



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

April 23, 2007

Mr. Tom Ford LANDESIGN, Inc. Oak Square, Ste. 3 Central Avenue Ocean View, DE 19970

RE: PLUS review – PLUS 2007-03-10; Governors

Response to Comments (in Red): **LANDESIGN, inc - September 5<sup>th</sup>,2007**

Dear Mr. Ford:

Thank you for meeting with State agency planners on March 28, 2007 to discuss the proposed plans for a multi family subdivision called "Governors" to be located on Gills Neck Road east of King's Highway. According to the information presented, you are seeking site plan approval for 472 multi family residential units on 186.56 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. In addition, this office notes that as Sussex County is the governing authority over this land use activity associated with this project; the developers will need to comply with any and all regulations/restrictions set forth by the County Planning and Zoning and County Council.

Executive Summary

The following section includes several site specific highlights from the various 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 is located in the Environmentally Sensitive Developing Area according to the Sussex County Comprehensive Plan an Investment Level 3 and has a small area of Investment Level 4 along the wetland boundary area according to the *Strategies for State Policies and Spending*. In these areas, State policies encourage long term phased growth that is sensitive to the natural resources on and surrounding the site. Finally, this office understand that this is part of a

larger development plan and that the developer should coordinate their efforts with the adjacent local jurisdiction; the City of Lewes. Efforts taken by the developer to provide insight and cooperation with the community will work to provide improved working relations and an overall better product for all. Will comply

### **Street Design and Transportation**

There is a circular feature, which may or may not be a roundabout, proposed for the street leading in and out of the site. In a roundabout, vehicles entering the circle must yield to vehicles that are already circling. As the plan is presently drawn, this principle appears to be violated for vehicles exiting the development to Gills Neck Road. There are several ways to address this situation, but something will need to be done to make it clear who has the right of way at this feature. The developer's engineer may contact me at (302) 760-2109 as necessary to discuss this matter. This feature will comply to standard engineering traffic flows as indicated herein

The plan shows two rectangular loop streets that would connect to higher type streets in ways that would form offset T intersections relative to other streets in the development. DelDOT recommends that the plan be adjusted to create four-way intersections, which are inherently safer.

### **Natural and Cultural Resources**

The developer is placing a conservation easement over the wooded and stream areas, which will serve to protect the site, and the DHCA commends the developer for including this generous area of natural and cultural conservation in

his plans. There are other areas of high potential for prehistoric archaeological remains in this area, and they urge the developer to stay out of the currently wooded area if at all possible. +/- 96% of the existing wooded areas shall remain intact.

DNREC appreciates the applicant's efforts to preserve the existing forested resources; however, it is recommended that the applicant consider removing those structures that will result in clearing, of forests. DNREC would ask the developer to consider removing or relocating five buildings and associated infrastructure at the southern end of the development to further protect these resources. Only 4% of the existing forest is to be disturbed with this proposed plan

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

#### **Office of State Planning Coordination – Contact: Bryan Hall 739-3090**

The State appreciates that the developer has provided planning for most of the existing wooded area as open space and maintaining wetland buffers. This is located in the Environmentally Sensitive Developing Area according to the Sussex County Comprehensive Plan an Investment Level 3 and has a small area of Investment Level 4 along the wetland boundary area according to the *Strategies for State Policies and Spending*. In these areas, State policies encourage long term phased growth that is sensitive to the natural resources on and surrounding the site. Finally, this office understand that this is part of a larger development plan and that the developer should coordinate their efforts with the adjacent local jurisdiction; the City of Lewes. Efforts taken by the developer to provide insight and cooperation with the community will work to provide improved working relations and an overall better product for all. Will comply

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

This parcel contained a mid-20<sup>th</sup>-c. house (S-1051), now demolished, at the road corner. Beers Atlas of 1868 shows the J. P. Marshall House very close to the eastern line of this parcel. The area is adjacent to the National Register-listed Townsend Site. The developer is placing a conservation easement over the wooded and stream areas, which will serve to protect the site, and the DHCA commends the developer for including this generous area of natural and cultural conservation in his plans. There are other areas of high potential for prehistoric archaeological remains in this area, and they urge the developer to stay out of the currently wooded area if at all possible.

Small, rural, family cemeteries often are found in relation to historic farm complexes, such as the Marshall House, usually a good distance behind or to the side of the house, and possibly into this parcel. The developer is 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. We understand that the Department Preservation Officer and his staff was consulted with when an archeological field investigation was conducted on this land by Heite Consulting, inc. June of 2005. They will be happy to discuss these issues with the developer.

