

MERESTONE

Consultants, Inc.

Civil Engineers - Land Surveyors - Site Planners

23 September 2008

Constance C. Holland, AICP, Director
Office of State Planning Coordination
122 William Penn Street, Suite 302
Haslet Building, Third Floor
Dover, DE 19901

**Re: #PLUS 2006-10-05; Lands of Givens (Shepherd Walk)
Tax Parcel No. 3-34-11.00-81.00**

Dear Ms. Holland:

Enclosed for your review and consideration please find one (1) copy of a revised Preliminary Subdivision Plan for the above referenced site, attached in PDF format and our response to the PLUS review (#2006-10-05).

This project is a proposed Residential Community located within the Environmentally Sensitive Development District. This approximate 49-acre site is located on the north side of Cedar Grove Road (County Road No. 283) east of Robinsonville Road, in Sussex County, Delaware. The Developer, Cornerstone Developers, is applying for subdivision approval in accordance with the County's AR-1 Cluster Development Option and the requirements of Sussex County. The site lies within the County's Environmentally Sensitive District Overlay Zone and is in Investment Level 3 according to the Strategies for State Policies and Spending Update.

This project was reviewed by the office of State Planning Coordination through their PLUS review process on October 25th 2006 (PLUS 2006-10-05). The initial application mentioned that there would be 115 single-family units. The revised preliminary Subdivision Plan submitted for consideration reflects the Developer's proposal at revising the plan to address the PLUS review comments and site limitations regarding stormwater management disposal.

The plan was originally submitted to the DSPC as a 115 lot subdivision seeking to utilize the County's recently adopted ordinance allowing for a development fee per unit for every unit in excess of two units per, for the purpose of creating open space preservation/active and passive recreation areas but because of site limitations regarding wetlands and stormwater management it was felt that this site was not a proper candidate for additional density and therefore this revised plan reducing the number of lots to 92 is being submitted.

It is my belief the revised plan provides for an element of creativity in regards to design concepts which provides a superior design over and above a standard lot development option while affording a degree of protection of significant natural features and resources and therefore satisfactorily address the PLUS review. By utilizing the County's Cluster Development Option the developer has been able to design the subdivision layout to provide for the protection of wetlands; provide for preservation of some forested areas; maximize inter-connectivity within the community by utilizing sidewalks and pathways; and create community areas consisting of a club house and pool for social and recreational activities.

Sincerely,
Merestone Consultants, Inc.

Roger A. Gross, P.E.
w/Encl.

Cc: Gordon Kane, James Fuqua, Jr., Esq.

"The Extra Measure People"

19633 Blue Bird Lane, Suite 7, Rehoboth Beach, DE 19971 - (302) 226-5880 - Fax (302) 226-5883
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November 17, 2006

Mr. Roger Gross
Merestone Consultants, Inc.
19633 Blue Bird Lane, Ste. 7
Rehoboth Beach, DE 19971

RE: PLUS review – PLUS 2006-10-05; Lands of Givens

Dear Mr. Gross:

Thank you for meeting with State agency planners on October 25, 2006 to discuss the proposed plans for the Lands of Givens project to be located at the northeast corner of Robinsonville Road and Cedar Grove Road in Sussex County.

According to the information received, you are seeking site plan approval through the County for 115 residential units located within an Investment Level 3 and the Environmentally Sensitive Developing area.

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 Sussex 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

- The Office of State Planning and Coordination acknowledges that the proposed development is located within an Investment Level 3 area. These areas are where we anticipate growth to occur or where growth is occurring. In addition, this site falls within the Environmentally Sensitive Developing Area within Sussex County comprehensive plan. This office has no objections to the development of this property in accordance with County codes and ordinances. With that said, the developer should keep in mind that it is located in an Environmentally Sensitive Developing Area and should design a site plan that recognizes the environmental or cultural resources valuable to this region of Sussex County. With these thoughts in mind, this office would encourage the developer to reconsider the design of this site to preserve open space within the development to promote these resources and improve the quality of the community's design.

