



STATE OF DELAWARE  
EXECUTIVE DEPARTMENT  
OFFICE OF MANAGEMENT AND BUDGET  
STATE PLANNING COORDINATION

January 29, 2007

Mr. Tim Anderson  
Karins & Associates  
17 Polly Drummond Center, Ste. 201  
Newark, DE 19711

RE: PLUS review – PLUS 2006-12-01; Riviera Glen

Dear Mr. Anderson:

Thank you for meeting with State agency planners on January 3, 2007 to discuss the proposed plans for the Riviera Glen project to be located at 2110 Andrews Lake Road near Felton.

According to the information received, you are seeking site plan approval for 65 residential units on 37 acres.

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 Kent County is the governing authority over this land, the developers will need to comply with any and all regulations/restrictions set forth by the County.

**Executive Summary**

The following section includes some site specific highlights from the agency comments found in this letter. This summary is provided for your convenience and reference. The full text of this letter represents the official state response to this project. *Our office*

*notes that the applicants are responsible for reading and responding to this letter and all comments contained within it in their entirety.*

### **State Strategies/Project Location**

- This project is located in Investment Level 2 according to the *Strategies for State Policies and Spending*. This site is also located in the Kent County Growth Zone. Investment Level 2 reflects areas where growth is anticipated by local, county, and State plans in the near term future. State investments will support growth in these areas. Our office has no objections to the proposed development of this project in accordance with the relevant County codes and ordinances. We encourage you to design the site with respect for the environmental features which are present. It is strongly recommended that the applicant address the environmental comments from DNREC contained within this letter.

### **Street Design and Transportation**

- Andrews Lake Road is a local road. DelDOT's policy is to require dedication of sufficient land to provide a minimum right-of-way width of 30 feet from the centerline on local roads. Therefore they will require right-of-way dedication along the frontage to provide any additional width needed from this project.
- The plan should provide a 15-foot wide permanent easement across the frontage of the site for a future 10' wide shared use path.
- The site design should include stub streets to the adjacent lands of UPFRONT Enterprises (proposed Brekenridge and Braewynd subdivisions).
- The site design should include an easement such that the driveways from the Patsy Mitchell and John Fulcher parcels (Tax Parcels SM-00-129.00-02-28.01-00001 and SM-00-129.00-02-28.02-00001) can be tied into the subdivision street if those parcels are ever redeveloped.
- DelDOT may require road improvements across the site's frontage. Local roads require 11-foot wide travel lanes and 5-foot wide shoulders at a minimum. An overlay of the existing roadway may be required. This will be determined during the plan development process.
- The developer will be required to enter into an agreement with DelDOT to participate in funding the construction of a single-lane roundabout at the

intersection of Midstate Road (Delaware Route 12 and Kent Road 34) and Canterbury Road.

### **Natural and Cultural Resources**

- The developers of Braewynd, Brekenridge, Branchside (all three projects involve the same developer), and Riviera Glen are proposing a total of 512 units on 259 contiguous acres. DNREC strongly recommends that the developers consider a “master plan” for the area that would address such issues as open space, stormwater management, recreation, and natural resources on a more regional scale, as opposed to designing each subdivision as a stand-alone project. All of these projects are proposing disturbance within 100 feet of tributaries that flow into the publicly-owned Andrews Lake. Cumulatively, 28.93 acres of forest are being either converted into a ‘residential woods’ or fragmented by these projects.
- Vegetated buffers of no less than 100 feet should be employed from the edge of the wetland complex. The developer should note that both DNREC and Army Corps of Engineers discourage allowing lot lines to contain wetlands to minimize potential cumulative impacts resulting from unauthorized and/or illegal activities and disturbances that can be caused by homeowners.
- Headwater riparian wetlands are important for the protection of water quality and the maintenance/integrity of the ecological functions throughout the length of the stream, including the floodplain system and/or water bodies further downstream. Since such streams are a major avenue for nutrient-laden stormwater and sediment runoff their protection deserves the highest priority. In recognition of this concern, the Watershed Assessment Section strongly recommends the applicant preserve the as much of the existing forested buffer as possible. Otherwise, an upland buffer width of at least 100-foot is the recommended minimum.
- The Water Supply Section has determined that the project falls entirely within an excellent ground-water recharge area for Kent County (see following map and attached map). The site plans show storm water management ponds in the area of excellent recharge. The Water Supply Section recommends that the portion of the new development within the excellent ground-water recharge area not exceed 20% impervious cover (DNREC, 2005). The purpose of an impervious cover threshold is to minimize loss of recharge (and associated increases in storm water) and protect the quality and quantity of ground water and surface water supplies.

- DNREC has never surveyed this site, therefore, it is unknown if there are state-rare or federally listed plants, animals or natural communities at or adjacent to this project site. They do have records of a state-rare fish species, *Enneacanthus chaetodon* (blackbanded sunfish) in Andrews Lake, therefore, run-off from this development could impact water quality within the lake if an adequate (at least 100 feet) buffer is not maintained along the tributary that flows into the Lake. According to the site plan there is a stormwater management pond, several lots and a road crossing within 100 feet and we highly recommend that these lots and pond be pulled out of this important buffer zone.
- The applicant indicated that approximately 5.3 out of 11.1 acres of trees would be removed by this project, however, the site plan indicates a higher level of forest removal.
- Lot lines should be redesigned to avoid all impacts to the forested area.