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

DelDOT has been working with LT Associates since 2005 in a cooperative effort to include the completion of the Junction & Breakwater Trail and improvements to the west end of Gills Neck Road in the plans for their development. This effort is part of a comprehensive planning process that has included the Cadbury and Breakwater projects, which are being done by other developers. Accordingly, DelDOT has had opportunities to review the plan before now and are generally supportive of it. Because the plan continues to evolve, however, DelDOT does have three comments on the plan presented today that they have not made previously:

- 1) There is a circular feature, which may or may not be a roundabout, proposed for the street leading in and out of the site. In a roundabout, vehicles entering the circle must yield to vehicles that are already circling. As the plan is presently drawn, this principle appears to be violated for vehicles exiting the development to Gills Neck Road. There are several ways to address this situation, but something will need to be done to make it clear who has the right of way at this feature. The developer's engineer may contact me at (302) 760-2109 as necessary to discuss this matter. Will comply
  
- 2) The plan shows two rectangular loop streets that would connect to higher type streets in ways that would form offset T intersections relative to other streets in the development. DelDOT recommends that the plan be adjusted to create four-\_\_\_\_\_way intersections, which are inherently safer. Will comply; however on one of these intersections there is woodland disturbance that was minimized by the proposed layout. A review of this will be taken into consideration.

- 3) While DelDOT will defer to the Division of Historical and Cultural Affairs, they recommend that the words "Archaeological Site" be removed from the plans. It is important that development avoid these sites if possible, but labeling them as what they are could promote looting. Will comply

DelDOT is still assessing the traffic impacts of both this project and the Townsend Village Centre, and they expect to write to Sussex County regarding the traffic impact study within the next two months. We are still awaiting this report

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

#### **Green Infrastructure**

Portions or all of the lands associated with this proposal are within the Livable Delaware Green Infrastructure area established under Governor Minner's Executive Order #61 that represents a network of ecologically important natural resource lands of special state conservation interest. The wooded portion alone was designated within this area and for the most part will be kept in its natural state.

Green infrastructure is defined as Delaware's natural life support system of parks and preserves, woodlands and wildlife areas, wetlands and waterways, productive agricultural and forest land, greenways, cultural, historic and recreational sites and other natural areas all with conservation value. Preserving Delaware's Green Infrastructure network will support and enhance biodiversity and functional ecosystems, protect native plant and animal species, improve air and water quality, prevent flooding, lessen the disruption to natural landscapes, provide opportunities for profitable farming and forestry enterprises, limit invasive species, and foster ecotourism.

Voluntary stewardship by private landowners is essential to green infrastructure conservation in Delaware, since approximately 80 percent of the State's land base is in private hands. It is in that spirit of stewardship that the Department appeals to the landowner and development team to protect sensitive resources through an appropriate site design.

#### **Soils**

Based on the Sussex County soil survey update, Greenwich, Downer, Fort Mott, Hammonton and Manahawkin were mapped in the immediate vicinity of subject parcel. Greenwich, Downer, and Fort Mott are well-drained upland soils that, generally, have few limitations for development. Hammonton is a moderately well-drained upland soil that has moderate limitations for development. Manahawkin is a very poorly-drained wetland associated (hydric) soil that has severe limitations for development.

## **Wetlands**

According to the Statewide Wetland Mapping Project (SWMP) mapping, nontidal and tidally-influenced headwater or near headwater palustrine riparian wetlands adjacent to Pot Hook Creek and bound the entire southern boundary of the combined parcel land area within this proposed project.

PLUS application materials provided by the developer indicate that wetlands have been delineated. It is recommended this delineation should be verified by the U.S. Army Corps of Engineers (USACE) through the Jurisdictional Determination process. In process. Palustrine wetlands are regulated by the Corp through Section 404 of the Clean Water Act. In situations where the applicant believes that the delineated wetlands on their parcel are non jurisdictional isolated wetlands. In addition certain drainage ditches may also be jurisdictional either under the Corps Program or through the DNREC Wetland and Subaqueous Lands program. Also, individual 404 permits and certain Nationwide Permits from the Corps 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 clarify these concerns the Corps should be contacted at 736-9763 to make the any final jurisdictional assessment.

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. Please be advised that the new Nationwide Permits from the Corps became effective March 19, 2007. The Delaware Coastal Management Program (DCMP) has not completed their Federal Consistency review of the new permits; therefore, contrary to past practices, Coastal Zone Management approval cannot be assumed. Individual certifications must be granted from the DCMP office for each project intending to utilize a Nationwide Permit. For more information on the Federal Consistency process, please contact the DCMP office at (302) 739-9283. Will comply