In addition, this office would encourage the developer to work with the various State agencies to address their concerns regarding the natural resources within the site and the need for quality open space for potential residents. Also, I would encourage the developer to work with the Department of Transportation - Western Parkway Working Group to address the potential impacts regarding this project on the proposed development. If the developer has any additional questions or wish to learn more about better community design, please feel free to contact this office.

Street Design and Transportation

- Robinsonville Road and Cedar Grove Road are both local roads. 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 DelDOT will require right-of-way dedication along the frontage to provide any additional width needed from this project. The five-foot dedications shown on the plan appear to address this requirement. *{A five (5) foot right-of-way dedication has been provided along both Cedar Grove and Robinsonville Road as requested.}*
- DelDOT will also require the construction of a 10-foot wide shared use path in a 15-foot wide permanent easement across the frontages of the site. *{A fifteen (15) foot easement has been provided for the construction of a ten (10) foot wide multi-modal path.}*

- The developer should anticipate a requirement to improve sections of Robinsonville Road and Cedar Grove Road to meet DeIDOT's local road standards. *{It is anticipated that the development will require roadway improvements along Cedar Grove Road in the form of wider travel ways, shoulders, improved intersection designs, and multi-modal facilities for pedestrian circulation.}*
- The developer should anticipate a requirement to enter a signal agreement for the intersection of Robinsonville Road and Cedar Grove Road. *{The Developer acknowledges that he may be obligated to enter into a signal agreement for the intersection of Robinsonville and Cedar Grove Roads.}*
- The creation of an outlot to be retained by Mr. & Mrs. Givens is acceptable, but that lot must be accessed through the proposed development streets rather than directly from Robinsonville Road. *{The revised plan has provided for a stub street connection to the outlot that will be retained by the Givens providing access from an interior subdivision street.}*
- From the discussion at the PLUS meeting, DeIDOT understands that Mr. & Mrs. Givens live on their existing lot (Tax Parcel 3-34-11.00-81.04) and may want the outlot for the sole purpose of expanding their residence, without additional access. DeIDOT would have no objection that except that as the outlot is presently configured it would preclude a street connection to Robinsonville Road. DeIDOT understands that the developer will ask Mr. & Mrs. Givens if they might consider a reconfigured outlot to allow the street connection. *{It is not known at this time what the Givens will do with the outlot. They did not want a street access to Robinsonville Road through their property so a stub street connection to the rear of this parcel has been provided to provide access from an interior subdivision street.}*
- As discussed at the PLUS meeting, the subject development would be affected by one of the alternative alignments being considered for the Western Parkway. DeIDOT anticipates selecting one of these alignments in 2007 for design and construction, but no schedule has been set for either of these activities. More information on the Western Parkway Project may be found at http://www.deldot.gov/static/projects/western_parkway. *{The Developer acknowledges that Del DOT is exploring alternative alignments for the Western Parkway, one of which directly impacts this project. It is our understanding that, at this time no alignment and no design or construction schedule has been set.}*

Natural and Cultural Resources

- According to the Statewide Wetland Mapping Project (SWMP) mapping, palustrine forested and palustrine scrub-shrub wetlands were mapped over much of the north central portion of the parcel. Wetlands provide water quality benefits, attenuate flooding and provide important habitat for plants and wildlife. The developer should maintain a 100-foot vegetated buffer from the wetlands. There should not be any buildings or associated infrastructure within the buffer. *{A wetlands reconnaissance survey by Ben Kulp of Merestone Consultants, Inc. has determined that wetland areas, delineated on the plan, meet the criteria found in the 1987 Corps of Engineers Wetland Delineation Manual and Regulatory Guidance Documents released on October 7, 1991 and March 6, 1992, however these areas are disconnected from any significant drainage feature (isolated wetland) and may not fall under the jurisdiction of the U.S. Army Corps. The plan proposes no disturbance to these wetland areas other than one road crossing. If through the development/engineering process it is determined the impacts to wetlands are unavoidable, the appropriate federal and/or state permits will be obtained. Sussex County has yet to adopt a buffer ordinance from non-tidal wetlands; the plan proposes buffers of varying degrees with average buffers exceeding 25-feet.}*
- The following is required by the Sussex County Conservation District:
 1. The District will require a phased plan and sequence of construction for this project. DNREC regulations require no more than 20 acres to be disturbed at more time. Please address. *{Stormwater management and erosion & sediment control plans will be prepared in accordance with contemporary regulations. The proper phasing and sequence of construction will be provided on those plans.}*
 2. Please demonstrate to the District that this project has an adequate outfall. *{The outfall from the stormwater management system will be through an enclosed storm sewer system offsite, west of Robinsonville Road to Gosling Creek. Agreements for easements have been obtained and a route survey has been performed that verifies gravity flow to the outfall can be achieved.}*

