater or surface water sources.

Low Impact Development (LID) Stormwater Techniques

The stormwater management approach of placing control features in drainage ways is an antiquated approach and almost certain to create negative water quality impacts. The approach by passes the filtering capability of buffers and concentrates all treatment within a few large features subject to catastrophic failure, high cost and maintenance.

The Low Impact Design Approach to stormwater management (see <http://www.lid-stormwater.net/intro/background.htm>) manages the stormwater on site with full benefit of buffers, is potentially less costly, has less maintenance, and is not subject to catastrophic failure of the retention ponds.

According to the Tetra Tech (2004a) study, the factors that degrade watershed functions in the Morgan Creek watershed are storm flows associated with increasing amounts of imperviousness, excess sedimentation, and excess nutrient loading. Stormwater BMPs that address these factors include stormwater wetlands, pocket wetlands, wet detention ponds, and bioretention. Each of these practices is ideally suited to address a range of contributing watershed areas. Stormwater wetlands are ideal for managing contributing drainage areas between 5 and 75 acres, while pocket wetlands are better suited to contributing drainage areas between 5 and 10 acres. Wet detention ponds, as are proposed for this site, require a minimum drainage area of 25 acres. Bioretention facilities are targeted at watersheds no larger than 5 acres, with a preferred drainage area of 0.5 – 2 acres.

Stormwater wetlands and wet detention ponds remove approximately the same amounts of suspended solids; bioretention removes nearly a third more suspended sediment as compared to either of these BMPs (see table below from Tetra Tech 2004a).

Table 2-2. Practice Specific Parameters for Stormwater BMPs

Parameter	Stormwater Wetlands	Wet Detention Pond	Bioretention
TSS Removal (%)	61	65	87
Fecal Coliform Removal (%)	70	70	No Data
TN Removal (%)	40	25	40
TP Removal (%)	35	40	35
Contributing Drainage Area (acres)	5 - 75	> 25	0.5 - 5
Land Required	High	Medium	Low
Capital Cost (per ft ²)	\$1.50 + \$0.35/plant	\$2 - \$4	\$4 - \$6
Maintenance Burden	Medium	Low	Medium
Aquatic Habitat	High	Medium	Low

While there is considerable overlap in the size of a suitable drainage area for a wet detention pond and that of a stormwater wetland, stormwater wetlands are recommended over wet ponds for all sites in which both would be appropriate (Tetra Tech 2004a). This preference is due to the fact that, due to lesser excavation requirements, stormwater wetlands are cheaper to construct (Tetra Tech 2004a). In addition, once vegetated, they have higher aesthetic value than traditional ponds. Since constructed wetlands, with lower allowable average depths, require more land area to achieve the same storage capacity as a wet pond, wet ponds are recommended when available land is limited.

Three wet detention ponds are proposed to treat stormwater at the County Line Plaza site, but no details (including calculations) for a stormwater plan was provided in the application. According to Tetra Tech (2004a), wet detention ponds alone do not remove nitrogen, phosphorous, or total suspended solids (TSS) in amounts sufficient to prevent pollution loading to Wilson Creek, Morgan Creek, and Jordan Lake.

Impervious Surface

Impervious surfaces cause increases in runoff volume, which can degrade water quality by damaging stream banks, contributing to sediment loads and other pollution, and increasing the stream temperature. In the Morgan Creek watershed, impervious surface is likely to be the major cause of stream degradation (Tetra Tech 2003).

The Wilson Creek subwatershed (LM2) is currently 6% impervious. The Center for Watershed Protection has concluded that streams are more likely to be adversely affected when impervious cover within their watershed reaches 10% or more, and that the level of degradation becomes significantly more likely and tends to be more severe at impervious cover levels of 25% or more (Tetra Tech 2004).

Though the proposed County Line Plaza falls within the 36% maximum impervious surface threshold required in our Watershed Protection Ordinance, the estimated impervious surface proposed (ca. 34%) certainly suggests that the level of degradation to Wilson Creek will be significant if appropriate measures aren't taken to control the quantity and quality of stormwater from the site.