As noted previously, this parcel contains SWMP-mapped headwater riparian wetlands associated with Pot Hook Creek. Headwater or near 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. Is this statement concerning the release of sediment bound phosphorus into the waters of the pots Hook Creek? If so we have provided and will provide extensive means of capturing any and all sediment from being removed from the site and making advances on the waters. The riparian edge is in part a large Best Management Practice (BMP) measure. In addition sediment traps and bio-swales shall remove the sediments, nitrogen and phosphorus prior to waters entering the creek. . From a contaminate perspective the change of land use from farming will significantly reduce nitrogen loading to the Columbia Aquifer even if replaced by the fertilization of lawns. Chemicals used in the farming practise will be discontinued. In addition to eliminating this very significant non-point source of contamination, at least one farm chemical tank has been identified at the irrigation well . The removal of this chemical feed system will significantly reduce the risk to the aquifer. Prior to abandoning of the well it should be pumped and tested to determine if it has not already contaminated the aquifer. The result from the land use change doesn't have to be adverse to groundwater quality and/or quantity The SWMP maps are difficult to obtain without going to Dover. The State should include the map with this report for land owners to better understand the concerns expressed herein. A environmental consultant has been retained to identify any issues in regards to wetlands

on this site. In recognition of this concern, the Watershed Assessment Section strongly recommends the applicant consider preserving, in its entirety, the forested buffer immediately adjacent to Pot Hook Creek. If this is not doable, then a 100-foot upland buffer (planted in native vegetation) is recommended from all delineated wetlands. Based on a literature review of wetland and stream buffer size research by Castelle et al.

(1994), a 100-foot upland buffer is the minimum buffer width necessary, under most circumstances, to protect water quality.

This site plan exceeds the 100' buffer from state wetlands. In addition it provides for adequate buffers to 404 lands as well.

### **Impervious Cover**

Based on information provided by the applicant in the PLUS application, the applicant estimated post-construction surface imperviousness of only 21 percent. However, given the scope and density of this project this estimate is likely a significant underestimate. **This estimate is highly accurate.** Some of the major reasons for this underestimate are the applicant's improper use of natural areas (potential wetlands and/or buffers) and/or stormwater management areas to meet the County's open space requirements. **Please quote your reference for this comment.** Use of natural areas and/or or stormwater management areas in this manner results in a significant underestimate of this project's calculated amount of surface imperviousness, ultimately leading to a significant underestimate of this project's actual environmental impacts. Why would the storm water management areas be excluded in the calculation? Why would buffers or natural areas be excluded? Impervious cover is impervious. Cty. Open space is another matter and shouldn't be confused with impervious cover. There is an inherent danger in mixing the terms open space and impervious from a land planners perspective. The more buffer to the natural areas that was allowed seems, by the above logic, the less impervious area that the plan can calculate. This seems counterproductive. Therefore, the parcel's calculated amount of surface imperviousness should use as its basis, a calculated open space figure that reflects the omission of all delineated wetlands (i.e., USACE-approved) and stormwater management areas. Additionally, all created forms of constructed surface imperviousness (i.e., rooftops, sidewalks, and roads) should be comprehensively accounted for an included in the calculation for surface imperviousness.

### **Impervious Surface Take Off:**

TOTAL 1,680,356 sq. ft. or 38.58 acs. or 20.7% of Total Site Area

Sidewalks: 112,875 sq. ft. or 2.59 acs.

Interior drives: 578,607 sq.ft. or 13.28 acs.

Multi-use Path; 31,480 sq.ft. or .72 acs.

Buildings: 586,953 sq.ft. or 13.47 acs.

Driveways Off –

Street Parking 323,572 sq.ft. or 7.43 acs.

Amenity Area: 46,779 sq.ft. or 1.07 acs.

These areas are all the impervious areas on this site. All other lands remain open and pervious to rainfall. This was presented at the PLUS hearing, the accuracy of which we stand behind. In addition Technical Release No.55 of the Soils Conservation Service an agency of the United States Department of Agriculture states average percent of impervious area for a land use of this proposal would range between 25 and 38%. The State should be aware of these numbers and complement projects that are below or on the low side of these averages such as is this project.

**Therefore, the finalized calculation for surface imperviousness should reflect all of the above-mentioned concerns so that an accurate assessment of this project's impacts can be made. We are at odds in what is an accurate assessment. Are all 404 lands and state wetlands not considered part and parcel of a watershed? If the**

watershed calculations omit these lands then the state could argue that our impervious calculations should be adjusted accordingly. Until a definition is established otherwise we stand behind our calculations. For argument sake however if we remove the state wetlands (17.85 acs.) from the calculation we have a 22.87% impervious post construction. If we remove the state wetlands (17.85acs.) and the 404 wetlands (39.47acs.) we have a 29.85% impervious post construction. The DNREC could have run these numbers themselves based on the information they have been given on the site plan. Their commentary and word usage "significant underestimate" and "improper use" on this calculation distorts what is full disclosure and it ignites anti-development sentiment, which is unfounded on this application. Requesting clarification of the information is fair territory. The State should encourage environmentally sound planning. The purpose of PLUS is to aid the development process along by interweaving all agency regulations and suggestions not disrupt it stall it or stir the public unnecessarily with speculative determinations.