3. Under the DNREC Health and Safety Memo of 2000, all wet ponds are required to have an open space depth of 3 feet or more that comprises 50-75 percent of the area of the pond. *{If it is determined that a wet pond is the appropriate means of stormwater management, the pond will be designed to maintain the required surface area at three (3) feet or deeper.}*
 4. Consideration should be made for any adjacent properties during the design of this project, including drainage and erosion/sediment control. *{Runoff from adjacent properties and roadways will be accounted for in the overall stormwater management and erosion & sediment control design.}*
 5. Please provide a soil survey report for each SWM basin. *{Geotechnical information in the form of soil borings and/or infiltration tests will be provided with the stormwater management plans.}*
 6. Please incorporate "Green Technology BMPs" in the stormwater management design as stated in the section 10.3.5.1 of the regulations. The District recommends green technology practices such as bioswales between the rear lots to provide drainage and water quality. *{Where site conditions are conducive to their use, we will consider the use of Green Technology BMP's as part of the overall stormwater management system, as well as other DNREC approved methods.}*
- The Drainage Program does not support the removal of trees for the creation of stormwater management areas. *{In accordance with direction from the Sussex Conservation District (SCD) the site will be allowed to release stormwater runoff at a restricted rate to Gosling's Branch due to the absence of a positive outfall. This will require the site to have a large stormwater management facility than is customary. The facility needs to be sited at the topographical low part of the site to avoid a stormwater pump station or massive earth moving to achieve positive drainage flow. Unfortunately, this is also where the low-lying forested wetland areas exist. An attempt to preserve this area to the most practical extent possible has allowed us to protect all of the adjacent wooded wetland area with a minimal amount of tree loss (approximately 1.7 acres) to account for the anticipated stormwater management area.}*
 - The Drainage Program does not have a clear understanding how stormwater is to be conveyed to the stormwater management areas. The Drainage Program requests that the routing of major stormwater pipes through yards be prohibited. *{The development will be served by a curb & gutter street section that will require the use of inlets and storm sewer for stormwater conveyance. We anticipate that most of this can be taken care of within the street right-of-ways. If there is the occasion that cross drainage through lots cannot be avoided, the appropriate easements will be shown on the record plan.}*
 - 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. In order to provide more informed comments and to make recommendations, the program botanist and zoologist request the opportunity to survey the forest and wetland areas that could potentially be impacted by the project. *{The NOAA's National Marine Fisheries Service has indicated that the proposed project does not appear likely to impact any waterbody where species listed under the jurisdiction of NOAA's National Marine Fisheries Service (NMFS) species are known to occur and no further coordination with NMFS Protected Resource Division is necessary. The Developer, currently, does not own the subject property but would not have a problem with DNREC conducting an onsite survey. If DNREC wishes to perform an onsite survey, I would suggest contacting the current property owners, Russell L. and Dorothy I Givens.}*
 - The amount of forest loss estimated by the applicant should be re-evaluated, as the applicant states 12.7 out of 21.68 acres will be cleared. However, there are at least 42 completely forested lots, 18 partially wooded lots and roadways within the forested area. Not only will these lots be cleared for homes, driveways and garages but subsequently by homeowners for sheds, play areas, pools, kennels etc. Although stated on the site plan, there does not appear to be 18 acres of forest preserved and what is maintained will be fragmented by lots and infrastructure. *{The plan now under consideration has been substantially revised from the plan that was reviewed by PLUS. Most significantly the number of lots has been reduced from 115 to 92. The updated forest loss estimates are as follows:}*
 - *Approximately 11.2 acres will be removed for stormwater management and infra-structure improvements. (this does not include those wooded areas within lots which may be protected from clearing through either deed restrictions or lot owner preference.0}*
 - *25 completely forested lots and 12 partially wooded lots.}*