Tetra Tech (2004a) classified the existing conditions of the Wilson Creek subwatershed as being in the early stages of urbanization, and noted that development in the headwaters in particular could increase stormwater runoff that progresses through the majority of the channel length

before joining Morgan Creek. Increases in flow volumes in the headwaters affects all of the receiving downstream channels.

We need to avoid and mitigate impacts to water quality through pollution prevention, and ensure adequate oversight maintenance and oversight of stormwater features.

Lack of Information in Stormwater Management Plan

The information on stormwater management proposed for the County Line Plaza site is insufficient and should be carefully scrutinized to ensure the protection of water quality on site and downstream.

The General Application Requirements defined in the Submission Materials Checklist requires that the applicant describe in sufficient detail the percentage of impervious surface, including a storm drainage management plan for the site.

Submission Materials Checklist, page 2:

- 3) Site Plan and Drawing <Required>. Describe the plans for the site in detail. Provide drawing(s) at an appropriate of the completed project. This information should be of adequate detail (a drawing done by a licensed land surveyor and design details from a licensed architect are **strongly recommended**) to address the following:
- a. existing buildings on site, construction description and size.
 - b. proposed new buildings, location on site, size, construction description in adequate detail to determine the general appearance of the building and to establish the architectural design.
 - c. landscape plan with materials used.
 - d. screening/buffering plan, setbacks.
 - e. natural preserved areas that will remain in this condition.
 - f. site boundaries with adjacent properties.
 - g. parking design.
 - h. sign location, type, size.
 - i. areas reserved for future development or improvements under this permit.
 - j. lighting plan.
 - k. percentage of impervious surface, include storm drainage management plan.
 - l. topographical description/drawing of current site and after improvements have been made to the site.
 - m. designate streams and wetlands and any required water hazard setback areas.
 - n. vicinity map showing property location.

The Submission Materials Checklist also specifically requires details on storm water runoff under the requirements stated for Finding #5, including details on the structures:

Submission Materials Checklist, page 8:

4) Storm Water Runoff >. <Required>. Detail the methods and various structures that will be used to control storm water runoff. This information will detail all points of off site discharge with design techniques used and projected impact on neighboring properties.

Though the applicant states that the project is estimated to have about 34% impervious surface at build out, and shows three wet detention ponds on the map, no stormwater calculations were submitted with the application.

It is also not clear how stormwater will reach these ponds, especially the pond located on the northern boundary of the site, across the creek from the actual impervious surface. Based on the information submitted, it is impossible for the County to determine if the size and location of the stormwater features are adequate, and the projected impact on neighboring properties cannot be determined.

Stormwater quantity and quality need to be addressed in adequate detail before Finding #3 can be made.

Sedimentation and Erosion Control

It is important to note that one source of sediment is land disturbance *during* construction.

As you know, the proposed site is located at the gateway to Chatham from Orange County, and the site is currently predominately forested.

Clearing and grading of more than 30 acres of the site will take place all at once to prepare for building and parking lot footprints. An additional 13.1 acres will need to be cleared and graded to construct the and wastewater drip irrigation. This means that the majority of the site (more than 43 acres) will need to be cleared and/or graded in a fairly short time frame [because stormwater pond calculations were not included in the application, the amount of acreage to be cleared/graded for these ponds cannot be included in this calculation].

As you are surely aware, the Chatham Downs shopping center has experienced tremendous problems with sedimentation during its construction over the last year. The Chatham Downs site is only 20 acres (I believe), but lack of oversight and poor implementation of their plan has resulted in Notices of Violation from the Division of Land Resources for sedimentation, and buildings with cracked foundations are a result of poor construction practices.

While Chatham County's soil and erosion control (S&EC) program has some strong sedimentation and erosion control regulations and the leadership of Holly Coleman and Jim Willis, Chatham faces the challenge of lack of resources for adequate enforcement for the program.

How will sedimentation during construction be dealt with on site? Has an erosion control plan been submitted?