Studies have consistently shown a strong relationship between increases in surface imperviousness and subsequent declines in a watershed's water quality. A recently published technical source "The Practice of Watershed Protection" by Schueler and Holland 2002 states that no studies have been conducted that examine the effects of widespread applications of stormwater practices on impervious cover/stream quality relationships.(pg.16). Therefore it is also evident that stormwater practices mitigate adverse effects and % of imperviousness could potentially increase without a decrease in environmental aspects. Speaking specifically in regards to this site we will be required through the permitting of stormwater to provide capture, retention, and quality treatment of the predevelopment and post development flow differential It is strongly recommended, therefore, 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. It appears that BMP's to address surface imperviousness and "subsequent declines in a watershed's water quality" are directed at increasing groundwater recharge and increasing evapotranspiration by increased tree plantings. We recommend tree plantings, where feasible that are phyreatophytes (for example, Sycamores and Willows) use ten times more water then typical deciduous and evergreen trees. Planting these trees in areas where their roots can reach the water table (wet areas) will result in the increased up take of nitrogen and phosphorous, and water as well. As the plan develops we will include these green techniques into the design.

#### **ERES Waters**

This project is located adjacent to receiving waters of the greater Inland Bays designated as waters having Exceptional Recreational or Ecological Significance (ERES). ERES waters are recognized as special assets of the State, and shall be protected and/ or restored, to the maximum extent practicable, to their natural condition. Provisions in Section 5.6 of Delaware's "Surface Water Quality Standards" (as amended July 11, 2004), specify that all designated ERES waters and receiving tributaries develop a "pollution control strategy" to reduce non-point sources of pollutants through implementation of Best Management Practices (BMPs). Best Management Practices as defined in subsection 5.6.3.5 of this section, expressly authorizes the Department to provide standards for controlling the addition of pollutants and reducing them to the greatest degree achievable and, where practicable, implementation of a standard requiring no discharge of pollutants. Saving forest cover, retaining significant portion of open space in meadow, buffers along the Pots Hook Creek, infiltration practices, and bio-swales. We are aware that groundwater under the property discharges to Pots Hook Creek and to unnamed

tributaries of Wolfe Glade. The elimination of the current farming practice will significantly improve water quality in this area

See the recommendation above: Uptake of nitrates and phosphorous with phyreatophytic vegetation will reduce non-point sources of pollutants.

#### **TMDLs**

Total Maximum Daily Loads (TMDLs) for nitrogen and phosphorus have been promulgated through regulation for the Lewes-Rehoboth canal 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. This project is located in the low nutrient reduction area requiring a 40 percent reduction in nitrogen and phosphorus. Additionally, a 40 percent reduction in bacteria will also be required.

Conversion of agricultural land to almost any other land use will significantly reduce nitrogen and phosphorous loading to both groundwater and surface water especially when central sewer shall serve this proposal.

#### **Compliance with TMDLs through the PCS**

As stated above Total Maximum Daily loads (TMDLs) for nitrogen and phosphorus have been promulgated through regulation for the Inland Bays Watershed. The TMDL calls for a 40 percent reduction in nitrogen and phosphorus from baseline conditions. Additionally, a 40 percent reduction in bacteria will also be required from baseline conditions. A Pollution Control Strategy (PCS) will provide the regulatory framework for achieving them. 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, preservation of larger amounts of forest cover, and use of innovative stormwater management treatment trains. The proposal calls for many of these BMP's inherently contained within the design layout. 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 significantly within both a wellhead protection area and an excellent ground-water recharge area (see following map and attached map). This proposed development shows storm-water management ponds within the excellent ground-water recharge area and the wellhead protection area for Lewes Water (see map). Storm water management ponds designed to enhance recharge do not routinely degrade groundwater quality.

Wellhead protection areas are the surface and subsurface areas adjacent to public water supply wells where contamination could, if released, travel to the well. Land use activities or impervious cover on wellhead protection areas may adversely affect the quality and quantity of drinking water in these areas. Elimination of the existing agricultural irrigation well and its accompanying chemical feed tank will do several important things to enhance the future viability of the the Lewes well field. They include:

1. The existing ag.well will no longer compete with the well field for ground water when demand is greatest in the summer and the water-table is lowest.
2. The ag.irrigation system will no longer distribute nitrate-nitrogen and pesticides within the capture zone of the well field
3. The chemical feed tank will no longer be a potential source of direct groundwater contamination if a check valve were to fail at the well-head.

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 is an "indicator of how fast contaminants will move and how much water may become contaminated" (Andres, 2004, pg 1). Land use activities or impervious cover on areas of excellent groundwater recharge potential may adversely affect the quality and quantity of ground water in these areas. Ag. Vs. sub-division with off-site waste water treatment will result in an immediate and marked improvement in groundwater quality.