The following are a complete list of comments received by State agencies:

**Office of State Planning Coordination – Contact: David Edgell 739-3090**

This project is located in Investment Level 2 according to the *Strategies for State Policies and Spending*. This site is also located in the Kent County Growth Zone. Investment Level 2 reflects areas where growth is anticipated by local, county, and State plans in the near term future. State investments will support growth in these areas. Our office has no objections to the proposed development of this project in accordance with the relevant County codes and ordinances. We encourage you to design the site with respect for the environmental features which are present. It is strongly recommended that the applicant address the environmental comments from DNREC contained within this letter.

This project is one of four adjacent properties being considered in PLUS this month (Braewynds, Breckenridge, Branchside, and Riviera Glen). It is recommended that the applicants and the County Planning Staff work together to ensure that the developments are well integrated into one another with street and pedestrian / bicycle interconnections. Likewise, the developers should coordinate road improvements for the entire area with DelDOT. We also encourage the consideration of preserving woodlands and riparian corridors that are common to these properties.

**Division of Historical and Cultural Affairs – Contact: Alice Guerrant 739-5685**

Nothing is known on this parcel. There is a historic house (K-1584) immediately across the road from this parcel. Beers Atlas of 1868 shows the Dr. Hubbard House here, in the place where the existing house on the property is. There may be archaeological remains here relating to this house. There is an area of high potential for a prehistoric-period archaeological site.

Small, rural, family cemeteries often are found in relation to historic farm complexes, such as the Hubbard House, usually a good distance behind or to the side of the house. The developer should be aware of Delaware's Unmarked Human Remains Act of 1987, which governs the discovery and disposition of such remains. The unexpected discovery of unmarked human remains during construction can result in significant delays while the process is carried out, and the developer may want to hire an archaeological consultant to check for the possibility of a cemetery here if this development is approved. The DHCA would have to have a copy of any archaeological report done for this purpose. They will be happy to discuss these issues with the developer.

The developer will probably be required to get an Army Corps of Engineers permit for the wetland crossing. In this case, the developer will be required to consult with this office under Section 106 of the National Historic Preservation Act of 1966 and may be required to conduct archaeological testing, depending on the area of the permit. The DHCA will be happy to assist the developer through this process.

The DHCA would like the opportunity to examine the area prior to any ground-disturbing activities, to see if there are in fact any archaeological sites on the parcel and to learn something about their location, nature, and extent. They request that there be sufficient landscaping along the front of this development to block any noise or visual intrusions on the nearby historic house.

**Department of Transportation – Contact: Bill Brockenbrough 760-2109**

- 1) Andrews Lake Road is a local road. DelDOT's policy is to require dedication of sufficient land to provide a minimum right-of-way width of 30 feet from the centerline on local roads. Therefore they will require right-of-way dedication along the frontage to provide any additional width needed from this project.
- 2) The plan should provide a 15-foot wide permanent easement across the frontage of the site for a future 10' wide shared use path.

- 3) The site design should include stub streets to the adjacent lands of UPFRONT Enterprises (proposed Brekenridge and Braewynd subdivisions).
- 4) The site design should include an easement such that the driveways from the Patsy Mitchell and John Fulcher parcels (Tax Parcels SM-00-129.00-02-28.01-00001 and SM-00-129.00-02-28.02-00001) can be tied into the subdivision street if those parcels are ever redeveloped.
- 5) DelDOT may require road improvements across the site's frontage. Local roads require 11-foot wide travel lanes and 5-foot wide shoulders at a minimum. An overlay of the existing roadway may be required. This will be determined during the plan development process.
- 6) The developer will be required to enter into an agreement with DelDOT to participate in funding the construction of a single-lane roundabout at the intersection of Midstate Road (Delaware Route 12 and Kent Road 34) and Canterbury Road.

**The Department of Natural Resources and Environmental Control – Contact: Kevin Coyle 739-9071**

### **General Comment**

The developers of Braewynd, Brekenridge, Branchside (all three projects involve the same developer), and Riviera Glen are proposing a total of 512 units on 259 contiguous acres. DNREC strongly recommends that the developers consider a “master plan” for the area that would address such issues as open space, stormwater management, recreation, and natural resources on a more regional scale, as opposed to designing each subdivision as a stand-alone project. All of these projects are proposing disturbance within 100 feet of tributaries that flow into the publicly-owned Andrews Lake. Cumulatively, 28.93 acres of forest are being either converted into a ‘residential woods’ or fragmented by these projects.

### **Soils**

Based on the Kent County soil survey update, Evesboro, Sassafras, Downer, Ingleside, Zekiah, and Longmarsh were mapped in the immediate vicinity of the proposed construction. Evesboro soils have limitations associated with excessive permeability and, on this parcel, slopes ranging from 5-15 percent. Sassafras, Downer, and Ingleside are well-drained upland soils that, generally, have few limitations for development. Zekiah

and Longmarsh are very poorly-drained wetland associated (hydric) soils that have severe limitations for development.