An assessment of impacts to adjoining properties cannot be made without information on erosion control.

Environmental Assessment

The applicant hired Soil & Environmental Consultants (S&EC) to conduct a records review of rare species known to occur within a 3-mile radius, and to determine the likelihood that these species occur within the boundaries of the proposed site.

The Threatened and Endangered Species Report submitted with the application is inadequate to determine whether or not rare species are present on site, and whatever survey was conducted is insufficient to even determine suitable habitat for species.

First, it is unclear exactly what kind of survey was conducted. The T&E Report suggests that Mr. Gainey, Environmental Specialist, walked the site to determine what, if any, suitable habitat exists for rare species known to occur with a 3-mile radius. While Mr. Gainey may have indeed walked the property, it is not at all clear whether he surveyed for suitable habitat and rare species. The T&E Report states that a survey was conducted for suitable habitat from the boundary of the project; it also states that an "intensive survey for suitable habitat" was conducted.

Can the applicant describe the methods used to determine whether or not suitable habitat or rare species exist on site? If suitable habitat was found, was a survey for the species also actually conducted? The T&E Report suggests there was a species survey. What kind of survey was conducted? There is a great deal of conflicting information in that report.

The T&E Report acknowledges that suitable habitat for the Carolina ladle crayfish exists on site, but does not state where it exists.

In the absence of a species-specific survey, a survey of suitable habitat may be sufficient to determine the likelihood of presence of a species (suitable habitat exists for it or it doesn't), but is not sufficient to say that the species is not there.

Second, the T&E Report reveals inconsistent methodology.

The T&E Report also states that suitable habitat for only the Carolina ladle crayfish occurs on site, yet acknowledges the presence of sweet pinesap within the 3-mile radius in the T&E Report. In addition, S&EC acknowledges the presence of four-toed salamander in the 3-mile radius from the project site.

In the Historical and Natural Features Report S&EC submitted for the application, S&EC concluded that both the Carolina ladle crayfish and four-toed salamander occurred within a 3-mile area. Yet in the T&E Report, written the same day and also included in the application, S&EC concluded that only the Carolina ladle crayfish may occur on site. No mention was made about the sweet pinesap that could potentially occur on site, though S&EC mentions it is known to occur approximately 2 miles north of the site. No mention of the four-toed salamander is made in the T&E Report.

Third, the T&E Report does not adequately characterize "suitable habitat" for rare species that could occur there or state where suitable habitat exists on the site.

Given there are headwater wetlands known to occur onsite (as the site drains to form the headwaters of Wilson Creek), suitable habitat for the four-toed salamander is most certainly likely to occur on site. The T&E Report specifically states that no suitable habitat for the four-toed salamander exists on site, despite the fact that headwater seeps must be present on site (given the hydrology map submitted as part of the application).

Finally, it is also worthwhile to mention also that a large portions of the reports for the Belmeade development and the County Line projects were cut and pasted.

I've attached to my comments the two reports that highlight the differing language about what the consultants actually did (survey for suitable habitat from just the boundary? or was it an "intensive" survey of suitable habitat? etc.) and also the portion that was cut and pasted from the Belmeade T&E Report.

Stream and Wetland Buffers

The upper portions of the Wilson Creek subwatershed (LM2), including this site, are relatively undeveloped and preliminary reconnaissance efforts of Tetra Tech (2003) indicate healthy conditions in the upper reaches of this watershed.

The Submission Materials Checklist (pg. 2) requires that the applicant designate streams and wetlands and any required water hazard setback areas.

Though a preliminary wetland delineation was submitted as part of the application, the size of the stream buffers proposed for this site is not mentioned. A narrow buffer is shown along the main stream on site, but its size is not mentioned, nor are buffers shown around existing wetlands on site.

Landscape Plan

Though the map of the Landscape Plan notes that the examples of landscape plant material is not yet determined, I'd like to point out that the Examples given include 2 plant species known to be invasive in North Carolina, and in the Piedmont in particular: Golden Rain Tree (listed as an example of a Medium Canopy Tree), and Japanese Privet (listed as an example of an Evergreen Shrub).