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. The continued plowing of farmed fields results in an ever-increasing "plow Pan" that could restrict groundwater recharge as well. 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 proposed plan discusses retention / detention basins to manage storm water within the wellhead area. All the water entering these basins in the form of precipitation and runoff has the potential to be drawn into public water supply for the City of Lewes.

- Water Supply recommends relocating the storm-water management ponds to an area not in the wellhead protection area or excellent ground-water recharge area. See comments above.

In addition this proposal anticipates its water source from Tidewater Utilities. Tidewater's Rehoboth Beach District is supplied water through a series of production wells located throughout the Rehoboth Beach and Route 1 Corridor area. The major groundwater production wells for this district are located within the following developments: Paynter's Mill, Maplewood, Rolling Meadows, Rehoboth Mall and the Plantations. A 750,000-gallon elevated water storage tank is located at the Home Depot site along Route 1. Water is distributed throughout the District via transmission mains located along major county roads and highways throughout the Rehoboth and Lewes area.

The Governors and Townsend Centre developments will be served water via an off-site water main extension. There will be no on-site production wells for this development.

The Water Supply Section recommends that the portion of the new development within the wellhead protection area and/or the excellent ground-water recharge area not exceed 20% impervious cover. 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 this area. However, the development should not exceed 50% regardless. A water balance calculation will be necessary to determine the quantity of clean water necessary to be recharged via a recharge basin (Kauffman, 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 0% to approximately 20.7%. Developer on the PLUS application provided these numbers.

Relocate any open space areas to the part of the parcel within the wellhead protection area and the excellent ground-water recharge area. This would decrease the total impervious area in these two areas. This would need further investigation whereas rainwater in this particular parcel of land most likely ends up in the Pot Hook Creek via surface run-off or as groundwater discharge .

Augmenting the ground-water recharge with clean rooftop run-off systems are another alternative to reducing the total impervious cover within excellent ground-water recharge potential areas (Kauffman, 2005).

Perform a water balance calculation to quantify the quantity of clean water recharged via a recharge basin (Thorntwaite, 1957). Is the reviewer recommending that a recharge basin be installed?

In addition, because the wellhead protection area is the source of public drinking water for the City of Lewes and the excellent ground-water recharge area so readily affects the underlying aquifer, the storage of hazardous substances or wastes should not be allowed within these areas unless specific approval is obtained from the relevant state, federal, or local program. Agreed, however a minimum quantity of substances or waste should be defined prior to notification

#### 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#investigations>

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.

Listed as: "Supplement 1 – Groundwater Recharge Design Methodology"

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

Thorntwaite, C. W. and Mather, J. R., 1957, Instructions and Tables for Computing Potential Evapotranspiration and the Water Balance: Drexel Institute of Technology, Laboratory of Climatology, Volume x, Number 3

#### **Map of Governors (PLUS 2007-03-10)**

The green area is excellent ground-water recharge potential area. The red area is the wellhead protection area for Lewes Water. The site plan is shown on the aerial image. The storm-water management ponds are outlined in black.



### **Water Supply**

The project information sheets state water will be provided to the project by Tidewater Utilities via a public 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 03-CPCN-12.

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. Will Comply

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. Will Comply but don't anticipate any new wells.

Should you have any questions concerning these comments, please contact Rick Rios at 302-739-9944.

#### **Sediment and Erosion Control/Stormwater Management**

A detailed sediment and stormwater plan will be required prior to any land disturbing activity taking place on the site. 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. Will comply

A Notice of Intent (NOI) for Stormwater Discharges Associated with Construction Activity must be submitted to the Division of Soil and Water Conservation along with the \$195 NOI fee prior to plan approval.

Applying practices to mimic the pre-development hydrology on the site, promote recharge, maximize the use of existing natural features on the site, and limit the reliance on structural stormwater components, such as maintaining open spaces, should be considered in the overall design of the project as a stormwater management technique. Green Technology BMPs must be given first consideration for stormwater quality management. Each stormwater management facility should have an adequate outlet for release of stormwater.

It is strongly recommended that you contact the reviewing agency to schedule a preliminary 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.

#### **Rare Species and Forested Riparian Buffers**

DNREC has never surveyed this site to determine if rare species are present, but we do have records of rare species within the forested riparian buffer along Pot Hook Creek. Because of the presence of these species and the existence of the State Natural Area, the forested riparian area is within a State Natural Heritage Site. This is one of the criteria used to determine the presence of Critical Resource Waters. The final decision regarding Critical Resource Waters, if this is an issue, will be made by the U.S. Army Corps of Engineers (USACE). The information above will aid the Corps in their determination.

