STATE OF DELAWARE
EXECUTIVE DEPARTMENT
OFFICE OF STATE PLANNING COORDINATION

December 15, 2017

Mr. Ron Sutton, P.E.
Civil Engineering Associates
55 West Main Street
Middletown, DE 19709

RE: PLUS review 2017-11-08; Boxwood

Dear Ron,

Thank you for meeting with State agency planners on November 15, 2017 to discuss the Boxwood project. According to the information received, you are seeking review of a 5 unit subdivision on 1.45 acres along North Ave. in New Castle County.

Please note that changes to the plan, other than those suggested in this letter, could result in additional comments from the State. Additionally, these comments reflect only issues that are the responsibility of the agencies represented at the meeting. **The developers will also need to comply with any Federal, State, and local regulations regarding this property. We also note that as New Castle County has governing authority over this land the developers will need to comply with any and all regulations/restrictions set forth by the County.**

Strategies for State Policies and Spending

- This project is located in Investment Levels 1 according to the *Strategies for State Policies and Spending*. Investment Level 1 reflects areas that are already developed in an urban or suburban fashion, where infrastructure is existing or readily available, and where future redevelopment or infill projects are expected and encouraged by State policy.

Code Requirements/Agency Permitting Requirements

Department of Transportation – Contact Bill Brockenbrough 760-2109

- The site access on North Avenue and the proposed subdivision street must be designed and built in accordance with DelDOT's Development Coordination Manual, which is available at https://www.deldot.gov/Business/subdivisions/index.shtml?dc=changes.

- Section P.5 of the Manual addresses fees that are assessed for the review of development proposals. DelDOT anticipates collecting the Initial Stage Fee when the record plan is submitted for review and the Construction Stage Fee when construction plans are submitted for review.

- Per Section 2.2.2.1 of the Development Coordination Manual, Traffic Impact Studies (TIS) are warranted for developments generating more than 500 vehicle trip ends per day or 50 vehicle trip ends per hour in any hour of the day. The PLUS application states that the proposed development would generate approximately 33 vehicle trip ends per day on weekdays. DelDOT finds that the trip generation would be higher, estimating it at 48 vehicle trip ends per day. Regardless, the development would not meet DelDOT's warrants for a TIS and DelDOT does not require one. DelDOT's understanding of New Castle County's regulations in this regard is that they would not require a TIS either.

- Section 3.2.4.1 of the Manual addresses the placement of right-of-way monuments (markers) along subdivision streets. DelDOT will require that monuments be furnished and placed along the proposed streets in accordance with this section.

- As necessary, in accordance with Section 3.2.5 and Figure 3.2.5-a of the Manual, Section 3.2.4.2 of the Manual addresses the placement of right-of-way monuments (markers) along the road on which a property fronts, in this case North Avenue. Monuments sufficient to re-establish the permanent rights-of-way after the dedication discussed below should be shown on the plan and provided in the field in accordance with this section.

- In accordance with Section 3.2.1 and 3.2.5 of the Manual, DelDOT will require dedication of right-of-way along the site's frontage on North Avenue (New Castle Road 115110). By this regulation, this dedication is to provide a minimum of 25 feet of right-of-way from the right-of-way centerline. The following right-of-way dedication note is required, "**An X-foot wide right-of-way is hereby dedicated to the State of Delaware, as per this plat.**"

- In accordance with Section 3.2.7 of the Manual, DelDOT would be willing to accept a reduced right-of-way for the entrance drive, provided that a permanent easement is provided along both sides of the roadway, extending to the property lines of Tax Parcels 07-042.20-097 and 098, respectively on the south and north sides of the entrance.

- In accordance with Section 3.4.2.1 of the Manual, a Traffic Generation Diagram is required on the Record Plan. See Figure 3.4.2-a for the required format and content.