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

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

The Office of State Planning and Coordination acknowledges that the proposed development is located within an Investment Level 3 or an areas where we anticipate sprawl growth to occur in areas where growth is occurring at an accelerated rate. In addition, this site falls within the Environmentally sensitive area within Sussex County and that this site may have environmental or cultural resources valuable to this region of Sussex County. With these thoughts in mind, this office would encourage the developer to reconsider the design of this site to preserve open space within the development to promote these resources and improve the quality of the community's design. *[Level 3 areas are characterized by lands which are adjacent to or intermingled with fast growing areas within counties or municipalities which are otherwise categorized as Investment Levels 1 or 2. These lands are most often impacted by environmentally sensitive features, agricultural preservation issues, or other infrastructure issues. The plan now under consideration has been substantially revised from the plan that was reviewed by PLUS, the number of lots has been reduced from 115 to 92. By utilizing the County's Cluster Development Option the developer has been able to design the subdivision layout to provide for the protection of wetlands; provide for preservation of some forested areas; maximize inter-connectivity within the community by utilizing sidewalks and pathways; and create community areas consisting of a club house and pool for social and recreational activities.]*

In addition, this office would encourage the developer to work with the various PLUS partners to meet their concerns regarding natural resources within the site and the need for quality open space for potential residents. Also, I would encourage the developer to work with the Department of Transportation - Western Parkway Working Group to address the potential impacts regarding this project on the proposed development. If the developer has any additional questions or wish to learn more about better community design, please feel free to contact this office. *[As this plan evolves and moves through the system, the Developer will work with the various agencies to determine their requirements and what elements of that cooperative exercise will be incorporated into the design.]*

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

This parcel contains the site of the J. Roach House (S-960; Beers Atlas of 1868). There may be archaeological remains associated with this house. There is a small area of medium potential for prehistoric-period archaeological sites. There are two early-20th-c. houses cut out of the northwest corner of the parcel, and a mid-20th-c. house across Cedar Grove Rd from the southeast corner of the parcel.

Small, rural, family cemeteries often are found in relation to historic farm complexes, such as the Roach 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. 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 contact person for this program is Faye Stocum, 302-736-7400. *[There was no evidence of any physical remnants of the existing house. Furthermore, there was no evidence of any family cemetery plots associated with the original residence. If, however, through the course of development the unexpected discovery of unmarked human remains occurs, the developer understands that the discovery and disposition of such remains will be governed by the Delaware's Unmarked Human Remains Act of 1987.]*

The DHCA recommends sufficient landscaping around the development to block any adverse visual or noise effects on the nearby historic properties. They would appreciate the opportunity to examine the area for possible archaeological sites, to learn something about their location, nature, and extent prior to any ground-disturbing activities. *[Perimeter buffers and landscape areas are proposed between perimeter lots and adjacent properties and roads. The Developer will provide a formal landscape Plan as part of the final subdivision approval process. The Developer, currently, does not own the subject property but if DHCA wishes to perform an onsite survey, I would suggest contacting the current property owners would not have a problem with DHCA conducting an, Russell L. Dorothy I Givens.]*

Department of Transportation – Contact: Bill Brockenbrough 760-2109

- 1) Robinsonville Road and Cedar Grove Road are both local roads. 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 DelDOT will require right-of-way dedication along the frontage to provide any additional width needed from this project. The five-foot dedications shown on the plan appear to address this requirement. *[A five (5) foot wide right-of-way dedication has been provided along both Cedar Grove and Robinsonville Road as requested.]*

