Dan,
Please post Dr. House's email and the attached documents on the website for the Vickers Village rezoning and First Plat. We received his comments the day of the Planning Board meeting and they were posted online almost immediately after we received them, and he also spoke during the meeting. However, one of the documents has today's date, so I think they need to be online so they're available to the Board of Commissioners in addition to the comments he provided the day of the Planning Board meeting. Thanks

Jason Sullivan
Planning Director
Chatham County
P.O. Box 54
80 East St.
Pittsboro, NC 27312
Office: 919/542-8233
Fax: 919/542-0527

www.chathamcountync.gov/planning

In keeping with the NC Public Records Law, emails, including attachments, may be released to others upon request for inspection and copying.

From: Halford House <halfordhouse7@gmail.com>
Sent: Monday, October 11, 2021 3:39 PM
To: glucier5@gmail.com; jmspoon5@gmail.com; Jason Sullivan <jason.sullivan@chathamcountync.gov>; Dan Lamontagne <dan.lamontagne@chathamcountync.gov>; Hicks, Larry M <hicks@email.unc.edu>
Subject: Vickers Village First Plat

Chatham County Officials:

The included email and attachments were created by Larry Hicks, a former Planning Board member, and chair of the original Land Use Plan Implementation Committee (LUPIC) (which created the framework for the existing Compact Community Ordinance)(CCO) and myself, Dr. House that was primarily tasked with wastewater, stormwater and buffers during the process of the LUPIC/CCO formation.

Please note the attached files that describe our Conditional Use Review for Vickers Village that was not vetted and a letter describing our justifications?

Respectfully,
Dr. Halford House

Chatham County Board of Commissioners
12 East Street
POB 1809
Pittsboro, NC 27312

October 11, 2021

Dear Commissioners:

As an elected leader of Chatham County, you face both an exciting and daunting time for our future. Your decisions, some of which once made may be difficult to retract, are both challenging and far reaching.

My name is Halford House, and I am a 30-year resident of 611 Vickers Road, a lifetime resident of North Carolina. I possess 40 years of professional experience, both in academia and business, in water quality management and protection. I am writing about the upcoming Vickers Village proposal, the first plat of which was recently approved by the Planning Board

I am pleased with the potentials for the development project by the Bennett Vickers Group. But, based on my extensive experience, I fear this project requires a more serious vetting. This is to ensure that the potential dangers of the design and construction are mitigated, before the first shovel of dirt is dug. This is critical to both the wastewater and stormwater containment of the project.

The Application Review process is now engaged in a flurry of review activity that may be causing a lapse in the process. My recent written comments were not directed to the Vickers Village First Plat Review, let alone discussed (I included these in the attachment). The 'public hearing' was essentially dominated by the developer, leaving little time for conversation regarding various concerns. I had less than 3 minutes to offer, let alone discuss, 10 potential conditional use requirements for the project. If not addressed, I am fearful that the county may be subject to future liability. In short, critical concerns were not effectively included in the decision-making process in advancing this project.

I respectively request the opportunity to discuss my proposed Conditional Uses with you, prior to your decision on the Vickers Village First Plat, so the project will receive necessary due diligence. My input is scientific facts, observation, and personal experience.

There is an opportunity to provide a relatively safe development if specific conditions can be met. They are not even being discussed, and that is the danger. Please regard this letter and the attached comments as my desire for a balanced approach to development.

Respectfully,
Dr. Halford House

Cc: Jason Sullivan, Planning Director
Jon Spoon, Chair, Planning Board
George Lucier, Vice Chair, Planning Board
Dan LaMontagne, County Manager

Comments for The Conditional Use of the Vickers Village Proposed Project Provided to the Planning Board

By Dr. Halford House "Hal"

October 5, 2021

I am a 30 year resident of 611 Vickers Road, a lifetime resident of North Carolina with 40 years of professional experience both in academia and business with a focus on "wastewater" management and water quality protection. I am grateful to live in Chatham County and to have had the opportunity to develop wastewater treatment and irrigation strategies during the 1970s that are now in use as alternative to discharge in our surface drinking waters, and to assist in the creation of the state reclaimed water rules as the first water reuse project during the 1990s in North Carolina and located in Chatham County.

The current state and local trends in economic development are short sighted since they are compromising water supply and quality for the short-term benefit of economic gain. Potential responsible business interest and potential future residents will not want to locate in a community that does not have a reliable source of clean water. Chatham County is quickly gaining a reputation for not protecting its citizens and their water supply from irresponsible development practices. Please regard the following comments as a desire for a balanced approach to growth and development?

Based on my professional applied science studies in water quality, soil science, wetland ecology, forestry, conservation, and wildlife biology, I can think of no worse location for a high- density development than a headwater stream with a close connection to our regional water supply! The natural function of the stream of the site is to convey runoff and base flow from up slope to the receiving water body of Jordan Lake.