- In accordance with Section 3.4 of the Manual, a record plan shall be prepared prior to issuing "Letter of No Objection". The following information will be required for the "Letter of No Objection" review:

    - Initial Stage Fee Calculation Form

- Initial Stage Review Fee
- Gate-Keeping Checklist – Site Plan
- Design Checklist - Record Plan
- Sight Distance Spreadsheet
- Owners and Engineers' name and e-mail address
- Record Plan
- Conceptual Entrance Plan
- Submission of the Area-Wide Study Fee (If applicable)

- In accordance with Section 3.8 of the Manual, storm water facilities, excluding filter strips and bioswales, shall be located a minimum of 20 feet from the ultimate State right-of-way along North Avenue and the proposed street.

- Referring to Section 4.3 of the Development Coordination Manual, a subdivision street construction plan shall be prepared prior to issuing subdivision approval. The following information will be required for Construction Plan review:

  - Construction Stage Fee Calculation Form
  - Construction Review Fee
  - Gate-Keeping Checklist – Entrance Plan
  - Design Checklist - Entrance Plan
  - Auxiliary Lane Spreadsheet
  - Entrance Plan
  - Pipe/Angle Spreadsheet (If applicable)
  - SWM Report and Calculations (If applicable)

- In accordance with Section 4.3.2 of the Manual, DelDOT's Standard General Notes should be included on the title sheet of the subdivision street construction plan. They should be included exactly as provided by DelDOT.

- In accordance with Section 5.2.5.6 of the Manual, Turning Movement Diagrams shall be provided to verify vehicles can safely enter and exit the site entrance. As per Section 5.2.3 of the Manual, the entrance shall be designed for the largest vehicle using the entrance.

- In accordance with Section 5.3.1.1 of the Manual, there should be a grass buffer between the back of curb and the sidewalk. A minimum buffer of three feet will be required.

- Section 7.7.2 of the Manual addresses the need to provide 20-foot wide drainage easements for all storm drainage systems, open or closed, that fall outside the existing right-of-way or the drainage/utility easement. In accordance with this section, metes and bounds and total areas need to be shown for any drainage easements. The easements should be shown and noted on the record plan.

Department of Natural Resources and Environmental Control – Contact Michael Tholstrup 735-3352

Executive Summary

Development of this parcel will result in increased impervious surface and new sources of greenhouse gas emissions. Opportunities exist to preserve natural resources while reducing the environmental impact on-site. As discussed at the PLUS meeting, the Department recommends reducing the environmental impact on-site through appropriate consideration of Total Maximum Daily Loads and minimizing impervious cover, to protect natural resources and the overall health of the community. Including waste reduction and resource conservation measures will also improve long term regional sustainability.

The State of Delaware is threatened by climate change and has a goal of reducing greenhouse gas emissions by 30 percent by 2030. Appropriate development that provides access to public transportation, opportunities to walk and bike to shopping and recreation, and that employs energy efficient building standards are among key strategies to meet these goals. DNREC encourages the use of high performance building standards and consideration of alternative energy sources to promote clean sustainable energy and reduce greenhouse gas emissions. This could mean siting the buildings to take advantage of solar and geothermal systems, and/or including infrastructure for electric vehicle charging stations (funding assistance may be found at www.de.gov/cleantransportation). DNREC further recommends an abundant use of native vegetation and shade trees throughout the landscape, as well as green infrastructure, where practicable, to absorb carbon dioxide, protect water quality and provide relief to residents on hot days.

The following pages provide information about applicable regulations and detailed recommendations associated with this project, from various DNREC Divisions. DNREC would like to be a partner in creating appropriate development that protects and highlights the environment as a natural amenity of the landscape. The Department has resources and expertise that are available to help make this a reality, often at no expense to the landowner.

Water Quality: TMDLs

- Total Maximum Daily Loads (TMDLs) for nitrogen, phosphorus, and bacteria have been promulgated through regulation in most of the State of Delaware's water bodies. A TMDL is the maximum level of pollution allowed for a given pollutant below which a "water quality limited waterbody" can assimilate and still meet State water quality standards (e.g., dissolved oxygen, nutrients, and bacteria; *State of Delaware Surface Water Quality Standards, as amended July 11, 2004*) to the extent necessary to support use goals such as, swimming, fishing, drinking water and shell fish harvesting. TMDLs are required by federal law (Section 303(d) of the 1972 Clean Water Act), and the states are charged with developing and implementing specific land use practices that support these goals.