- 2) DeIDOT will also require the construction of a 10-foot wide shared use path in a 15-foot wide permanent easement across the frontages of the site. *{A fifteen (15) foot easement has been provided for the construction of a ten (10) foot wide multi-modal path.}*
- 3) The developer should anticipate a requirement to improve sections of Robinsonville Road and Cedar Grove Road to meet DeIDOT's local road standards. Preliminarily, those improvements would include widening the road to 11-foot lanes and 5-foot shoulders, an overlay of the existing pavement and improvements to the geometry and drainage. Again preliminarily, the limits of those improvements on each road will be from the intersection of the two roads to the far limits of the site frontage. A final determination regarding the limits of the improvements, and the details of the improvements, such as the thickness of any required overlay, will be determined as part of the entrance plan review. *{It is anticipated that the development will require roadway improvements along Robinsonville and Cedar Grove Roads in the form of wider travel ways, shoulders, improved drainage, improved intersection designs, and multi-model facilities for pedestrian circulation.}*
- 4) The developer should anticipate a requirement to enter a signal agreement for the intersection of Robinsonville Road and Cedar Grove Road. DeIDOT will install a signal at this intersection if and when DeIDOT finds that one is warranted. The agreement would obligate the developer to fund, or participate in funding that signal when it is installed. *{The Developer acknowledges that he may be obligated to enter into a signal agreement for the intersection of Robinsonville and Cedar Grove Roads.}*
- 5) The creation of an outlot to be retained by Mr. & Mrs. Givens is acceptable, but that lot must be accessed through the proposed development streets rather than directly from Robinsonville Road. DeIDOT would prefer that a second access to the development be built on Robinsonville Road (which would provide additional entry for emergency services) and if that were done Mr. & Mrs. Givens' outlot could be accessed from that street. Alternatively, a driveway easement could be provided in the area of Lots 35 through 38 to serve the outlot. *{The revised plan has provided for a stub street connection to the outlot that will be retained by the Givens providing access from an interior subdivision street through the subdivision. A second access has been provided to Cedar Grove Road providing an additional entry point for emergency vehicles.}*
- 6) From the discussion at the PLUS meeting, DeIDOT understands that Mr. & Mrs. Givens live on their existing lot (Tax Parcel 3-34-11.00-81.04) and may want the outlot for the sole purpose of expanding their residence, without additional access. DeIDOT would have no objection that except that as the outlot is presently configured it would preclude a street connection to Robinsonville Road. They understand that the developer will ask Mr. & Mrs. Givens if they might consider a reconfigured outlot to allow the street connection. *{The Givens did want an access through their lands to Robinsonville Road so a stub street connection has been provided through the subdivision for internal access to Robinsonville Road should the property be subdivided at a later date.}*
- 7) As discussed at the PLUS meeting, the subject development would be affected by one of the alternative alignments being considered for the Western Parkway. The proposed Western Parkway Project is one of the recommendations contained in a report that resulted from the State Route 1 Land Use and Transportation Study (LUTS), a joint DeIDOT and Sussex County study that began in 2001 and ended in 2003. Since that time, the Department has been engaged with this project to examine a full range of alternatives for providing a transportation corridor parallel to and west of existing Route 1 (Coastal Highway) from north of Five Points (Route 9) to Delaware Route 24. We have refined this range of potential corridor alignments for which we will be doing further engineering and environmental analysis, and one of those alignments would affect the Cedar Grove Road frontage of the subject development. DeIDOT anticipates selecting one of these alignments in 2007 for design and construction, but no schedule has been set for either of these activities. More information on the Western Parkway Project may be found at http://www.deldot.gov/static/projects/western_parkway.

Pending the results of our location decision, DeIDOT recommends that the Developer proceed with the planning for their development but maintain contact with the project manager for the Western Parkway Study, Mr. Monroe C. Hite, III. Mr. Hite may be reached at (302) 760-2120.