### **Wetlands**

According to the Statewide Wetland Mapping Project (SWMP) mapping, palustrine riparian wetlands associated with headwater reaches of an unnamed (or name unknown) headwater tributary to Spring Creek, bisect most of the south-central portion of subject parcel. A small area of non-riparian wetlands was also mapped in the west-central portion of the parcel. Wetlands provide water quality benefits, attenuate flooding and provide important habitat for plants and wildlife. Vegetated buffers of no less than 100 feet should be employed from the edge of the wetland complex. The developer should note that both DNREC and Army Corps of Engineers discourage allowing lot lines to contain wetlands to minimize potential cumulative impacts resulting from unauthorized and/or illegal activities and disturbances that can be caused by homeowners.

PLUS application materials indicate that wetlands have been delineated (presumably a field delineation). This delineation should be verified by the Army Corps of Engineers through the Jurisdictional Determination process. Please note that impacts to palustrine wetlands are regulated by the Army Corps of Engineers through Section 404 of the Clean Water Act. In situations where the applicant believes that the delineated wetlands on their parcel are nonjurisdictional isolated wetlands, the Corps must be contacted to make the final jurisdictional assessment. They can be reached by phone at 736-9763. Certain drainage ditches may also be jurisdictional either under the U.S. Army Corps of Engineers Program or through the DNREC Wetland and Subaqueous Lands program.

In addition, individual 404 permits and certain Nationwide Permits from the Army Corps of Engineers also require 401 Water Quality Certification from the DNREC Wetland and Subaqueous Land Section and Coastal Zone Federal Consistency Certification from the DNREC Division of Soil and Water Conservation, Delaware Coastal Programs Section. Each of these certifications represents a separate permitting process.

To find out more about permitting requirements, the applicant is encouraged to attend a Joint Permit Process Meeting. These meetings are held monthly and are attended by federal and state resource agencies responsible for wetland permitting. Contact Denise Rawding at (302) 739-9943 to schedule a meeting.

Headwater riparian wetlands are important for the protection of water quality and the maintenance/integrity of the ecological functions throughout the length of the stream, including the floodplain system and/or water bodies further downstream. Since such streams are a major avenue for nutrient-laden stormwater and sediment runoff their

protection deserves the highest priority. In recognition of this concern, the Watershed Assessment Section strongly recommends the applicant preserve the as much of the existing forested buffer as possible. Otherwise, an upland buffer width of at least 100-foot is the recommended minimum. A literature review of buffer research by Castelle et al. (1994), documents consensus among researchers that an upland buffer width of at least 100-foot is necessary to protect the water and/or habitat quality of streams and wetlands from development and its associated impacts.

### **Impervious Cover**

Based on a review of the PLUS application, post-development surface imperviousness is estimated to be about 24 percent. However, given the scope and density of this project, this estimate is likely to be an **underestimate**. The applicant's apparent use of natural areas (wetlands or buffers) and areas of functional utility (stormwater management areas) for meeting the County's open space requirements artificially lowers the amount of this project's post-development projection of surface imperviousness, ultimately underestimating its environmental impacts. Furthermore, the applicant should also realize that all created forms of constructed surface imperviousness (i.e., rooftops, sidewalks, and roads) and their extent should be comprehensively accounted for when calculating surface imperviousness. It is strongly recommended that the applicant address all of the above-mentioned concerns in the finalized calculation for surface imperviousness.

Studies have shown a strong relationship between increases in impervious cover to decreases in a watershed's overall water quality. It is strongly recommended that the applicant implement best management practices (BMPs) that reduce or mitigate some of its most likely adverse impacts. Reducing the amount of surface imperviousness through the use of pervious paving materials ("pervious pavers") in lieu of asphalt or concrete in conjunction with an increase in forest cover preservation or additional tree plantings – are some examples of practical BMPs that could easily be implemented to help reduce surface imperviousness.

### **TMDLs**

Total Maximum Daily Loads (TMDLs) for nitrogen and phosphorus have been promulgated through regulation for the Murderkill watershed. A TMDL is the maximum level of pollution allowed for a given pollutant below which a "water quality limited water body" can assimilate and still meet water quality standards to the extent necessary to support use goals such as, swimming, fishing, drinking water and shell fish harvesting. Although TMDLs are required by federal law, states are charged with developing and implementing standards to support these desired use goals. In the Murderkill watershed,

a post-development TMDL reduction level of 50 and 30 percent will be required for nitrogen and phosphorus, respectively.

### **TMDL Compliance through the Pollution Control Strategy (PCS)**

As stated above Total Maximum Daily loads (TMDLs) for nitrogen and phosphorus have been promulgated through regulation for the Murderkill Watershed. The TMDL calls for a 50% reduction for nitrogen and 30% for phosphorus from baseline conditions. The Department developed an assessment tool to evaluate how your proposed development may reduce nutrients to meet the TMDL requirements. Additional reductions may be possible through the implementation of Best Management Practices such as wider vegetated buffers along watercourses, increasing passive, wooded open space, and the use of stormwater management treatment trains. Contact Lyle Jones at 302-739-9939 for more information on the assessment tool.