  This project is located in the greater Piedmont drainage area, specifically within the greater Christina River Basin. In the Christina River Basin, post-development nitrogen and phosphorus loading must be capped at the pre-development or baseline loading rate (or a 0

percent post-construction increase in N & P in Delaware's portion of the Christina River Basin) to meet the required TMDL for each nutrient. Moreover, reductions in bacteria that range from 29 percent to 95 percent (High Flow) is also required (depending upon location). The specific required nutrient and bacterial requirements for the various stream segments in the Basin, and background information is outlined in the report entitled "*Christina River Basin High Flow TMDL*" by the EPA. This report can retrieved here: http://www.dnrec.delaware.gov/swc/wa/Pages/WatershedAssessmentTMDLs.aspx

Water Supply

- Should dewatering points be needed during any phase of construction, a dewatering well construction permit must be obtained from the Water Supply Section prior to construction of the well points. In addition, a water allocation permit will be needed if the pumping rate will exceed 50,000 gallons per day at any time during operation.

- All well permit applications must be prepared and signed by licensed water well contractors, and only licensed well drillers may construct the wells. Please factor in the necessary time for processing the well permit applications into the construction schedule. Dewatering well permit applications take approximately four weeks to process, which allows the necessary time for technical review and advertising. Should you have any questions concerning these comments, please contact Rick Rios, at (302) 739-9944.

Sediment and Erosion Control/Stormwater Management.

- A detailed sediment and stormwater plan will be required prior to any land disturbing activity taking place on the site. Contact the reviewing agency to schedule a pre-application meeting to discuss the sediment and erosion control and stormwater management components of the plan. The site topography, soils mapping, pre- and post-development runoff, and proposed method(s) and location(s) of stormwater management should be brought to the meeting for discussion. The plan review and approval as well as construction inspection will be coordinated through the New Castle County Department of Land Use Engineering Section. Contact the Department of Land Use at (302) 395-5470 for details regarding submittal requirements and fees.

Air Quality

- The applicant shall comply with all applicable Delaware air quality regulations. Please note that the following construction-phase regulations in Table 1 – Potential Regulatory Requirements may apply to your project.

Table 2: Potential Regulatory Requirements	
Regulation	**Requirements**
7 DE Admin. Code 1106 - Particulate Emissions from Construction and Materials Handling	• Use dust suppressants and measures to prevent transport of dust off-site from material stockpile, material movement and use of unpaved roads. • Use covers on trucks that transport material to and from site to prevent visible emissions.
7 DE Admin. Code 1144 – Control of Stationary Generator Emissions	• Ensure that emissions of nitrogen oxides (NO_x), non-methane hydrocarbons (NMHC), particulate matter (PM), sulfur dioxide (SO_2), carbon monoxide (CO), and carbon dioxide (CO_2) from emergency generators meet the emissions limits established. (See section 3.2). • Maintain recordkeeping and reporting requirements.
7 DE Admin. Code 1145 – Excessive Idling of Heavy Duty Vehicles	• Restrict idling time for trucks and buses having a gross vehicle weight of over 8,500 pounds to no more than three minutes.

For a complete listing of all Delaware applicable regulations, please look at our website: http://www.awm.delaware.gov/AQM/Pages/AirRegulations.aspx.

Delaware State Fire Marshall's Office – Contact John Rudd 739-4394

At the time of formal submittal, the applicant shall provide; completed application, fee, and three sets of plans depicting the following in accordance with the Delaware State Fire Prevention Regulation:

Fire Protection Water Requirements:

- Where a water distribution system is proposed for single family dwellings it shall be capable of delivering at least 500 gpm for 1-hour duration, at 20-psi residual pressure. Fire hydrants with 1000 feet spacing on centers are required.
- The infrastructure for fire protection water shall be provided, including the size of water mains.