If this project is approved, it is strongly recommended that a condition of approval prohibit plants known to be invasive in the southeastern US and North Carolina from being used for landscape and buffer plantings. (See lists of species at the following websites: NC Botanical Garden <http://ncbg.unc.edu/pages/74/>; NC Native Plant Society <http://www.nowildflower.org/invasives/invasives.htm>.)

Based on the information submitted in the application, Finding #3 cannot be met.

FINDING #4 - The requested permit will be consistent with the objectives of the Land Conservation and Development Plan.

A primary principal of the Land Conservation and Development Plan ("the Plan") is that land development and conservation will reflect balanced growth. Balanced growth means that "*new development is welcome and accommodated, but in ways that ensure that development is guided to appropriate locations and designed appropriately for its setting.*"

There is no doubt that the proposed location is appropriate for commercial development. The question is whether or not the proposed project is designed appropriately.

Major Recommendations of the Land Use Plan (pgs. 3-5) which are applicable to the request for rezoning and a Conditional Use Permit include that the County:

18. Work closely with the state to identify impaired waters and develop and implement strategies for restoring them.

This recommendation supports the use of watershed planning recommendations as outlined in the Morgan Creek Watershed Plan (Tetra Tech 2003, 2004a, 2004b), and emphasizes the importance of stormwater management in preventing further impairment to Morgan Creek and the New Hope Arm of Jordan Lake.

27. Use site-based planning as a means of preserving the precious resources of Chatham County. Require that developers inventory the community resources existing on major proposals including botanical, historical, and water resources.

This recommendation supports the need for an Environmental Assessment to be conducted for this project.

The Plan (~~pg. 35~~) also:

1. Discourages commercial development as strip commercial development along major highways and in environmentally sensitive areas (pg. 35).

2. States that "*the County should require storm water management measures in new development and redevelopment projects in such a manner that will avoid upstream and downstream flooding impacts, and maximize the control and reduction of pollutant runoff. Consideration should be given to requiring a minimum of 100 percent pre-development to post-development control of the runoff peak rate leaving new development sites*" (pg. 44).

3. Calls for the examination of the cumulative effects of development on water quality, for the County to increase the health and safety of water bodies, and recommends that a comprehensive environmental analysis be undertaken before further development is approved in the Protected and Critical watershed areas around Jordan Lake in order to "ensure the long-term quality and availability of groundwater and surface water resources."

The Submission Materials Checklist requires that the applicant provide information that demonstrates how the requested use conforms to the Watershed Protection Ordinance, yet no mention is made in the application about what size buffers are proposed for streams and other wetlands on the site.

Submission Materials Checklist, page 6:

(2) Water shed and flood considerations: <Required>. Provide information that demonstrates how the requested use conforms to the Watershed Protection Ordinance and the Flood Damage Prevention Ordinance.

Based on the information submitted in the application, Finding #4 cannot be met.

FINDING #5 states that qdequate utilities, access roads, drainage, sanitation, and/or other necessary facilities have been or are being provided.

The Submission Materials Checklist specifically requires a wastewater management plan and storm water runoff plan be submitted as part of the application.

Submission Materials Checklist, page 7:

2) Wastewater Management >. <Required>. What is the wastewater capacity needs for this use? Specify the treatment and disposal methods to be used. If individual septic, provide septic improvements permit letter from the Chatham County Health Department. If other than individual septic systems are to be used, submit a plan for wastewater management. If system requires approval from NCDENR. state progress towards getting approval from NCDENR.

Submission Materials Checklist, page 8:

4) Storm Water Runoff >. <Required>. Detail the methods and various structures that will be used to control storm water runoff. This information will detail all points of off site discharge with design techniques used and projected impact on neighboring properties.

Details on the wastewater system given in the application are not adequate to determine whether or not the proposed system will negatively impact surface and groundwater, and no mention is made as to the status of permitting with the DENR (as is specifically required on the Submission Materials Checklist, pg. 7, under finding Finding #5).