Therefore, through all phases of this potential project, the existing stream and Jordan Lake will be further polluted. This includes pollution from construction site grading, construction of roads, buildings, ancillary structures and the post construction of wastewater spray irrigation of polluted water, storm-water runoff containing every pollutant known to humankind. These include many of which cause cancer and other disease but are not limited to nitrogen, phosphorous, biologically active compounds, endocrine disruptive compounds and recalcitrant pollutants from petroleum such as Benzene, Toluene, Ethyl benzene, and Xylene (BTEX).

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In addition, the Existing Site Conditions require additional study as a Phase 2 Environmental Assessment due to fill of unknown quality and quantity in the uplands contiguous to the stream, potential destruction of the ephemeral streams, and the prominence of oil, gasoline, and grease spills of unknown characterization both in quality and quantity.

I am impressed with the historical connections to Chatham County of the applicants and their strong sense of place that I can truly relate. It is therefore incumbent upon them as neighbors to protect their fellow citizens from a poorly designed project but also from the potentials for disease related to locations of wastewater infrastructure in close proximity to their future citizens.

I was pleased to be a member of the citizens committee that assisted with the creation of the Compact Community Ordinance (CCO) and realize that the proposed project does include a number of important relevant features such as the following: Village Center, Mixed Use, Green Space, Open Space, Wastewater Treatment Plant (WWTP) Inside the Community, Buffers Requirements and Multi Use Trails (CCO 2004).

With reference to the preceding conditions, I respectfully request that if the applicant has interest in advancing this project that they meet the following Conditions in addition to others that may be presented by other citizens and Chatham County officials:

Conditions Requested:

1. Provide Phased Grading of the Project Site
2. Provide Low Impact Storm-water Design
3. Provide Conservative Design Criteria to Address the Impacts of Climate Change
4. Increase Pervious Space in the Headwaters
5. Manage Storm-water Runoff from the UHAUL Facility
6. Locate Ephemeral Streams and Provide Buffers Based on the CCO Requirements
7. Conduct a Phase 2 Environmental Impact Assessment
8. Mitigate Environmental Impacts Observed in the Phase 2 Assessment
9. Locate WWTP to Prevent Aerosols and Odors from Negatively Impacting Future Residents

From: Halford House <halfordhouse7@gmail.com>
Sent: Tuesday, October 12, 2021 10:27 AM
To: glucier5@gmail.com; jmspoon5@gmail.com; Jason Sullivan <jason.sullivan@chathamcountync.gov>; Dan Lamontagne <dan.lamontagne@chathamcountync.gov>; Hicks, Larry M <hicks@email.unc.edu>
Subject: Vickers Village Posting Error

Chatham County Officials:

I have discovered the likely source of the lack of proper vetting for the Vickers Village First Plat. My comments were **posted incorrectly** under the Zoning Amendment rather than the First Plat and therefore the Planning Board did not receive them in advance as appropriate.

Jason Sullivan was kind enough to post my comments in both places today for your review, however the question of did the full Planning Board have proper access and therefore vetting still remains. My comments are lengthly and detailed since there are many issues with the project. The full Planning Board likely did not have them in advance of my brief summary 3 minute presentation.

For your convenience, I have attached the comments that also contain **Evidence in Support of Conditions**.

Please provide a process that will allow proper vetting of this project?

Dr. House

Comments for The Conditional Use of the Vickers Village Proposed Project Provided to the Planning Board

By Dr. Halford House "Hal"

October 5, 2021

I am a 30-year resident of 611 Vickers Road, a lifetime resident of North Carolina with 40 years of professional experience both in academia and business, with a focus on wastewater management and water quality protection. I am grateful to live in Chatham County.

Throughout my career, I have had the opportunity to develop wastewater treatment and irrigation strategies during the 1970s that are now in use as alternatives to discharge in our surface drinking waters. Plus, I have assisted in the creation of the state reclaimed water rules, as the first North Carolina water reuse project, located in Chatham County, during the 1990s. Furthermore, I was a member of the Land Use Plan Implementation Committee (LUPIC), that created the set of recommendations for the Compact Community Ordinance (CCO).

I realize that the proposed project does include several important relevant features such as a village center, affordable housing (actually within the community), mixed use, green space, open space, wastewater treatment plant (WWTP) within the community, buffering, and multi-use trails.

What brings me great pause and consternation, however, is the impact of the proposed wastewater and storm water designs. Based on my extensive experience in water quality, soil science, wetland ecology, forestry, conservation, and wildlife biology, I can attest that the worse location for a high-density development is at the headwaters of streams closely connected to our regional water supply.