Accessibility:

- All premises which the fire department may be called upon to protect in case of fire, and which are not readily accessible from public roads, shall be provided with suitable gates and access roads, and fire lanes so that all buildings on the premises are accessible to fire apparatus. This means that the access road to the subdivision from North Avenue must be constructed so fire department apparatus may negotiate it.
- Fire department access shall be provided in such a manner so that fire apparatus will be able to locate within 100 ft. of the front door.

- The minimum paved radius of the cul-de-sac shall be 38 feet. The dimensions of the cul-de-sac or turn-around shall be shown on the final plans. Also, please be advised that parking is prohibited in the cul-de-sac or turn around.
- The use of speed bumps or other methods of traffic speed reduction must be in accordance with Department of Transportation requirements.
- The local Fire Chief, prior to any submission to our Agency, shall approve in writing the use of gates that limit fire department access into and out of the development or property.

Required Notes:

- Provide a note on the final plans submitted for review to read " All fire lanes, fire hydrants, and fire department connections shall be marked in accordance with the Delaware State Fire Prevention Regulations"
- Name of Water Supplier
- Proposed Use
- National Fire Protection Association (NFPA) Construction Type
- Maximum Height of Buildings (including number of stories)
- Provide Road Names, even for County Roads

Recommendations/Additional Information

This section includes a list of site specific suggestions that are intended to enhance the project. These suggestions have been generated by the State Agencies based on their expertise and subject area knowledge. **These suggestions do not represent State code requirements.** They are offered here in order to provide proactive ideas to help the applicant enhance the site design, and it is hoped **(but in no way required)** that the applicant will open a dialogue with the relevant agencies to discuss how these suggestions can benefit the project.

Department of Transportation – Contact Bill Brockenbrough 760-2109

- The applicant should expect a requirement that all PLUS and Technical Advisory Committee (TAC) comments be addressed prior to submitting plans for review.

- Please be advised that as of August 1, 2015, all new plan submittals and re-submittals, including major, minor and commercial plans, shall now be uploaded via the PDCA (Planning Development Coordination Application) with any review fee paid online via http://pdca.deldot.gov/Account/Index?ReturnUrl=%2F

- Please be advised that the Standard General Notes have been updated and posted to the DelDOT website. Please begin using the new versions and look for the revision date of October 11, 2017. The notes can be found at http://www.deldot.gov/Business/subdivisions/index.shtml

Department of Natural Resources and Environmental Control – Contact Michael Tholstrup 735-3352

Additional information on TMDLs and water quality

- A Pollution Control Strategy (PCS) to achieve the required TMDL nutrient and bacterial load reduction requirements has been established for the Christina Basin. The web link for the Christina watershed PCS strategies is as follows: http://www.dnrec.delaware.gov/swc/wa/Pages/WatershedManagementPlans.aspx

- In further support of the PCS, the applicant is also strongly urged to reduce nutrient and bacterial pollutants through voluntary commitment to the implementation of the following recommended best management practices:

  - Provide additional native tree, shrub and/or native herbaceous vegetation plantings in areas of open space, wherever possible.

  - Employ green-technology storm water management and a rain gardens, in lieu of open-water management structures, as a best management practice to mitigate or reduce nutrient and bacterial pollutant runoff.

  - Use pervious paving materials instead of conventional paving materials wherever possible, to help reduce the amount of water and pollutant runoff draining to adjoining streams and wetlands in the greater Christina River Basin.

  - Assess nutrient and bacterial pollutant loading at the preliminary project design phase. To this end, the Watershed Assessment Section has developed a methodology known as the "Nutrient Load Assessment protocol." The protocol is a tool used to assess changes in nutrient loading (e.g., nitrogen and phosphorus) resulting from the conversion of individual or combined land parcels to a changed land use; thus providing applicants and governmental entities with quantitative information about the project's impact(s) on baseline water quality. DNREC strongly encourage the applicant/developer use this protocol to help them design and implement the most effective best management practices. Please contact John Martin (Division of Watershed Stewardship) at 302-739-9939 for more information on the protocol.

Additional information on air quality

- New homes may emit, or cause to be emitted, additional air contaminants into Delaware's air, which will negatively impact public health, safety and welfare. Air emissions generated from new homes include emissions from the following activities:

  - Area sources such as painting, maintenance equipment and the use of consumer products like roof coatings and roof primers.
    - The generation of electricity, and
    - All transportation activity.

