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June 29, 2017

Office of State Planning Coordination
122 William Penn Street – Suite 302
Dover, DE 19901

Attn: Constance C. Holland, AICP

RE: PLUS review 2017-05-04; Creekridge RPC

Dear Ms. Holland:

Axiom Engineering is in receipt of comments resulting from our May 24, 2017 meeting with State agency planners. Comments received are shown in black, Axiom Engineering's responses are shown underlined and printed in red.

Code Requirements/Agency Permitting Requirements

Department of Transportation – Contact Bill Brockenbrough 760-2109

- The site access on Banks Road (Sussex Road 298) must be designed and built in accordance with DelDOT's Development Coordination Manual (formerly the Standards and Regulations for Subdivision Streets and State Highway Access), which is available at http://www.deldot.gov/information/business/subdivisions/changes/index.shtml.

- 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. DelDOT anticipates that the proposed development would generate 182 vehicle trip ends per day on weekdays (somewhat less than the 200 trips on the PLUS application) and 15 vehicle trip ends during the weekday evening peak hour of Banks Road. Therefore the proposed development does not meet those warrants and a TIS is not required.

Thank you for acknowledging that the project will not require a TIS.

- Per Section 2.3.2 of the Development Coordination Manual, DelDOT may require a Traffic Operational Analysis (TOA) for a development generating 200 or more vehicle trip ends per day if they identify a potential problem in the operation of a site access. Because DelDOT anticipates that the proposed development would generate 182 vehicle trip ends per day on weekdays (somewhat less than the 200 trips on the PLUS application) a TOA will not be required.

Thank you for acknowledging that the project will not require a TOA.

- Pursuant to Section P.3 of the Manual, a Pre-Submittal Meeting is required before plans are submitted for review. The form needed to request the meeting and guidance on what will be covered there and how to prepare for it is located at http://www.deldot.gov/information/business/subdivisions/Meeting_Request_Form.pdf. DelDOT anticipates having more detailed comments to offer at that time.

Acknowledged.

- As necessary, in accordance with Section 3.2.5 and Figure 3.2.5-a of the Manual, DelDOT will require dedication of right-of-way along the site's frontage on Banks Road. By this regulation, this dedication is to provide a minimum of 30 feet of right-of-way from the right-of-way centerline on Banks Road. 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.**"

Based upon out field survey, the the project will require a 5' dedication.

- In accordance with Section 3.2.5.1.2 of the Manual, DelDOT will require the establishment of a 15-foot wide permanent easement across the property frontage on Banks Road. The location of the easement shall be outside the limits of the ultimate right-of-way. The easement area can be used as part of the open space calculation for the site. The following note is required, "**A 15-foot wide permanent easement is hereby established to the State of Delaware, as per this plat.**"

The required permanent easement will be included on the plan.

- As per the Delaware Strategies for State Policies and Spending, this development is primarily in Investment Level 3. Referring to Section 3.5.4.2.A of the Manual, developments in Level 3 and 4 Areas are required to install a sidewalk or Shared Use Path if the project abuts to an existing facility, which this one does not. If the project does not abut to an existing facility, it will be at the Subdivision Engineer's discretion. No fee in lieu of construction will be required. The requirement or lack thereof should be addressed at the Pre-Submittal Meeting mentioned above but it is likely that DelDOT will require a Shared Use Path.

There are no adjacent sidewalks or Shared Use Paths on Banks Road. The applicant requests that this requirement be waived.

- In accordance with Section 3.8 of the Development Coordination 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 Banks Road.

Acknowledged.

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 reduce the environmental impact on-site through appropriate use of pollution control strategies, reduced tree clearing and nature-based infrastructure. DNREC would like to see increased buffers and considerations of the existing flood plain and wellhead protection area. DNREC has outlined a number of best management practices to assist in protecting these resources and the overall health of the community.

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. We encourage 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). It is further recommended that an abundant use of native vegetation and shade trees throughout the landscape, as well as pervious pavement and 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 and TMDLs.