Cumulative impacts are a valid concern considering the large footprint this project and the adjacent proposed Senators subdivision and proposed J.G. Townsend Village Center will have along ecologically important lands. The applicant indicated that adequate riparian buffers would be left intact along Pot Hook Creek and we recommend this include 100-foot wetland buffers for additional on-site wetlands as well. Although not currently State regulation, this request for 100-foot buffers is based on peer reviewed scientific research and is made to protect rare species, to protect water quality which is important for the early stages of some aquatic species and those sensitive to water quality changes, and because upland buffers around wetland areas serve as habitat for wetland dependent species. Take the 404 wetlands that are directly adjacent to this proposed plan. There is 4575 lin.ft. of which in three instances a corner of a proposed structure comes inside of 100' feet of the 404 wetland line. Predominately the plan far exceeds this recommended 100' distance in order to protect the existing forested areas.

**Forest Preservation**

DNREC appreciates the applicant's efforts to preserve the existing forested resources, they would recommend that the applicant consider removing those structures that will result in clearing, essentially remove or relocate five buildings and associated infrastructure at the southern end of the development. Forested areas near or along water courses are especially important from a wildlife management standpoint as this type of habitat is important as a wildlife travel corridor, as breeding areas for wetland dependent species, and also aide in the survivability of aquatic organisms by protecting water quality in a variety of ways.

DNREC would point out that there are currently no state codes or regulations protecting forests. This lack of forest protection has contributed to an estimated 20,000 acres of forest converted by development just in the last decade in Delaware as identified by Department of Agriculture Forest Service. This cumulative forest loss has led to a corresponding loss of forest-dependent species (Environmental Law Institute. 1999. Protecting Delaware's Natural Heritage: Tools for Biodiversity Conservation. ISBN#158576-000-5). Forest loss throughout the state is of utmost concern to all environmental agencies which are charged with conserving and managing the state's natural resources; we have to rely on applicants and/or the entity that approves the project (i.e. counties and municipalities) to consider and implement our professional, scientific recommendations. The spirit of your recommendations have been incorporated into this land plan. 96% of all existing forest will remain.

In addition trees will be planted throughout the development and the soils stabilized by converting the land into a sub-division.

**Nuisance Waterfowl**

The stormwater management ponds in the site plan 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 grass 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. Will comply 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.

**Mosquito Control**

Development projects that result in increased housing densities within 2 miles of large expanses of salt marshes or brackish wetlands can often lead to increased demands for mosquito control services, going beyond what DNREC's Mosquito Control Section currently has the budget or resources to provide. The concern for a potential increase in budgetary needs for mosquito control is just as valid as any other agencies concerns, such as those relating to an increase in traffic and roadway needs, increased need for emergency services, increase in student enrollment and bus

transportation, and an increase in energy demands.

Adverse impacts upon the State's allocation of public funds for mosquito control services must be realistically recognized as a potential consequence of approving development projects in proximity to known mosquito breeding areas; and State and local governments should then be prepared to deal with the increased budget demands for mosquito control services. The increase in the local (county/city) property tax base generated by this development does not result in any increase in the Mosquito control operating budget. Property taxes are local and these local governments do not pay the State for mosquito control services.

Additionally, even though the EPA has scientifically determined that EPA-registered mosquito control insecticides can be applied "without posing any unreasonable risks to human health, wildlife or the environment" (when used in accordance with all product label instructions), avoiding or reducing the use of such pesticides should be employed whenever possible. The following should be considered if this task is going to become the responsibility of the homeowners association: 1) achieving good control in an environmentally compatible manner requires technical knowledge, 2) they will need concurrence from all their homeowners/residents for if, how, when and where any treatments will be done, 3) controlling mosquitoes can be quite costly and an on-going problem, 4) they should be aware that there can be liability issues that their treatment activities might cause, particularly in regard to any claims of chemical trespass, misapplications, or adverse impacts to human health or the environment from insecticide exposures.

Limiting development within proximity to mosquito breeding wetlands will aide in achieving a reduction in pesticide use. For more information about this issue, the applicant can contact Dr. Bill Meredith, Mosquito Control Administrator at (302) 7399917.

#### **State Resource Area/Natural Area**

As noted by the applicant, this project contains or borders land currently identified as part of a State Resource Area. State Resource Areas are comprised of lands that contain a variety of natural, cultural and open space resources significant to the state. Consideration should be given to protecting these resources during design and construction of this project. For more information, please contact Ron Vickers, Land Preservation Office, 739-9235.

Further, this project contains land currently listed on Delaware's Natural Areas Inventory. Natural Areas contain lands of statewide significance identified by the Natural Area Advisory Council as the highest quality and most important natural lands remaining in Delaware.