If DeIDOT selects the alternative that would affect their development, they would be compensated for any damages resulting from that selection. As necessary, the developer may contact our Assistant Director for Real Estate, Mr. Wayne Rizzo, about how any such damages would be determined. Mr. Rizzo may be reached at (302) 760-2228. *{The Developer acknowledges that Del DOT is exploring alternative alignments for the Western Parkway, one of which directly impacts this project. It is our understanding that, at this time no alignment and no design or construction schedule has been set.}*

- 8) The developer's site engineer should contact the Subdivision Manager for Sussex County, Mr. John Fiori, regarding specific requirements for road improvements and access. His review will include both of the existing site accesses as well as the proposed access. Mr. Fiori may be reached at (302) 760-2157. *{Through the entrance construction plan review process, we will coordinate with Mr. Fiori for required roadway and entrance improvements.}*

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

Soils

Based on the Sussex County soil survey update, Fort Mott, Downer, Pineyneck, and Hurlock were mapped in the immediate vicinity of the proposed construction. Fort Mott and Downer are well-drained upland soils that, generally, have few limitations for development. Pineyneck is a moderately well-drained soil of low-lying uplands that has moderate limitations for development. Hurlock is a poorly-drained wetland associated (hydric) soil that has severe limitations for development.

It should also be noted that a significant portion of subject parcel (approximately 40-45%) is likely to have a seasonal high water table within one-foot of the soil surface. These soils are mapped as Hurlock and are indicative of wetland conditions. Building in such soils is likely to leave prospective residents of this and adjoining properties susceptible to future flooding problems from groundwater-driven surface water ponding, especially during extended periods of high-intensity rainfall events such as tropical storms/hurricanes or "nor'easters." This is in addition to increased flooding likely from surface water runoff emanating from future created forms of structural imperviousness (roof tops, roads, and sidewalks). *{We acknowledge that there are areas onsite that are mapped as poorly drained soils and may have a high seasonal water table. Geotechnical testing will be performed to determine the extent of these areas and appropriate flood proofing and building techniques will be implemented in those areas. Most of the proposed lots are situated outside of the anticipated poor soils area and the stormwater management and bulk grading design will insure that lot flooding from the regulatory design rainfall events will be avoided.}*

Wetlands

According to the Statewide Wetland Mapping Project (SWMP) mapping, palustrine forested and palustrine scrub-shrub wetlands were mapped over much of the north central portion of the parcel. Wetlands provide water quality benefits, attenuate flooding and provide important habitat for plants and wildlife. The developer should maintain a 100-foot vegetated buffer from the wetlands. There should not be any buildings or associated infrastructure within the buffer. *{Wetland areas have been delineated and are shown on the plan which may or may not be jurisdictional. The centrally located forested wetland area will be incorporated into the overall stormwater design to be utilized as additional flood storage in an attempt to mimic the pre-development hydrology. Sussex County has yet to adopt a buffer ordinance from non-tidal wetlands; the plan proposes buffers of varying degrees with average buffers form lots exceeding 25-feet.}*

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. *{A wetlands reconnaissance survey by Ben Kulp of Merestone Consultants, Inc. has determined that wetland areas, delineated on the plan, meet the criteria found in the 1987 Corps of Engineers Wetland Delineation Manual and Regulatory Guidance Documents released on October 7, 1991 and March 6, 1992, however these areas are disconnected from any significant drainage feature (isolated wetland) and may not fall under the jurisdiction of the U.S. Army Corps. A Jurisdictional Determination (JD) will be filed with the Army Corps for their determination.}*

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. *{If, through the JD process, it is determined that the wetlands fall under the jurisdiction of the Army Corps of Engineers, the appropriate federal and/or state permits will be obtained for any proposed impacts to those wetland areas, as required.}*

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.

Impervious Cover

Based on a review of the PLUS application, post-development surface imperviousness is estimated to be about 15 percent. However, given the scope and density of this project, this estimate is likely to be an **underestimate**. Use of the wetland and stormwater management acreage for the calculation of recreational open space, as reported in the PLUS application for this project, significantly underestimates this project's actual amount of created surface imperviousness, and ultimately understates its environmental impacts. Therefore, it is strongly recommended that the finalized open space calculation omit all wetland and stormwater management areas. Furthermore, the applicant should also realize that all forms of constructed surface imperviousness (i.e., rooftops, sidewalks, and roads) should be accounted for when calculating surface imperviousness. It was not clear from the information submitted whether all of these forms were considered in surface imperviousness calculation. *[We've recalculated the anticipated impervious area for the site based on this revised plan and offer the following:*