As discussed previously under my comments regarding Finding #3 (above), it is not possible to assess whether or not adequate drainage and sanitation facilities are being provided based on the information submitted with the application.

Based on the information submitted in the application, Finding #5 cannot be met.

Specific Recommendations if Request is Approved

Whether this development results in significant degradation of watershed functions will be decided by the rules and regulations of Chatham County (as discussed above), how the development is designed, and the degree to which controls or management measures are required.

If the request for a Conditional Use Permit is approved, the following recommendations should be considered:

1. Require an Environmental Impact Assessment (EIA) be conducted by the applicant with appropriate peer review.

Given the inadequacies of the T&E Report submitted with the application, the likelihood for rare species to be present on site, and the potential impacts to water quality from this project, I urge the Board to request that an Environmental Assessment be done, which would include an identification and evaluation of the suitable habitat present (or rare species present) and potential water quality impacts so that any impacts can appropriately avoided or mitigated.

An Environmental Assessment could also address other potential impacts, including those to air quality (NCDOA 1999).

An Environmental Assessment (EA) is needed to adequately determine what potential impacts there may be to rare species, surface and groundwater; only when the potential impacts are identified can they be avoided or mitigated.

The EA should address direct, indirect, and cumulative impacts [see Environmental Assessment Guidelines attached, and also at <http://www.nccql.net/fap/eaaguide.htm>]. Information addressed in an EA will allow decision makers the data needed to make informed decision and will help draft conditions needed for mitigation of those impacts.

Our Land Conservation and Development Plan supports site-based planning, protection of natural resources, and discourages commercial development in environmentally sensitive areas; and compatibility with this Plan is the basis for Finding #4.

2. Require a minimum 100-foot vegetated stream buffer on all intermittent and perennial streams on site, as well as an adequate vegetated buffer for other wetlands. Ephemeral streams should also be buffered, as they serve as headwater streams and carry surface runoff into surface waters.

Significant and negative consequences can result when headwater streams are lost, and the effects of degradation accumulate; therefore the condition of the stream in the lower reaches is closely dependent on the condition of the headwaters (NC WRC 2002).

Consideration should also be given to including the recommendations by NC Wildlife Resources Commission for mitigating impacts to aquatic and terrestrial resources as conditions of approval. Impacts on rare aquatic species, water quality, and wildlife habitat can all be mitigated by following these buffer recommendations given by NC WRC (2002).

3. Require a minimum 50-foot undisturbed vegetated buffer around the headwaters of all streams on site. An undisturbed vegetated buffer will help ensure impacts to the streams at this location will be minimal.

Stream segments in which riparian buffer vegetation has been subject to significant loss or disturbance have a much higher vulnerability to stream instability. Any buffer that is not

vegetated should be required to be restored with native wetland species prior to construction activities on site.

4. Prohibit plants known to be invasive in the southeastern US and North Carolina from being used for reclamation and for buffer plantings. (See lists of species at the following websites: NC Botanical Garden <http://ncbg.unc.edu/pages/74/>; NC Native Plant Society <http://www.nowildflower.org/invasives/invasives.htm>)

5. Encourage the use of Low-Impact Stormwater (LID) design principles for this project by using a combination of stormwater features, not just wet detention ponds that would cause tremendous downstream flooding and pollution if they fail. No one Best Management Practice (BMP) should receive runoff from such large impervious surfaces.

As noted previously, DENR is currently developing a phosphorus and nitrogen TMDL for the Upper New Hope Creek arm of Jordan Lake, including the LWP study area. While the exact TMDL is still undecided, all parties have agreed that, at minimum, the total nonpoint source loading should be capped at existing levels. Whether this load target or a more stringent load target is adopted, the TMDL will clearly require additional controls on new development and redevelopment.