### **Water Resource Protection Areas**

The Water Supply Section has determined that the project falls entirely within an excellent ground-water recharge area for Kent County (see following map and attached map). The site plans show storm water management ponds in the area of excellent recharge.

Excellent Ground-Water Recharge Areas are those areas mapped by the Delaware Geological Survey where the first 20 feet of subsurface soils and geologic materials are exceptionally sandy. These soils are able to transmit water very quickly from the land surface to the water table. This map category (excellent) is an indicator of how fast contaminants will move and how much water may become contaminated (Andres, 2004). Land use activities or impervious cover on areas of excellent ground-water recharge potential may adversely affect the quality and quantity of ground water in these areas.

The construction phase of storm water management ponds requires excavation, hauling, and grading. The heavy equipment used in this phase has the capacity to compact and degrade the structure of the strata that defines the area as an excellent ground water recharge area. Changes to the structural soil properties may cause significant reduction in recharge capacity. Installing storm-water management ponds in excellent ground-water recharge areas has the potential to contaminate the ground water beneath it and infiltrate into the aquifer.

The Water Supply Section recommends that the portion of the new development within the excellent ground-water recharge area not exceed 20% impervious cover (DNREC, 2005). The purpose of an impervious cover threshold is to minimize loss of recharge

(and associated increases in storm water) and protect the quality and quantity of ground water and surface water supplies.

The proposed development would change the impervious over from 1 % to approximately 24 %. These numbers were provided by the developer on the PLUS application. Some allowance for augmenting ground-water recharge should be considered if the impervious cover exceeds 20% but is less than 50% of that portion of the parcel within these areas, provided the applicant submits an environmental assessment recommending a climatic water budget and facilities to augment recharge (Thornthwaite, 1957). The environmental assessment must document that post-development recharge will be no less than predevelopment recharge when computed on an annual basis. Commonly, the applicant offsets the loss of recharge due to impervious cover by constructing recharge basins that convey relatively pure rooftop runoff for infiltration to ground water (Kauffman, 2005).

In addition, because the excellent ground water recharge area can so quickly affect the underlying aquifer if contaminants are spilled or discharged across the area, the storage of hazardous substances or wastes should not be allowed within the area unless specific approval is obtained from the relevant state, federal, or local program.

#### References

Andres, A. Scott, 2004, Ground-Water Recharge Potential Mapping in Kent and Sussex Counties, Delaware: Delaware Geological Survey Report of Investigations No. 66, p. 14.

<http://www.udel.edu/dgs/Publications/pubform.html#nvestigations>

Delaware Department of Natural Resources and Environmental Control (2005): *Source Water Protection Guidance Manual for the Local Governments of Delaware*: Dover, DE., 144 p.

[http://www.wr.udel.edu/publications/SWAPP/swapp\\_manual\\_final/swapp\\_guidance\\_manual\\_final.pdf](http://www.wr.udel.edu/publications/SWAPP/swapp_manual_final/swapp_guidance_manual_final.pdf)

Kauffman, G.J., Wozniak, S.L., and Vonck, K.J., 2005, *Delaware Ground-Water Recharge Design Manual*: Newark, DE, Water Resources Agency, University of Delaware, p. 31.

<http://www.wr.udel.edu/swaphome/Publications/SWPguidancemanual.html>

Thornthwaite, C. W., and Mather, J. R., 1957, Instructions and Tables for Computing Potential Evapotranspiration and the Water Balance, Volume x, Drexel Institute of Technology, Laboratory of Climatology.

**Map of Riviera Glen (PLUS 2006-12-01)** Excellent ground-water recharge potential area is highlighted in green. The parcel under review is outlined in black.



## **Water Supply**

The project information sheets state water will be provided to the project by Tidewater Utilities via a central water system. Our records indicate that the project is located within the public water service area granted to Tidewater Utilities under Certificate of Public Convenience and Necessity PSC-1190.

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 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**

Requirements:

1. Land disturbing activities in excess of 5,000 square feet are regulated under the Delaware Sediment and Stormwater Regulations. A detailed sediment and stormwater management plan must be reviewed and approved by the Kent Conservation District prior to any land disturbing activity (i.e. clearing, grubbing, filling, grading, etc.) taking place. The review fee and a completed Application for a Detailed Plan are due at the time of plan submittal to the Kent Conservation District. Construction inspection fees based on developed area and stormwater facility maintenance inspection fees based on the number of stormwater facilities are due prior to the start of construction. Please refer to the fee schedule for those amounts.
2. The following notes must appear on the record plan:
  - The Kent Conservation District reserves the right to enter private property for purposes of periodic site inspection.

- The Kent Conservation District reserves the right to add, modify, or delete any erosion or sediment control measure, as it deems necessary.
  - A clear statement of defined maintenance responsibility for stormwater management facilities must be provided on the Record Plan.
3. Ease of maintenance must be considered as a site design component and a maintenance set aside area for disposal of sediments removed from the basins during the course of regular maintenance must be shown on the Record Plan for the subdivision.
  4. All drainage ways and storm drains should be contained within drainage easements and clearly shown on the plan to be recorded by Kent County.
  5. A soils investigation supporting the stormwater management facility design is required to determine impacts of the seasonal high groundwater level and soils for any basin design.