- The project is located in the low nutrient reduction zone of the greater Inland Bays watershed. In this watershed, Total Maximum Daily Load (TMDL) pollutant reduction targets call for a 40 percent reduction in nitrogen and phosphorus from baseline conditions. The TMDL also calls for a 40 percent reduction (17 percent for marine waters) in bacteria from baseline conditions. 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. Please view the following web link for further information on the regulatory requirements and technical analysis involved in the development of the specific TMDLs: http://www.dnrec.delaware.gov/swc/wa/Pages/WatershedAssessmentTMDLs.aspx

- The Inland Bays Pollution Control Strategy (PCS) and the accompanying regulations can be reviewed here: http://regulations.delaware.gov/documents/November2008c.pdf.

Background information about the PCS with guidance documents and mapping tools can be retrieved here:
http://www.dnrec.state.de.us/water2000/Sections/Watershed/ws/ib_pcs.htm

Sussex Conservation District procedures shall be followed in the design of the stormwater management system.

- A nutrient management plan is required under the *Delaware Nutrient Management Law* (*3 Del.C., Chapter 22*) for all persons or entities who apply nutrients to lands or areas of open space in excess of 10 acres. This project's open space may exceed this 10-acre threshold. Please contact the Delaware Nutrient Management Program at (302) 739-4811 for further information concerning compliance requirements, or, view additional information here: http://dda.delaware.gov/nutrients/index.shtml

The project will not have nutrients applied to 10 acres of open space, no Nutrient Management plan is required.

Flood Management

- The topography on the site plan shows one lot fully below elevation 6 as well as portions of several other lots. This lot is not designated in the floodplain per FEMA's effective floodplain boundary. Sussex County's floodplain ordinance does require land below the base flood elevation to be permitted as if it were in the floodplain. Any development that occurs on land below the base flood elevation would have to meet the County's floodplain regulations. DNREC We discourage filling these naturally occurring flood fringe areas as it has the unintended consequence of pushing floodwater somewhere else and adversely effecting adjacent property. DNREC encourages leaving the low lying areas undeveloped so flood water has a place to go and doesn't put structures and the public at risk.

Construction below the base flood elevation shall be completed in accordance with Sussex County Floodplain Ordinances and the requirements of the Federal Emergency Management Agency.

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 typically take four weeks to process, which allows the necessary time for technical review and advertising.

- A Potential Contamination Source exists in the area, and any well permit applications will undergo a detailed review that may increase turnaround time and may require site specific conditions/recommendations.

    - Baywood Spray Irrigation located within 1000 feet of the proposed project

The developer intends to connect to central water from Tidewater Utilities. It is not anticipated that any wells will be required on the project site.