Tetra Tech recommends that local governments encourage developers to follow low-impact stormwater design principles for high-density and rural, low-density areas. LID design, although it is called innovative, actually combines time-proven site design methods for minimizing stormwater runoff in a way that enhances water quality protection and the aesthetics of the site.

The LID approach offers a wide range of techniques, which can vary depending on the site and its planned use, including:

- Minimizing disturbance to conserve forested or natural areas onsite.
- Designing and using smaller parking lots and parking stalls and shared parking agreements.
- Managing and treating stormwater through the use of conditioned planting soil beds and planting materials (e.g., bioretention cells and wetlands).

One feature of LID is spreading stormwater management techniques, both landscape and engineered, throughout the site to manage stormwater at its source and, wherever possible, linking stormwater BMPs onsite to create a "treatment train." Recent studies have shown that these LID techniques can significantly reduce stormwater volume, sediment, nutrient, and metals loading compared to conventional stormwater management. Depending on the site design and land uses, LID can also decrease the costs of infrastructure and best management practices.

6. Require that the quality and quantity of stormwater leaving the site after development shall be equal to or better than the quality and quantity of stormwater leaving the site before development. To enforce this condition, stormwater monitoring is strongly recommended.

SUMMARY

If the application is approved, I hope the recommendations just mentioned will be strongly considered as conditions to the permit.

However, I believe the application is insufficient to address environmental impacts, especially water quality impacts, and that grounds exist for denial. It seems this application was rushed to meet a deadline; there are numerous examples of information that is lacking. Based on the application presented, Findings #3, 4, and 5 cannot be made.

CONCLUSION

The County Line Plaza application does not present a compelling reason to permit the approval of a Conditional Use Permit, and does not meet Findings # 3, 4 and 5.

Respectfully submitted for your consideration,

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APPENDIX 1

Soils Data for Lee Moore Oil Site at Chatham/Orange County line (USDA-NRCS 2006) Compiled by Allison E. Weakley, Biologist 18 September 2006

SOILS MAP UNIT DESCRIPTIONS (by map unit symbol)

HeB Helena

Map Unit: HeB - Helena sandy loam, 2 to 6 percent slopes

Description Category: SO

These gently sloping, very deep, moderately well drained Helena soils are on uplands. They formed in residuum from felsic crystalline rock. They have a loamy surface layer and a clayey subsoil. Permeability is slow and shrink-swell potential is high. Seasonal high water table is within a depth of 1.5 to 2.5 feet.

HeC Helena

Map Unit: HeC - Helena sandy loam, 6 to 10 percent slopes

Description Category: SO

These sloping, very deep, moderately well drained Helena soils are on uplands. They formed in residuum from felsic crystalline rock. They have a loamy surface layer and a clayey subsoil. Permeability is slow and shrink-swell potential is high. Seasonal high water table is within a depth of 1.5 to 2.5 feet.

VaB Vance

Map Unit: VaB - Vance sandy loam, 2 to 6 percent slopes

Description Category: SO

These gently sloping, very deep, well drained Vance soils are on uplands. They formed in residuum from felsic crystalline rock. They have a loamy surface layer and a clayey subsoil. Permeability is slow. Shrink-swell potential is moderate. Seasonal high water table is below 6.0 feet.

WdC Wedowee

Map Unit: WdC - Wedowee sandy loam, 2 to 15 percent slopes, bouldery

Description Category: SO

These gently sloping to strongly sloping, very deep, well drained Wedowee soils are on uplands. They formed in residuum from felsic crystalline rock. They have a loamy surface layer and a clayey subsoil. There are a significant number of boulders on the surface. Permeability is moderate and shrink-swell potential is low. Seasonal high water table is below 6.0 feet.

WeD Wedowee

Map Unit: WeD - Wedowee sandy loam, 10 to 15 percent slopes

Description Category: SO

These moderately sloping, very deep, well drained Wedowee soils are on uplands. They formed in residuum from felsic crystalline rocks. They have a loamy surface layer and a clayey subsoil. Permeability is moderate. Shrink-swell potential is low. Seasonal high water table is below 6.0 feet.