Comments:

1. The designer is encouraged to consider the conservation design approach and limit the amount of tree clearing required for the development of the site including the stormwater management facilities shown in the wooded areas.
2. Access to the proposed stormwater facility must be provided for periodic maintenance. This access should be at least 12 feet wide to leading to the facility and around the facility's perimeter.
3. It is recommended that the stormwater management areas be incorporated into the overall landscape plan to enhance water quality and to make the stormwater facility an attractive community amenity.
4. A letter of no objection to re-recording will be provided once the detailed Sediment and Stormwater Management plan has been re-approved.
5. Proper drainage of developed lots and active open space should be considered in the development of the grading plan for this subdivision.
6. Based on the site characteristics, a pre-application meeting is suggested to discuss stormwater management and drainage for this site.

## **Drainage**

The Drainage Program requests that the engineer take precautions to ensure the project does not hinder any off site drainage upstream of the project or create any off site drainage problems downstream by the release of on site storm water. The Drainage Program requests that the engineer check existing downstream ditches and pipes for function and blockages prior to the construction. Notify downstream landowners of the change in volume of water released on them.

The Drainage Program encourages the elevation of rear yards to direct water towards the streets where storm drains are accessible for maintenance. However, the Drainage Program recognizes the need for catch basins in yards in certain cases. Therefore, catch basins placed in rear and side yards will need to be clear of obstructions and be accessible for maintenance. Decks, sheds, fences, pools, and kennels can hinder drainage patterns as well as future maintenance to the storm drains or catch basin. Deed restrictions, along with drainage easements recorded on deeds, should ensure adequate future maintenance access.

Increase the side yard setback to 15 feet on all properties with a drainage easement on the side. The increase will allow room for equipment to utilize the entire easement and maneuver free of obstructions if the drainage conveyance requires periodic maintenance or future re-construction. The side yard setback would only increase on the side with the drainage easement.

All catch basins in rear or side yards should have a 10-foot drainage easement around them on all sides. Place restrictions on fences, sheds, and other structures within the easement to prevent obstructions from being placed next to the catch basin. Record the easement on the deed.

Have all drainage easements recorded on deeds and place restrictions on obstructions within the easements to ensure access for periodic maintenance or future re-construction. Future property owners may not be aware of a drainage easement on their property if the easement is only on the record plan. However, by recording the drainage easement on the deed, the second owner, and any subsequent owner of the property, will be fully aware of the drainage easement on their property.

The Drainage Program does not support the removal of trees for the creation of stormwater management areas. However, the Drainage Program recognizes that tree removal is unavoidable in some cases. Where practical, plant native trees and shrubs to compensate for the loss of nutrient uptake and stormwater absorption the removed trees provided.

This project is within the Murderkill River Watershed, a designated critical area, with a promulgated Total Maximum Daily Load (TMDL). Preserve existing riparian buffers to aid in the reduction of nutrients, sediment, and other pollutants. For the further enhancement of water quality in the Murderkill watershed, the Drainage Program encourages additional widths of vegetated buffers and other water quality measures on this project. This site will drain into Andrews Lake, which has existing water quality problems. Please explore methods to filter excess nutrients in stormwater runoff from this site before releasing stormwater into the Andrews Lake watershed.

### **Floodplains**

Portions of this parcel lie within the 100 year floodplain.

### **Open Space**

In areas set aside for passive open space, the developer is encouraged to consider establishment of additional forested areas or meadow-type grasses. Once established, these ecosystems provide increased water infiltration into groundwater, decreased run-off into surface water, air quality improvements, and require much less maintenance than traditional turf grass, an important consideration if a homeowners association will take over responsibility for maintenance of community open spaces. The developer is encouraged to review "Community Spaces, Natural Places: A guide to restoration, management, and maintenance of community open space". This document provides a reference of practical and successful open space management techniques that emphasize natural landscape alternatives. The guidebook is available online at: <http://www.dnrec.state.de.us/dnrec2000/Divisions/Soil/dcmp/>.

Open space containing forest and/or wetlands should be placed into a permanent conservation easement or other permanent protection mechanism. Conservation areas should also be demarked to avoid infringement by homeowners.

### **Rare Species and Wetland Buffers**

DNREC has never surveyed this site, therefore, it is unknown if there are state-rare or federally listed plants, animals or natural communities at or adjacent to this project site. They do have records of a state-rare fish species, *Enneacanthus chaetodon* (blackbanded sunfish) in Andrews Lake, therefore, run-off from this development could impact water quality within the lake if an adequate (at least 100 feet) buffer is not maintained along the tributary that flows into the Lake. According to the site plan there is a stormwater management pond, several lots and a road crossing within 100 feet and we highly

recommend that these lots and pond be pulled out of this important buffer zone. Andrews Lake is a publicly owned pond managed by the State. The State expends both staff time and funding to ensure that water quality is conducive to fish production and survival and upstream efforts to protect water quality are extremely important. Essentially whatever chemical, nutrients or other substances are used on lawns or spilled in driveways could end up in this stream system. A minimum riparian buffer of 100 feet is necessary to mitigate for these impacts. Cumulative impacts are a real concern considering the number of other developments being proposed adjacent to this site.