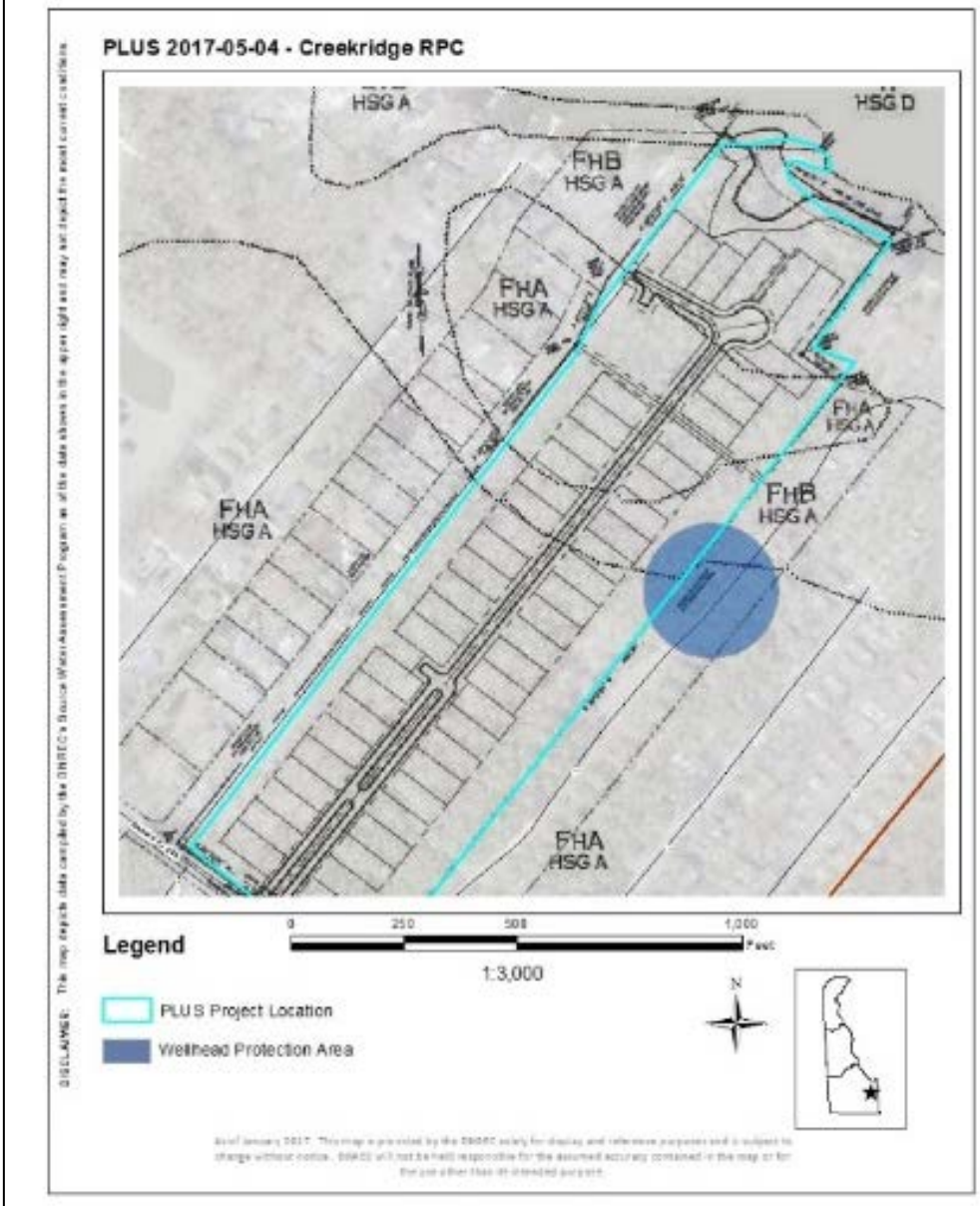
Source Water Protection

- DNREC has determined that the project falls partially within a wellhead protection area for Sussex County (see map). The wellhead protection area protects a well owned by Shawn's Hideaway.

- Wellhead protection areas are surface and subsurface areas surrounding a public water supply well where land use activities or impervious cover may adversely affect the quantity and quality of ground water moving toward such wells.

    - DNREC appreciates the developer's efforts to not develop within the wellhead.

The applicant appreciates DNREC's acknowledgement that the project has been proposed with no impact to the wellhead protection area.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HSG A
HSG D
FhB
HSG A
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250
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Legend
PLUS Project Location
Wellhead Protection Area
N

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 Sussex Conservation District. Contact the Sussex Conservation District at (302) 856-7219 for details regarding submittal requirements and fees.

Acknowledged.

Air Quality

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

Table 1: 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 1113 – Open Burning	• Prohibit open burns statewide during the Ozone Season from May 1-Sept. 30 each year. • Prohibit the burning of land clearing debris. • Prohibit the burning of trash or building materials/debris.
7 DE Admin. Code 1135 – Conformity of General Federal Actions to the State Implementation Plan	• Require, for any "federal action," a conformity determination for each pollutant where the total of direct and indirect emissions would equal or exceed any of the de minimus levels (See Section 3.2.1)
7 DE Admin. Code 1141 – Limiting Emissions of Volatile Organic Compounds from Consumer and	• Use structural/ paint coatings that are low in Volatile Organic Compounds. • Use covers on paint containers when paint containers are not in use.

Commercial Products	
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.

Acknowledged.

Tank Management

- If a release of a Regulated Substance occurs at the proposed project site, compliance of *7 Del.C., Chapter 60*; *7 Del.C., Chapter 74* and *DE Admin. Code 1351*, State of Delaware Regulations Governing Underground Storage Tank Systems (the UST Regulations) is required.