- Based on the information provided, the three air emissions components (i.e. area, electric power generation, and mobile sources) for the project were quantified. Table 2 represents the potential impact the Boxwood project may have on air quality.

Table 2: Projected Air Quality Emissions for the Boxwood Subdivision

Emissions Attributable to Warrington Subdivision (Tons per Year)	Volatile Organic Compounds (VOC)	Nitrogen Oxides (NOx)	Sulfur Dioxide (SO_2)	Fine Particulate Matter ($PM_{2.5}$)	Carbon Dioxide (CO_2)
Area source emissions	0.2	0.0	0.0	0.0	0.6
Power emissions	*	0.1	0.2	*	31.5
Mobile emissions	0.2	0.2	0.0	0.0	147.8
Total emissions	0.4	0.3	0.2	0.0	179.9

(*) *Indicates data is not available.*

Note that emissions associated with the actual construction of the subdivision, including automobile and truck traffic from working in, or delivering products to the site, as well as site preparation, earth moving activities, road paving and other miscellaneous air emissions, are not reflected in the table above.

- Site/Project-Specific Recommendations:
  - Planting of native shade trees to clean the air of localized pollutants and cut down on residential energy/cooling costs.
  - The use of reclaimed asphalt pavement (RAP), which reduces heat island effects on paved surfaces, reduces landfill waste, is a sustainable pavement and more economically feasible than other pavement types.
  - Use of energy efficient products in construction to lessen the power source emissions of the project and costs.
  - Electric vehicle charging in common areas to facilitate the shift from vehicle-centric travel to other modes.
  - Expansion of the bicycle/pedestrian network through sidewalks and bike lanes which also promote alternative forms of transportation.
  - Beautification and landscaping to generate a context-sensitive design that would blend in well with surrounding land uses while also helping to mitigate the pollution potential of the project.

- Green Streetscape: The implementation of a Green Streetscape is highly encouraged for the subdivision plan. Green streetscapes are key in reducing negative air quality impacts and beautifying existing conditions. Green infrastructure solves many environmental problems while providing a myriad of benefits for the community including the cleaner air, proper management of storm water, safe multi-modal transportation options, beautifying neighborhoods and increasing property values.

- Tree Buffer or Canopy: Some green streetscape elements that the Boxwood subdivision could incorporate are tree buffer or expansion of the City of Wilmington's tree canopy. According to the Delaware Forest Service, in 2014, Wilmington's Urban Tree Canopy was 40.8 percent.

  Native, low VOC emitting trees reduce emissions by trapping dust particles and replenishing oxygen. Every effort should be made to ensure as many existing native trees are preserved as possible. Trees also reduce energy emissions by cooling during the summer and by providing wind breaks in the winter, whereby reducing air conditioning needs by up to 30 percent and saving 20 to 50 percent on fuel costs. All urban trees that are selected should be native to Delaware and preferably low VOC emitting trees. Every tree has a different biogenic emissions rate by which they release VOC's into our atmosphere. VOC's are a component of smog and when mixed with other gases in the atmosphere (nitrogen oxide or NOx) in the presence of sunlight can contribute to air pollution risks. As a general reminder, the best trees to plant are those that have a large leaf surface area at maturity, contain leaf characteristics that are amenable to particle collection from particulate matter (PM) such as those that have hairy or sticky leaves and have high transpiration rates which result in relatively high temperature reduction.

- Energy Efficient Options: Constructing with only energy efficient products can help your facility immensely, not only in terms of environmental sustainability but financially. Energy Star qualified products are up to 30 percent more energy efficient. Savings come from building envelope upgrades, high performance windows, controlled air infiltration, upgraded heating and air conditioning systems, tight duct systems and upgraded water-heating equipment as well as third-party certifications and building materials (i.e. LEED, Greenseal, EcoLogo). Every percentage of energy efficiency translates into a percent reduction in pollution.