### **Forest Preservation**

The applicant indicated that approximately 5.3 out of 11.1 acres of trees would be removed by this project, however, the site plan indicates a higher level of forest removal. Lot lines should be redesigned to avoid all impacts to the forested area. The developer is strongly encouraged to preserve, and where possible, enhance forested resources on site. This includes removing lots 40-42, 50-65, and infrastructure (such as stormwater ponds and roads) in the southeastern portion of the site so that a larger forested riparian area is left intact. Also, by omitting these lots, the road crossing would then not be necessary and wetland impacts reduced as well. Where possible, the developer should seriously consider habitat improvements such as revegetating portions of the site.

*Note: At the PLUS meeting the applicant indicated that the area occupied by lots 50-65 was newer growth and did not meet the County's definition of "forest." It is not clear that DNREC has visited the site to investigate the quality or density of the trees in this area. It is recommended that the County planning staff visit the site and use their professional judgment in determining if the woodland meets the criteria in the County code and warrants protection. The County and/or the applicant may contact DNREC if they need any assistance with such a site visit. (note by David Edgell. DNREC contact will be Kevin Coyle)*

### **Nuisance Waterfowl**

Stormwater management ponds may attract waterfowl like resident Canada geese and mute swans. High concentrations of waterfowl in ponds create water-quality problems, leave droppings on lawn and paved areas and can become aggressive during the nesting season. Short manicured grasses around ponds provide an attractive habitat for these species. We recommend native plantings of tall grasses, wildflowers, shrubs, and trees at the edge and within a buffer area around the perimeter. Waterfowl do not feel safe when they can not see the surrounding area for possible predators. These plantings should be completed as soon as possible as it is easier to deter geese when there are only a few than it is to remove them once they become plentiful. The Division of Fish and Wildlife does

not provide goose control services, and if problems arise, property managers or owners will have to accept the burden of dealing with these species (e.g., permit applications, costs, securing services of certified wildlife professionals). Solutions can be costly and labor intensive; however, with proper landscaping, monitoring, and other techniques, geese problems can be minimized.

**Solid Waste**

Each Delaware household generates approximately 3,600 pounds of solid waste per year. On average, each new house constructed generates an additional 10,000 pounds of construction waste. Due to Delaware's present rate of growth and the impact that growth will have on the state's existing landfill capacity, the applicant is requested to be aware of the impact this project will have on the State's limited landfill resources and, to the extent possible, take steps to minimize the amount of construction waste associated with this development.

**Air Quality**

Once complete, vehicle emissions associated with this project are estimated to be 5.0 tons (9,976.8 pounds) per year of VOC (volatile organic compounds), 4.1 tons (8,260.1 pounds) per year of NOx (nitrogen oxides), 3.0 tons (6,094.5 pounds) per year of SO2 (sulfur dioxide), 0.3 ton (542.5 pounds) per year of fine particulates and 417.3 tons (834,548.4 pounds) per year of CO2 (carbon dioxide).

Emissions from area sources associated with this project are estimated to be 2.0 tons (4,024.1 pounds) per year of VOC (volatile organic compounds), 0.2 ton (442.8 pounds) per year of NOx (nitrogen oxides), 0.2 ton (367.4 pounds) per year of SO2 (sulfur dioxide), 0.2 ton (474.2 pounds) per year of fine particulates and 8.2 tons (16,312.8 pounds) per year of CO2 (carbon dioxide).

Emissions from electrical power generation associated with this project are estimated to be 0.8 tons (1,594.9 pounds) per year of NOx (nitrogen oxides), 2.8 tons (5,547.4 pounds) per year of SO2 (sulfur dioxide) and 409.1 tons (818,235.6 pounds) per year of CO2 (carbon dioxide).

	VOC	NOx	SO <sub>2</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Mobile	5.0	4.1	3.0	0.3	417.3
Residential	2.0	0.2	0.2	0.2	8.2
Electrical Power		0.8	2.8		409.1

TOTAL	7.0	5.1	6.0	0.5	834.6
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For this project the electrical usage via electric power plant generation alone totaled to produce an additional 0.8 tons of nitrogen oxides per year and 2.8 tons of sulfur dioxide per year.

A significant method to mitigate this impact would be to require the builder to construct Energy Star qualified homes. Every percentage of increased energy efficiency translates into a percent reduction in pollution. Quoting from their webpage, <http://www.energystar.gov/>:

“ENERGY STAR qualified homes are independently verified to be at least 30% more energy efficient than homes built to the 1993 national Model Energy Code or 15% more efficient than state energy code, whichever is more rigorous. These savings are based on heating, cooling, and hot water energy use and are typically achieved through a combination of:

building envelope upgrades,  
high performance windows,  
controlled air infiltration,  
upgraded heating and air conditioning systems,  
tight duct systems and  
upgraded water-heating equipment.”

The Energy office in DNREC is in the process of training builders in making their structures more energy efficient. The Energy Star Program is excellent way to save on energy costs and reduce air pollution. We highly recommend this project development and other residential proposals increase the energy efficiency of their homes.