- Per the UST Regulations: Part E, § 1. Reporting Requirements: Any indication of a Release of a Regulated Substance that is discovered by any Person, including but not limited to environmental consultants, contractors, utility companies, financial institutions, real estate transfer companies, UST Owners or Operators, or Responsible Parties shall be reported within 24 hours to:

    - The Department's 24-hour Release Hot Line (800) 662-8802; and

    - The DNREC Tank Management Section (302) 395-2500.

- If any aboveground storage tanks (ASTs) less than 12,500 gallons are installed, they must be registered with the TMS. If any ASTs greater than 12,500 gallons are installed, they are also subject to installation approval by the DNREC Tank Management Section.

- For more information, go to: http://www.dnrec.delaware.gov/tanks/Pages/default.aspx or contact Ross D. Elliott with further questions at (302) 395-2500, or *Ross.Elliott@state.de.us*

State Historic Preservation Office – Contact Terrence Burns 736-7404

- There is no known archaeological site or National Register listed property, on this parcel. However, the developer should be aware of the Unmarked Human Burials and Human Skeletal Remains Law.

Abandoned or unmarked family cemeteries are very common in the State of Delaware. They are usually in rural or open space areas, and sometimes near or within the boundary of an historic farm site. Even a marked cemetery can frequently have unmarked graves or burials outside of the known boundary line or limit. Disturbing unmarked graves or burials triggers the Delaware's Unmarked Human Burials and Human Skeletal Remains Law (Del. C. Title 7, Ch. 54), and such remains or discoveries can result in substantial delays while the procedures required under this law are carried out. If there is a discovery of any unmarked graves, burials or a cemetery, it is very costly to have them archaeologically excavated and the burials moved. The Division of Historical & Cultural Affairs recommends that owners and/or developers have a qualified archaeological consultant investigate their project area, to the full extent, to see if there is any unmarked cemetery, graves, or burial sites. In the event of such a discovery, the Division of Historical & Cultural Affairs also recommends that the plans be re-drawn to leave the full extent of the cemeteries or any burials on its own parcel or in the open space area of the development, with the responsibility for its maintenance lying with the landowner association or development. If you would like to see more information, please review the following websites: www.history.delaware.gov/preservation/umhr.shtml and www.history.delaware.gov/preservation/cemeteries.shtml.

Therefore, prior to any demolition or ground-disturbing activities, the developer should hire an archaeological consultant, to examine the parcel for archaeological resources and plan to avoid those sites or areas.

- If there is federal involvement, in the form of licenses, permits, or funds, the federal agency, often through its client, is responsible for complying with Section 106 of the National Historic Preservation Act (36 CFR 800) and must consider their project's effects on any known or potential cultural or historic resources. Owners and developers who may plan to apply for an Army Corps of Engineers permit or for federal funding, such as HUD or USDA grants, should be aware of the National Historic Preservation Act of 1966 (as amended). Regulations promulgated for Section 106 of this Act stipulate that no ground-disturbing or demolition activities should take place before the Corps or other involved federal agency determines the area of potential effect of the project undertaking. These stipulations are in place to allow for comment from the public, the Delaware State Historic Preservation Office, and the Advisory Council for Historic Preservation about the project's effects on historic properties. Furthermore, any preconstruction activities without adherence to these stipulations may jeopardize the issuance of any permit or funds. If you need further information or additional details pertaining to the Section 106 process and the Advisory Council's role, please review the Advisory Council's website at the following: www.achp.gov.

Acknowledged.

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.

Acknowledged.

- **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 Banks Road must be constructed so fire department apparatus may negotiate it. If a "center island" is placed at an entrance into the subdivision, it shall be arranged in such a manner that it will not adversely affect quick and unimpeded travel of fire apparatus into the subdivision.

What design vehicle is required to maneuver past the proposed entrance island?

  - 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 lots have a 30' front yard setback.

  - Any dead end road more than 300 feet in length shall be provided with a turn-around or cul-de-sac arranged such that fire apparatus will be able to turn around by making not more than one backing maneuver. 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 plan includes the required turn around. The cul-de-sac shown on sheet CZ-2 meets the required radius.

  - 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.

Gates and speed bumps are not anticipated for the project.

- **Gas Piping and System Information:**
  - Provide type of fuel proposed, and show locations of bulk containers on plan.