The developer has already considered protecting riparian lands adjacent to Pot Hook Creek, however, additional consideration should be given to protecting the forested resources on the site in their entirety. In fact, the developer should investigate dedicating the Natural Area as a Nature Preserve through a conservation easement or donation of land. For more information, please contact the Office of Nature Preserves at 739-9235. This will be considered.

#### **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.

### Underground Storage Tanks

There are no LUST site(s) located near the proposed project. However, should any underground storage tank or petroleum contaminated soil be discovered during construction, the Tank Management Branch must be notified as soon as possible. It is not anticipated that any construction specifications would need to be changed due to petroleum contamination. However, should any unanticipated contamination be encountered and PVC pipe is being utilized, it will need to be changed to ductile steel with nitrile rubber gaskets in the contaminated areas.

### Air Quality

Once complete, vehicle emissions associated with this project are estimated to be 36.2 tons (72,447.1 pounds) per year of VOC (volatile organic compounds), 30.0 tons (59,981.3 pounds) per year of NOx (nitrogen oxides), 22.1 tons (44,255.3 pounds) per year of SO2 (sulfur dioxide), 2.0 ton (3,939.5 pounds) per year of fine particulates and 3,030.1 tons (6,060,105.5 pounds) per year of CO2 (carbon dioxide).

Emissions from area sources associated with this project are estimated to be 14.6 tons (29,221.2 pounds) per year of VOC (volatile organic compounds), 1.6 ton (3,215.2 pounds) per year of NOx (nitrogen oxides), 1.3 ton (2,668.2 pounds) per year of SO2 (sulfur dioxide), 1.7 ton (3,443.2 pounds) per year of fine particulates and 59.2 tons (118,456.2 pounds) per year of CO2 (carbon dioxide).

Emissions from electrical power generation associated with this project are estimated to be 5.8 tons (11,581.2 pounds) per year of NOx (nitrogen oxides), 20.1 tons (40,282.4 pounds) per year of SO2 (sulfur dioxide) and 2,970.8 tons (5,941,649.3 pounds) per year of CO2 (carbon dioxide).

	VOC	NOx	SO2	PM2.5	CO2
Mobile	36.2	30.0	22.1	2.0	3030.1
Residential	14.6	1.6	1.3	1.7	59.2
Electrical Power		5.8	20.1		2970.8
TOTAL	50.8	37.4	43.5	3.7	6060.1

For this project the electrical usage via electric power plant generation alone totaled to produce an additional 5.8 tons of nitrogen oxides per year and 20.1 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. They highly recommend this project development and other residential proposals increase the energy efficiency of their homes.

The Energy office recommends 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.

A regional bikeway system is a major part of the amenities proposed with this application.

**State Fire Marshal's Office – Contact: R.T. Leicht 856-5298**

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):Will comply

a. **Fire Protection Water Requirements:**

- ¾ Water distribution system capable of delivering at least 1000 gpm for 1hour duration, at 20-psi residual pressure is required. Fire hydrants with 800 feet spacing on centers. (Assembly, Apartments, and Townhouses)
- ¾ 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:** ¾ All structures over 10,000 sq.ft. aggregate will require automatic sprinkler protection installed.

- ¾ Buildings greater than 10,000 sq.ft., 3-stories or more, over 35 feet, or classified as High Hazard, are required to meet fire lane marking requirements
- ¾ Show Fire Department Connection location (Must be within 300 feet of fire hydrant), and detail as shown in the DSFPR. ¾ Show Fire Lanes and Sign Detail as shown in DSFPR ¾ 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**

- ¾ 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 Gills Neck Rd must be constructed so fire department apparatus may negotiate it.
- ¾ 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.

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- ¾ 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.
- ¾ The use of speed bumps or other methods of traffic speed reduction must be in accordance with Department of Transportation requirements. ¾ The bridge shall meet all DelDOT requirements and can handle all fire apparatus gross vehicle weights.
- ¾ 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:**

- ¾ Provide type of fuel proposed, and show locations of bulk containers on plan.

e. **Required Notes:**

- ¾ 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”
- ¾ Proposed Use ¾ Alpha or Numerical Labels for each building/unit for sites with multiple buildings/units ¾ Square footage of each structure (Total of all Floors) ¾ National Fire Protection Association (NFPA) Construction Type ¾ Maximum Height of Buildings (including number of stories) ¾ Townhouse 2-hr separation wall details shall be shown on site plans ¾ Note indicating if building(s) is/are to be sprinklered ¾ Name of Water Provider ¾ Letter from Water Provider approving the system layout ¾ Provide Lock Box Note (as detailed in DSFPR) if Building is to be sprinklered
- ¾ 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**

A portion of this site is located 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. Large swath of pervious cover is a part of this application. Only 20.7% of the lands shall be impervious.