It is also recommend that the home builders offer geothermal and photo voltaic energy options. Applicable vehicles should use retrofitted diesel engines during construction. The development should provide tie-ins to the nearest bike paths, links to mass transit, and fund a lawnmower exchange program for their new occupants.

**State Fire Marshal’s Office – Contact: John Rudd 739-4394**

These comments are intended for informational use only and do not constitute any type of approval from the Delaware State Fire Marshal’s Office. 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 (DSFPR):

- a. **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. (One & Two- Family Dwelling)
  - Where a water distribution system is proposed for the site, the infrastructure for fire protection water shall be provided, including the size of water mains for fire hydrants and sprinkler systems.
  
- b. **Fire Protection Features:**
  - For townhouse buildings, provide a section / detail and the UL design number of the 2-hour fire rated separation wall on the Site plan.
  
- c. **Accessibility**
  - The access road to the subdivision from Andrews Lake Road 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.
  - 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 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.
  
- d. **Gas Piping and System Information:**
  - Provide type of fuel proposed, and show locations of bulk containers on plan.

e. **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”
- Proposed Use
- Alpha or Numerical Labels for each building/unit for sites with multiple buildings/units
- Square footage of each structure (Total of all Floors)
- National Fire Protection Association (NFPA) Construction Type
- Maximum Height of Buildings (including number of stories)
- Townhouse 2-hr separation wall details shall be shown on site plans
- Note indicating if building(s) is/are to be sprinklered
- Name of Water Provider
- Letter from Water Provider approving the system layout
- Provide Lock Box Note (as detailed in DSFPR) if Building is to be sprinklered
- Provide Road Names, even for County Roads

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.delawarestatefiremarshal.com](http://www.delawarestatefiremarshal.com), technical services link, plan review, applications or brochures.

**Department of Agriculture - Contact: Scott Blaier 698-4500**

The Department of Agriculture has no objections to the proposed project. The project is within the Kent County growth zone, and *Strategies for State Policies and Spending* encourages environmentally responsible development in areas in Investment Level 2.

This site is located entirely in an area designated as having “excellent” ground-water recharge potential. DNREC has mapped all ground-water recharge-potential recharge areas for the state, and an “excellent” rating designates an area as having important groundwater recharge qualities.

Senate Bill 119, enacted by the 141<sup>st</sup> General Assembly in June of 2001, requires the counties and municipalities with over 2,000 people to adopt as part of the update and implementation of their 2007 comprehensive land use plans, areas delineating excellent ground-water recharge potential areas. Furthermore, the counties and municipalities are required to adopt regulations by December 31, 2007 governing land uses within those areas to preserve ground-water quality and quantity.

Maintaining pervious cover in excellent and good recharge areas is crucial for the overall environmental health of our state and extremely important to efforts which ensure a safe drinking water supply for future generations. Retention of pervious cover to ensure an adequate future water supply is also important for the future viability of agriculture in the First State. The loss of every acre of land designated as “excellent” and “good” recharge areas adversely impacts the future prospects for agriculture in Delaware. The developer should make every effort to protect and maintain valuable ground-water recharge potential areas.

#### *Right Tree for the Right Place*

The Delaware Department of Agriculture Forest Service encourages the developer to use the “Right Tree for the Right Place” for any design considerations. This concept allows for the proper placement of trees to increase property values in upwards of 25% of appraised value and will reduce heating and cooling costs on average by 20 to 35 dollars per month. In addition, a landscape design that encompasses this approach will avoid future maintenance cost to the property owner and ensure a lasting forest resource.

#### *Native Landscapes*

The Delaware Department of Agriculture and the Delaware Forest Service encourages the developer to use native trees and shrubs to buffer the property from the adjacent land-use activities near this site. A properly designed forested buffer can create wildlife habitat corridors and improve air quality to the area by removing six to eight tons of carbon dioxide annually and will clean our rivers and creeks of storm-water run-off pollutants. To learn more about acceptable native trees and how to avoid plants considered invasive to our local landscapes, please contact the Delaware Department of Agriculture Plant Industry Section at (302) 698-4500.

#### *Tree Mitigation*

The Delaware Forest Service encourages the developer to implement a tree mitigation program to replace trees at a 1:1 ratio within the site and throughout the community. This will help to meet the community’s forestry goals and objectives and reduce the environmental impacts to the surrounding natural resources. To learn more, please contact our offices at (302) 349-5754.

**Public Service Commission - Contact: Andrea Maucher 739-4247**

Any expansion of natural gas or installation of a closed propane system must fall within Pipeline Safety guidelines. Contact: Malak Michael at (302) 739-4247.

**Delaware State Housing Authority – Contact Vicki Walsh 739-4263**

This proposal is for a site plan review for 65 residential units on 37 acres located at 2110 Andrews Lake Road, west of Indian Point Road in Kent County's growth zone. According to the *State Strategies Map*, the proposal is located in an Investment Level 2 area. As a general planning practice, DSHA encourages residential development inside growth zones, where residents will have proximity to services, markets, and employment opportunities. Furthermore, DSHA encourages residential development in Level 2 areas that are affordable to first time homebuyers. According to the most recent real estate data collected by DSHA, the average home price in Kent County is \$225,000. However, families earning respectively 100% of Kent County's median income only qualify for mortgages of \$180,115, thus creating an affordability gap of \$44,885. The provision of units within reach of families earning at least 100% of Kent County's median income will ensure housing that is affordable to first time homebuyers.