- **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
  - Townhouse 2-hr separation wall details shall be shown on site plans
  - Maximum Height of Buildings (including number of stories)
  - Provide Road Names, even for County Roads

Acknowledged.

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 the 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 credit card or electronic check. Guidance on how to do this is available on our website at http://www.deldot.gov/information/business/subdivisions/

- 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 July 20, 2016. The notes can be found at http://www.deldot.gov/information/business/subdivisions/Sheet_Notes.doc?073116

Acknowledged.

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

Flooding and Sea Level Rise

- The planned development lies within an area that will be subject to direct and permanent inundation from sea level rise (http://de.gov/slrmap).

Sea levels in Delaware have risen by about a foot over the past
by sea level rise of 1.5 meters. In the short-term, sea level rise on this parcel, combined with periodic coastal flooding events, may result in repetitive flood damage to roads and significant difficulties maintaining storm water, drainage and other infrastructure. In the long-term, this increased flood and inundation risk could result in costly public and private flood abatement and drainage projects and an eventual abandonment of structures.

- Lots within flood prone areas should be eliminated.
- Any structures that are built within an area mapped as both floodplain and sea level rise zone should be constructed with 18 inches of freeboard plus additional freeboard to accommodate future sea levels.
- Access roads should be designed to be flood resilient for the entirety of your project's design life span. This includes ensuring that the roadway functions for the 1% chance flood plus anticipated future sea level rise.[1]

Acknowledged.

Fish and Wildlife

- This project would require the removal of more than half of the forest within the parcel. DNREC strongly recommends that the site plan be reconfigured in order to minimize the amount of tree clearing necessary. DNREC recommends a 100-foot buffer be left between the development and Hopkins Prong. This buffer should not be a maintained lawn area, and should not contain lot lines or infrastructure. It is also recommended that the buffer area be comprised of the existing vegetation or planted with Delaware native species of trees, shrubs, grasses or wildflowers.

Acknowledged.

Request for Site Survey

- Additionally, in order to provide more informed comments, DNREC requests the opportunity to conduct a survey to evaluate habitat and determine the potential for species of conservation concern. Please note that DNREC scientists have extensive knowledge of the flora and fauna of the state. The survey will be conducted at no expense to the landowner. In the event that authorizations will be needed from DNREC's Coastal Management Program and/or Wetlands and Subaqueous Lands Section, they will require complete and up to date info from the Wildlife Species and Conservation Research Program as part of their review. Therefore, allowing access to the site will increase the efficiency of the State authorization process.

Please contact Kate Fleming at (302) 735-8658 or Kate.Fleming@state.de.us to schedule the site visit.

Acknowledged.

Recycling

- Though it may not be the case here, some residents have expressed concerns about the storage of trash and recycling containers in high density communities. Those involved with the planning of new facilities should give consideration to space for collection of recyclables. The Universal Recycling Law (7 *Del.C.*, §6053) requires all waste service providers to provide recycling collection to their residential customers including providing a recycling cart. For more information or assistance related to recycling requirements, benefits, tools, and assistance, please contact Bill Miller at (302) 739-9403 or bill.miller@state.de.us.

Acknowledged.

Additional information on TMDLs and water quality

- Compliance with the specified TMDL nutrient and bacterial reduction requirements specified for the Inland Bays watershed can be facilitated by adherence to the strategies and requirements described in the Inland Bays PCS, and the implementation of the following recommended BMPs, which would:

    - Preserve and/or maintain as much of the existing forested area as possible. Given the environmental sensitivity (e.g., water quality and wildlife habitat) of the greater Inland Bays watershed, the Division of Watershed Stewardship strongly opposes the applicant's apparent plan to remove most of the existing forestland in this parcel to accommodate this development. DNREC believes that the developer should scale-back the extent of this development and make greater effort to retain/preserve more of the existing forestland than they have currently proposed. Moreover we further suggest additional native tree, shrub and/or native herbaceous vegetation plantings in areas of open space, wherever possible. Additionally, removing forest cover (which appears to be the applicant's intent) to accommodate a stormwater management pond is not considered an environmentally acceptable practice and should be avoided.