This site also overlaps with the State's Green Infrastructure Investment Strategy Plan. The Natural Areas layer is present on the site. This designation indicates the land has valuable environmental characteristics and functions which are discussed in Governor Minner's Executive Order Number 61. They should be preserved as such, and not developed for residential or other incompatible uses.

### *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 of 472 residential units on 186 acres located on Gills Neck Road, 1,100 ft. east of King's Highway in the Lewes-Rehoboth Hundred. According to the State Strategies Map, the proposal is located in an Environmentally- Sensitive Developing Area. However, the proposal does not include units for first time homebuyers. The 2003 Statewide Housing Needs Assessment indicates that much of the housing in the Lewes CCD is outside of the affordability level of low- and moderate-income households. For example, real estate data collected by DSHA for the fourth quarter of 2006 indicated that the median home price was \$360,000, which is outside the affordability level of low-and moderate-income households. Conversely, the affordability price for low- and moderate-income households earning 100% of area median income is estimated to be \$174,485. Households that cannot afford to live in the coastal resort area have been displaced to western Sussex County. The provision of moderately-priced units for first time homebuyers would help support the housing needs of low- and moderate-income families employed by the local retail, service, and tourism economy.

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

This proposed development is within the Cape Henlopen School District boundaries. DOE offers the following comments on behalf of the Cape Henlopen School District:

- 1 Using the DOE standard formula, this development will generate an estimated 236 students.
- 2 DOE records indicate that the *Cape Henlopen* School Districts' *elementary schools are not at or beyond 100% of current capacity* based on September 30, 2006 elementary enrollment.
- 3 DOE records indicate that the *Cape Henlopen* School Districts' *secondary schools are not at or beyond 100% of current capacity* based on September 30, 2006 secondary enrollment.
- 4 While the *Cape Henlopen* School District secondary and elementary schools are not currently beyond capacity, *the district does NOT* have adequate student capacity to accommodate the additional students likely to be generated from this development given the number of planned and recorded residential sub divisions within district boundaries.
- 5 Continued development will cause significant burden to the *Cape Henlopen* School District without the provision for additional educational infrastructure.
- 6 The developer is strongly encouraged to the Cape Henlopen School District Administration to address the issue of school over-crowding that this development will exacerbate.
- 7 DOE requests the developer work with the Cape Henlopen 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 school district. Will comply

**Sussex County – Contact: Richard Kautz 855-7878**

The proposed project is not designed in accordance with existing County Ordinances and does not qualify with the Density Trade. The project should either be resubmitted with a design which is in accordance with present County regulations or resubmitted for consideration after applicable ordinance amendments are passed by the County Council. Ordinances are in place.

Due to the probable existence of excellent recharge on the site, the developer should prohibit the discharge of roof drains to impervious surfaces; require the segregation and treatment of roof run-off from mechanical system prior to discharge to the recharge area, and use best management practices to ensure that land uses and activities are conducted in such a way as to minimize the impact on, and reduce the risk of contamination to, excellent recharge areas. Will investigate appropriate BMP's to achieve this objective during the engineering phase of plan development.

This year Sussex County will be considering implementation of a Source Water Protection Program required by the State. Depending on the requirements adopted by the County Council this project might be affected. Any well location should insure that the wellhead protection area is entirely on site. We aren't anticipating any new well permits for this project.

Because this project is situated in an Environmentally Sensitive Development Area, the required report should include how the PLUS comments have been addressed and how the plan has been revised accordingly.

**The Sussex County Engineer Comments:**

The proposed project is within the West Rehoboth Expansion of the Dewey Beach Sanitary Sewer District and connection to the sewer system is mandatory. The project conforms to the West Rehoboth Planning Study and system design assumptions for sewer service. A sewer concept plan for providing sewer service to the area, including this project, was previously approved. This plan requires extensive regional construction to be completed by the developer, with the added requirement to participate in and contribute funds to a necessary treatment plant upgrade in accordance with an approved sequence of construction. Requirements are detailed on the approved concept plans and correspondence. The offsite force main, which will extend from Gills Neck Road to the treatment plant, must be fully operational before the Engineering Department will provide final approval of the project allowing sewer connections to begin. In addition to the above, the layout of the new proposal differs significantly from the original, and it is required that a revised concept plan for Governor's be submitted for review and approval prior to the submittal of any construction plans. A checklist for preparing sewer concept plans was handed out at the meeting.

The proposed development will require a developer installed collection system in accordance with Sussex County's standard requirements and procedures. The Sussex County Engineer must approve the connection point. The plan is different from the approved concept plan and a revised concept is required as noted above. The previously approved concept plan shall also be submitted with all future plan submittals.

Onetime System Connection Charges will apply. Please contact Mrs. Christine Fletcher at 302 854-5086 for additional information on charges.

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

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

Sincerely,



Constance C. Holland, AICP  
Director

CC: Sussex County City of  
Lewes