Through all phases of this proposed project there is potential for pollution from construction site grading, construction of roads, buildings, ancillary structures, and the post construction of wastewater spray irrigation of polluted water, and stormwater. These include but are not limited to nitrogen, phosphorous, biologically active compounds, endocrine disruptive compounds, and recalcitrant pollutants from petroleum such as Benzene, Toluene, Ethyl benzene, and Xylene (BTEX).

To mitigate these issues, I strongly suggest the applicant meet the following conditions:

1. Provide and document phased grading of the project site
2. Provide and document low impact storm-water design
3. Increase and document pervious space in the headwaters
4. Manage storm-water runoff from the UHAUL facility (document strategy)
5. Locate and document ephemeral streams and provide buffers, based on the CCO requirements

6. Continue to locate WWTP within the project, but with sufficient distancing from adjacent residential units to prevent aerosols and odors from negatively impacting these residences.
7. Change spray irrigation near dwellings to surface drip irrigation.
8. Provide and document strategies for managing overflow of wastewater storage ponds into the nearby stream.

In addition, on the property there is evidence of a fill of unknown quality and quantity in the uplands contiguous to the stream, potential destruction of the ephemeral streams, and the prominence of oil, gasoline, and grease spills of unknown characterization both in quality and quantity.

9. Conduct a Phase 2 Environmental Impact Assessment
10. Mitigate and document environmental impacts observed in the Phase 2 Assessment

I am impressed with the applicant's historical connections to Chatham, and their strong sense of place. It is therefore incumbent upon them, as neighbors, to protect their fellow citizens from a poorly designed project, and potential disease related pollutants relating to the location of wastewater infrastructure.

The current state and local trends in economic development have been short sighted, compromising water supply and quality for the short-term benefit of economic gain. If this trend continues, responsible business interest and future residents will not want to locate in a community without a reliable source of clean water. Chatham County is quickly gaining a reputation for not protecting its citizens and their water supply from irresponsible development practices. Please regard my comments as a desire for a balanced approach to growth and development.

Thank you.

Evidence in Support of Conditional Use

One primary concern for the viability of this project is that the current application does not include a detailed soils report. The EIA utilizes County Soils Maps that have a scale that is inadequate for site use and a preliminary hydrologic and soils report that do not address the potential complexity of the site.

There is no way to determine if the site can accommodate a wastewater system to support the proposed development although based on Preliminary findings, 40-50,000 gpd is suggested.

Preliminary may be off considerably since the area is very geological complex and variable because inclusions of 3 geological formations come together in the area, Felsic Crystalline, Triassic Basin and Carolina Slate Belt. I live nearby on Vickers Road on land with a little over 2 acres. I have soils derived from slate, granite and a diabase dike.

Since the state now allows applicants to place fill on land that would not otherwise support wastewater irrigation, there are potentials of additional fill placement in areas not designated in the current application noted as "Spray Irrigation Areas". This is particularly relevant for what are the low hydraulic conductivity soils of the Helena Soil Series that are likely extensive on the site.

1) Provide and document phased grading of the project site: The Application EIA suggest Phased Grading based on 20acre phases. The Chatham County Erosion and Sedimentation Ordinance requires Phased Grading based on GIS determined slope ranging from 1 acre of grading for steep slopes; 10 for moderate, and 15 acre maximum for gradual slopes. Minimizing land-disturbing activity will also minimize the runoff of sediments and therefore provide water quality protection to the receiving streams and our regional water supply.

2) Provide and document low impact storm-water design: The CCO encourages LID or low impact storm-water design that is based on maintaining the pre-development hydrology of the site for both rate and volume of runoff. The current storm-water design approach is based on removing runoff from the site at a high rate but does manage the same volume as LID. The high rate runoff will likely create on site erosion and erosion of the receiving stream's banks.

3) Increase and document pervious space in the headwaters: The science of storm water management well documents the relationship between increased impervious space and decrease in water quality of impacted surface waters. Therefore, given that the functional storm-water design space is totally in the headwater up-slopes of the site, a maximum of 24% Impervious Area should be used for calculating the Built Upon Area.

4) Manage storm-water runoff from the UHAUL facility (document strategy): The UHAUL facility upslope of the proposed project was permitted based on the same state regulatory rules as the current applicant is seeking. These rules allow for the inclusion of a non-

contiguous property to be used in the calculations of Impervious Area to meet the Watershed Supply Ordinance. However, state storm-water rules require the management of off site runoff onto the project site although not requiring the use of the runoff contributing property for impervious calculations. Therefore, although the UHAUL project meets state watershed rules, the on site management of storm-water is more challenging due to the functional storm-water runoff space is high density as it is for the proposed Vickers Village project. The UHAUL facility consist of over 10 acres of concrete and metal structures as impervious surface.