**Department of Education – Contact: John Marinucci 739-4658**

This proposed development is within the Lake Forest School District boundaries. DOE offers the following comments on behalf of the Lake Forest School District. \

1. Using the DOE standard formula, this development will generate an estimated 33 students.
2. DOE records indicate that the Lake Forest School Districts' *elementary schools are at or beyond 100% of current capacity* based on September 30, 2006 elementary enrollment.
3. DOE records indicate that the Lake Forest School Districts' *secondary schools are very close to 100% of current capacity* based on September 30, 2006 secondary enrollment.
4. The Superintendent of Lake Forest School District has communicated to the DOE the district's lack of capacity given the number of planned and recorded residential sub divisions within district boundaries.
5. This development will create additional elementary and secondary student population growth which will further compound the existing shortage of space.

6. The developer is strongly encouraged to contact the Lake Forest School District Administration to address the issue of school over-crowding that this development will exacerbate.
7. DOE requests developer work with the Lake Forest School District transportation department to establish developer supplied bus stop shelter ROW and shelter structures, interspersed throughout the development as determined and recommended by the local school district

**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,

A handwritten signature in cursive script that reads "Constance C. Holland".

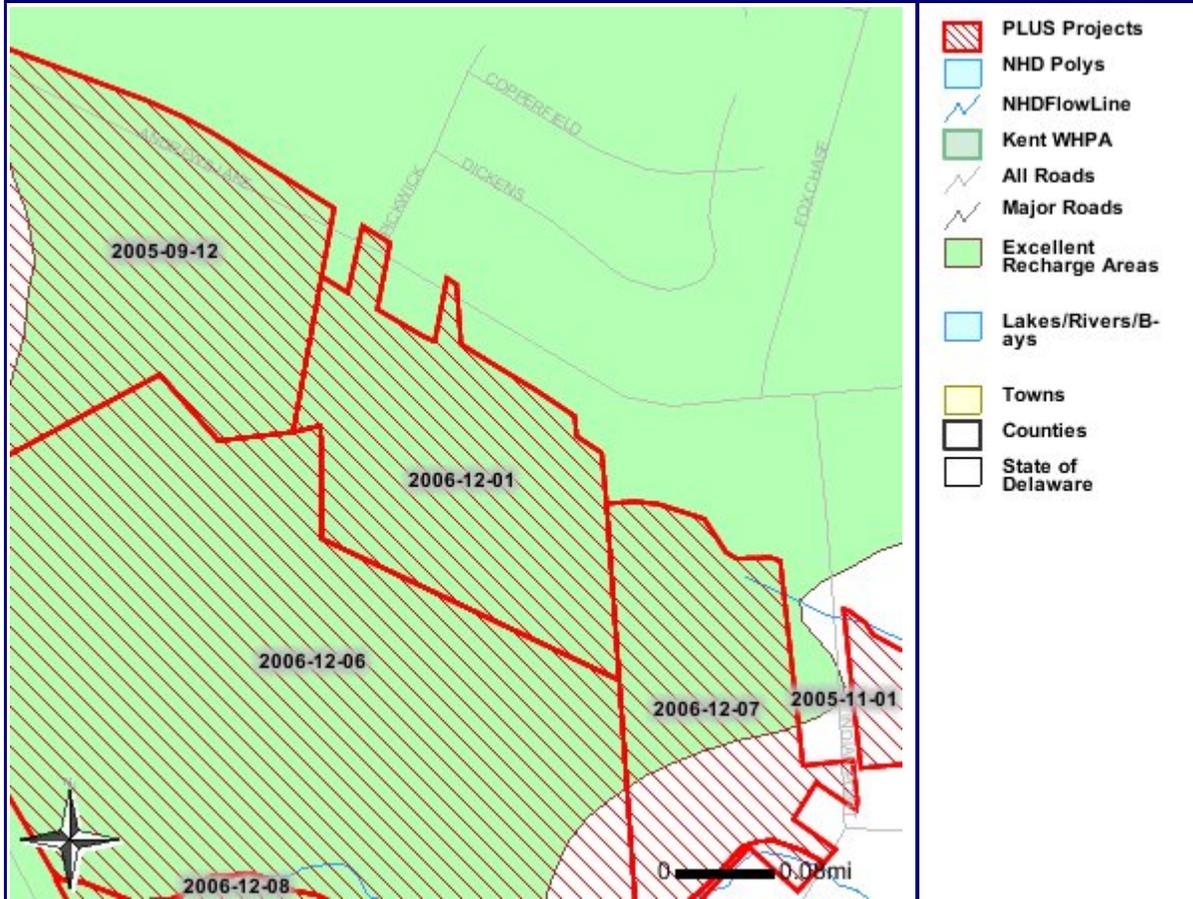
Constance C. Holland, AICP  
Director

CC: Kent County



# Riviera Glen

2006-12-01



This map was produced by the Delaware Department of Natural Resources and Environmental Control.