  Economic benefits include:
  - Reduced operating costs
  - Enhanced asset value and profits
  - Enhanced occupant comfort and health
  - Improved air, thermal, and acoustic environments

  The Energy Star Program is an excellent way to save on energy costs and reduce air pollution. Providing shade for parking areas can also be of added benefit to this facility. Some approaches may include architectural devices, vegetation, or solar panels. Providing shade for parking areas helps to reduce heat island impacts, and, by extension,

helps to minimize the potential for localized ground-level ozone formation. Such measures can also have the additional benefit of channeling or infiltrating storm water. For more about energy efficient options, please see: https://www.energystar.gov/ or https://www.epa.gov/greeningepa/energy-efficiency-epa.

- Multi-modal travel: A component of improving existing air quality levels is to maximize multi-modal travel through bike lanes, sidewalks and convenient access to transit opportunities. DNREC was pleased to see that existing and proposed sidewalks are featured for the neighborhood. DNREC encourages the developer to include crosswalks and to add sharrows or bike lanes where needed to encourage multi-modal travel opportunities. Sharrows and striping are the easiest and most cost effective option. Multi-modal travel can significantly reduce mobile source emissions. For every vehicle trip that is replaced by the use of a sidewalk or bike path, 7 pounds of VOC and 11.5 pounds of NOx are reduced each year.

  Also, for more information on the impacts of multimodal access on air quality please see the EPA's website at: https://www3.epa.gov/otaq/.

- Electric Vehicle Charging (EVSE) Expansion: The developer is recommended to include electric vehicle supply equipment (ESVE)/ charging where feasible in common areas such as near the front of the building. More information can be viewed here: DE.Gov/cleantransportation

- Development Beautification: The developer is encouraged to beautify the development site with landscaping that would not only make the subdivision more attractive but also help to clean the air of any pollutants that could be emitted or transported by sources around the development area such as pollutants from mobile sources, construction or neighboring activities. This would reduce air quality impacts on residents while also incorporating a context-sensitive design that blends well with the surrounding development and existing land uses.

- The overall project enhancements will create valued upgrades to the existing community and add air quality benefits. Should the developer have any more questions or concerns, the DNREC Division of Air Quality (DAQ) point of contact is Lauren DeVore, and she may be reached at (302) 739-9437 or lauren.devore@state.de.us. The applicant is encouraged to contact DAQ to discuss any emission mitigation measures that will be incorporated into the Boxwood subdivision project. DNREC looks forward to working together with you on this project to achieve our shared air quality goals.

Additional information on recycling and reducing water use

- Materials and resources utilized for new development should be considered, including regionally available recycled content (i.e. carpet, concrete, countertops, furniture, siding, etc.), rapidly renewable material and certified woods.

- Construction Waste Management should include policies which promote efficient material use and recycling of project debris).

- Employ systems and appliances that increase water efficiency and reduce water use.
  - Low-flow and high-efficiency items
  - Waterless urinals
  - graywater recycling systems
  - Rainwater catchment

Delaware State Fire Marshall's Office – Contact John Rudd 739-4394

- Although not a requirement of the State Fire Prevention Regulations, the Office of the State Fire Marshal encourages home builders to consider the benefits of home sprinkler protection in dwellings. The Office of the State Fire Marshal also reminds home builders that they are obligated to comply with requirements of Subchapter III of Chapter 36 of Title 6 of the Delaware Code which can be found at the following website: http://delcode.delaware.gov/title6/c036/sc03/index.shtml

- Preliminary meetings with fire protection specialists are encouraged prior to formal submittal. Please call for appointment. Applications and brochures can be downloaded from our website: www.statefiremarshal.delaware.gov, technical services link, plan review, applications or brochures.

Following receipt of this letter and upon filing of an application with the local jurisdiction, the applicant shall provide to the local jurisdiction and the Office of State Planning Coordination a written response to comments received as a result of the pre-application process, noting whether comments were incorporated into the project design or not and the reason therefore.

Thank you for the opportunity to review this project. If you have any questions, please contact me at 302-739-3090.

Sincerely,

Constance C. Holland, AICP
Director, Office of State Planning Coordination

CC: New Castle County