    - Conduct a United States Army Corps of Engineers (USACE) approved wetlands delineation by contacting a qualified soils scientist (Delaware licensed Class D soil scientist) to map the soils in this parcel. DNREC strongly discourages building on hydric soils as these soils provide benefits for water quality and flood protection. A list of qualified soil scientists can be obtained from Ground Water Discharges branch; the GWDB can be reached by phone at 739-9947. Also, please contact the Subaqueous Land section to schedule an evaluation/delineation of the tidal wetlands in this

parcel. The Subaqueous Lands section can be reached by phone at (302) 739-9378.

- Maintain a vegetated buffer of at least 100 feet from the adjoining wetlands and waterbodies. Based on a review of existing buffer research by Castelle et al. (Castelle, A. J., A. W. Johnson and C. Conolly. 1994. Wetland and Stream Buffer Requirements – A Review. J. Environ. Qual. 23: 878-882.), an adequately-sized buffer that effectively protects wetlands and streams, in most circumstances, is about 100 feet in width. In recognition of this research and the need to protect water quality, the Watershed Assessment Section recommends that the applicant maintain/establish this aforementioned 100-foot buffer width (planted in native vegetation) from all waterbodies (including ponds & hydric soils) and all non-tidal and tidal wetlands (i.e., a USACE approved field wetlands delineation for non-tidal wetlands and State approved wetlands delineation for tidal wetlands). According to information presented in the PLUS application, the applicant does not intend to maintain a buffer from the adjoining wetlands and waterbody. Not maintaining a vegetated buffer is considered an environmentally unacceptable best management practice. DNEC strongly urges the applicant reconsider their project design with the above-mentioned recommended 100-foot buffer width

Acknowledged.

- Also, based on information presented in the PLUS application, a wetland delineation was conducted but not submitted to the State for review. The wetland delineation was also not approved by the USACE as per our recommendation.

  - Employ green-technology storm water management such as rain gardens or rainwater catchment systems as best management practices to mitigate or reduce nutrient and bacterial pollutant runoff. We strongly discourage the construction of open-water stormwater management structures, as currently proposed.

  - Use pervious paving materials, when compatible or consistent with water quality concerns in areas designated as locations of excellent recharge (e.g., well head protection areas), as determined/assessed by a DNREC hydrogeologist, instead of conventional paving materials to help reduce the amount of water and pollutant runoff draining to adjoining streams and wetlands. Pervious pavers are especially recommended for the large area designated for parking in this project.

  - 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 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.

Table 2: Projected Air Quality Emissions for the Creekridge RPC

Emissions Attributable to Creekridge RPC (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	1.7	0.2	0.2	0.2	6.8
Power emissions	*	0.7	2.3	*	339.9
Mobile emissions	2.5	2.6	0.1	0.0	1,596.0
Total emissions	4.2	3.5	2.6	0.2	1,942.7

We strongly encourage the applicant/developer use this protocol to design and implement the most effective best management practices. Please contact John Martin of the Division of Watershed Stewardship for more information on the protocol, at (302) 739-9939.

Acknowledged.

Additional information on tank management

- When contamination is encountered, PVC pipe materials should be replaced with ductile steel and nitrile rubber gaskets in the contaminated areas.

Acknowledged.

Additional information on air quality

- Based on the information provided, the three air emissions components (i.e., area, electric power generation, and mobile sources) were quantified. Table 2 – Projected Air Quality Emissions represents the potential impact the Creekridge RPC development may have on air quality.

**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.

- New developments may emit, or cause to be emitted, additional air contaminants into Delaware's air, which will negatively impact public health, safety and welfare. These negative impacts are attributable to:
    - Emissions that form ozone and fine particulate matter;
    - The emission of greenhouse gases which are associated with climate change, and
    - The emission of air toxics.

- Site-specific recommendations for this project:
    - Inclusion of bike racks in common areas and expansion of the bicycle/pedestrian network through sidewalks and bike lanes which also promote alternative forms of transportation. There are no identified bike paths or sidewalks in the proposed plan.
    - Planting of native shade trees to clean the air of localized pollutants and cut down on energy/cooling costs.
    - Work with Delaware Transit Corp to include more convenient transit access to this development.
    - The use of Recycled Content Materials (carpet, concrete, countertops, furniture, siding, of reclaimed asphalt pavement, etc.) which reduces landfill waste, is sustainable and more economically

feasible than other material types. Sustainable pavements (or cool pavement choices with higher albedo) reflect 40 percent more sunlight than warm pavements which only reflect 10 percent.