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5) Locate and document ephemeral streams and provide buffers, based on the CCO requirements: Ephemeral streams are described within the EIA and Corp of Engineering Report as well as a report by Jim Holland that expires October 18th.

However, Ephemeral streams and their associated buffers are not shown on the Current Site Plan. In addition, the Buffers within the proposed project must comply with the CCO since the NCDEQ Non Discharge Rule buffers are only 25 ft. for all stream designations except SA Waters.

6) Continue to locate WWTP within the project, but with sufficient distancing from adjacent residential units to prevent aerosols and odors from negatively impacting these residences.

7) Change spray irrigation near dwellings to surface drip irrigation: Regardless of good design, installation and Operation and Maintenance, system failures do occur and therefore require a conservative design to protect the Public and Environmental Health.

"Emerging pathogens may exhibit fate and transport characteristics that provide for atypical transmission pathways or higher exposure concentrations than natural transmission sources (e.g., human-to-human transmission, fomite contamination from infected individuals). Given the significant health threat posed by some emerging pathogens (e.g., Ebola virus [EBOV], severe acute respiratory syndrome [SARS]), exposure to emerging pathogens in a wastewater system could result in potentially serious health outcomes" (USEPA 2018).

In a study of downwind drift from a wastewater spray field using ponded chlorinated effluent, "estimated mean bacterial die off was 52% at 21 to 30 m and 77% at 200 m. Median aerodynamic particle size was 2.5 to 2.8 μm, with 66 to 78% of particles between 1 and 5μm, the reported range of efficient pulmonary deposition" (JWPC 1983).

8) Provide and document strategies for managing overflow of wastewater storage ponds into the nearby streams: Maintaining wastewater levels within the two-foot freeboard required by NCDEQ Regulations is a continuing operational and maintenance challenge for Non-Discharge Wastewater Systems. Weather conditions that are other than average prevent irrigation based on design and therefore results in overflow of storage ponds into the surrounding environment. Wastewater Storage Pond design should include engineered structures or substantial buffer space down slope and between receiving stream

environments to minimize adverse water quality impacts due to overflow (Personal Communications).

9) Conduct a Phase 2 Environmental Impact Assessment:

There is evidence of fill of unknown quality and quantity and road construction in the uplands of the proposed site contiguous to the headwater of the stream. This fill may indicate potential destruction of nearby ephemeral streams.
The prominence of oil, gasoline, and grease spills of unknown characterization both in quality and quantity along with the history of long term storage of wrecked vehicles indicate additional site investigations may be necessary as noted in the following narrative.

"Recognized Environmental Conditions (RECs) observed on the subject property included the amount and unknown contents of the multiple above ground fuel tanks, drums, a "tote", and smaller buckets and containers. Much of the liquid products contained in the various containers may be generated in the shop/garage which operates on site such as used oil, used oil filters, solvents, and used anti-freeze. It would take an exceptional effort to not only identify the waste in all of the drums and other containers on site, to clean up the stained soil, and to clean up all of the solid waste on site".

The Vickers Village EIA also notes the presence of petroleum products on the surface but infers that they are not an issue since no ground water wells will be used in the project. This statement does not recognize the potentials for a subsurface petroleum plume that may impact the receiving stream that is down gradient.

"The ASTM standard describes a recognized environmental condition as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property".

The EIA does not note the presence of fill or apparent historical road building.

10) Mitigate and document environmental impacts observed in the Phase 2 Assessment:

"Phase II Environmental Assessments consist of collecting soil samples to screen for chemical or metal contamination. This sampling is conducted by drill rig, hydraulic push, hand auger or backhoe, depending on site conditions. Phase II Environmental reports can also include sampling of groundwater and surface water. The samples are collected and tested according to State and Federal regulations with the samples collected shipped to a state certified laboratory for independent analysis. This testing is recommended when there is a significant potential for the existence of an environmental liability that can affect the value of a property".
Some of the tests that may be performed include:

- Surficial soil and water samples
- subsurface soil borings
- groundwater monitoring well installation, sampling, and analysis
- drum sampling (if any were left on the property)
- sampling of dry wells, floor drains and catch basins
- sampling for hazardous chemicals
- geophysical testing for buried tanks and drums
- testing of underground storage tanks

A Phase II ESA report will describe the investigative activities performed including:

- detailing soil borings performed,
- soil and groundwater analytical results as compared to applicable state standards.

Literature Cited

Journal Water Pollution Control Federation. 1983. Microbiological Aerosols from a Field-Source Wastewater Irrigation System Vol. 55, No. 1 (Jan., 1983), pp. 65-75 (11 pages).

USEPA. 2018. Exposure Pathways to High-Consequence Pathogens in the Wastewater Collection and Treatment Systems.