- Use of energy efficient products in construction to lessen the power source emissions of the project and costs.
- Take advantage of compact building design to preserve open space. Open space protects animals and plants and conserves their habitat as well as moderates temperatures and combats air pollution.
- At least two parking spaces in common areas dedicated to alternative fueled vehicle (electric vehicle (EV), hybrid electric vehicle (HEV), low emission vehicle (LEV)) use and charging.

Acknowledged.

- Native Delaware Tree Plantings: 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.
- Native trees reduce emissions by trapping dust particles and replenishing oxygen. Every effort should be made to ensure as many original 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. White pines, Heritage River Birch, and American Beech fall within these categories and contain these characteristics and are mentioned in the landscaping plan.

Acknowledged.

- Energy Efficiency: Constructing with only energy efficient products can help your housing units 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. Every percentage of energy efficiency translates into a percent reduction in pollution. 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.

- Clean Fuel Measures: This measure helps to reduce localized air pollution by supporting the use of clean diesel powered vehicles and charging infrastructure. It would be ideal to include at least one charging station in common areas. Vehicle charging should also be an option included in the homes for accommodation of those with electric vehicles (EVs) and could be marketed as a unique selling feature. For a site map of local alternative fueling sites, please visit the Alternative Fuels Data Center website here: http://www.afdc.energy.gov/locator/stations/.

- 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. No bike paths or sidewalks were included in the development plan. DNREC encourages the developer to improve its existing sidewalks and 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.

- Transit is also an important component of multimodal travel opportunities. GIS evaluation of the area has concluded that the nearest transit stop/facility is located to the west at the intersection of Delaware Route 24 and Holly Lake Road (Bus Route 215). It is suggested that more transit opportunities be made for local residents in the Bank Road area. For more information on DART Bus Routes in your area, please visit www.dartfirststate.com. Also, for more information on the impacts of multimodal access on air quality please see the EPA's website: https://www3.epa.gov/otaq/.

- 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 the emission mitigation measures that will be incorporated into the Creekridge RPC subdivision project. We look forward to working together with you on this project to achieve our shared air quality goals.

Acknowledged.

Soils Assessment

- Based on soils survey mapping update, Fort Mott-Henlopen complex (FhA & FhB) is the primary soil mapping units mapped in the immediate vicinity of the proposed project. Fort Mott-Henlopen complex is a well-drained soil mapping unit that is considered to have few to moderate limitations for development (Figure 1).

Acknowledged.

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.

Acknowledged.

Sussex County Housing Coordinator & Fair Housing Compliance Officer – Contact Brandy Nauman 855-7777

- Sussex County endeavors to promote non-discrimination and affordable housing whenever possible throughout the County. In this regard, the developer and associated financial institutions are encouraged to provide and finance affordable housing opportunities to Sussex County residents in all new developments, and affirmatively market those affordable housing units to diverse populations.

- For questions about opportunities available for affordable housing projects within Sussex County, please consult Sussex County's "Affordable Housing Support Policy". The policy along with other resources are available on the County's Affordable & Fair Housing Resource Center website: www.sussexcountyde.gov/affordable-and-fair-housing-resource-center. The County's Community Development & Housing Department can advise about existing affordable housing opportunities in Sussex County and the appropriate

County Department to contact regarding specific development issues concerning future affordable housing projects within Sussex County.

- The Community Development & Housing Department can also explain and assist with any financial support or incentives that may be available to a project from federal, state and county sources, as well as private funding sources that also promote affordable housing in Sussex County.

- Please understand that all residential projects, including Affordable Housing Projects are subject to the applicable provisions of the Sussex County Subdivision and Zoning Codes, and the approval processes set forth in those Codes.

Acknowledged.

If there are any questions regarding the attached, do not hesitate to contact me at the above number or by e-mail: ken@axeng.com

Sincerely,

Kenneth R. Christenbury, P.E.
President, Axiom Engineering, LLC