- *There is approximately 4.0 acres of impervious areas within the street right-of-ways which include roads, curbs and sidewalks.*
- *There will be approximately 6.3 acres of impervious areas within the lots assuming approximately 3,000 square feet of impervious per lot for dwellings, sidewalks and driveways.*
- *There will be approximately 1.3 acres of impervious area devoted to the community area, nature trail and the shared use path.*
- *Total anticipated impervious area will be 11.6 acres (23.5% of site).*

Currently, Sussex County ordinances allow for the inclusion of wetlands, stormwater management and community wastewater areas as part of the open space calculation. If those areas were subtracted from the overall open space calculation, there would still be approximately 10 acres of open space (21% of site).]

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. *[Where site and soil conditions allow, best management practices (BMP's) will be incorporated into the overall stormwater management system. A formal landscape plan which will require the planting of trees and shrubs and will help to augment the loss of forested lands will be submitted as part of the final subdivision plan.]*

ERES Waters

This project is located adjacent to receiving waters of the 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.

TMDLs

Total Maximum Daily Loads (TMDLs) for nitrogen and phosphorus have been promulgated through regulation for the Inland Bays 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, respectively. A Total Maximum Daily Load (TMDL) is the maximum level of pollution for which a water quality limited water body can assimilate without compromising use and recreational goals such as swimming, fishing, drinking water, and shell fish harvesting. *[DNREC approved stormwater management systems including the use of Green Technology BMP's will be incorporated into the overall stormwater management strategy further reducing pollutants and hydrocarbons prior to reaching receiving waters and wetlands.]*

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% reduction in nitrogen and phosphorus 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, reducing forest cover removal, and the use of innovative stormwater management treatment trains. Contact Lyle Jones at 302-739-9939 for more information on the assessment tool. *[Until such time that a Pollution Control Strategy (PCS) is adopted, it is our understanding that compliance with TMDL's is voluntary. We will work to minimize TMDL's and incorporate BMP's into the overall stormwater management system but are not mandated to create a Nutrient Budget Analysis.]*

Water Resource Protection Areas

The DNREC Water Supply Section has determined that most of the proposed development falls within an excellent ground-water recharge area (see following map and attached map). The review found no wellhead protection areas.

The Delaware Geological Survey Report of Investigations No. 66 was published in 2004. This report along with the accompanying maps were part of "Shaping Delaware's Future: Managing Growth in the 21st Century Delaware, Strategies for State Policies and Spending" (December 1999) (73 Del. Laws, c. 67, § 2; 70 Del. Laws, c. 186 § 1.).

The intent of the project was to identify areas of excellent recharge to protect them as critical areas. Excellent recharge areas are near-surface areas within which precipitation infiltrates the land surface to the unconfined aquifer at a more rapid rate than other areas. The Report states that the recharge potential "map categories are indicators of how fast

contaminants will move and how much water may become contaminated" (Andres, 2004, p. 1). This proposed development shows a large storm-water management area within the excellent ground-water recharge area.

The construction phase of this type of pond 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 have the potential to contaminate the ground water beneath it and infiltrate into the aquifer.

The proposed development would change the total impervious cover from 0% to approximately 14.52%. The developer on the PLUS application provided the numbers. DNREC Water Supply Section recommends that that portion of the new development within the excellent ground-water recharge area not exceed 20% impervious cover. 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. *[We've recalculated the anticipated impervious area for the site based on this revised plan and the total estimated impervious cover for the site is 11.6 acres (23.5% of the overall site area. The centrally located forested wetland area will be incorporated into the overall stormwater design to be utilized as additional flood storage and groundwater recharge in an attempt to mimic the pre-development hydrology.)]*

References

Delaware Department of Natural Resources and Environmental Control, 2005, Source Water Protection Guidance Manual for the Local Governments of Delaware, p. 144.

http://www.wr.udel.edu/publications/SWAPP/swapp_manual_final/swapp_guidance_manual_final.pdf

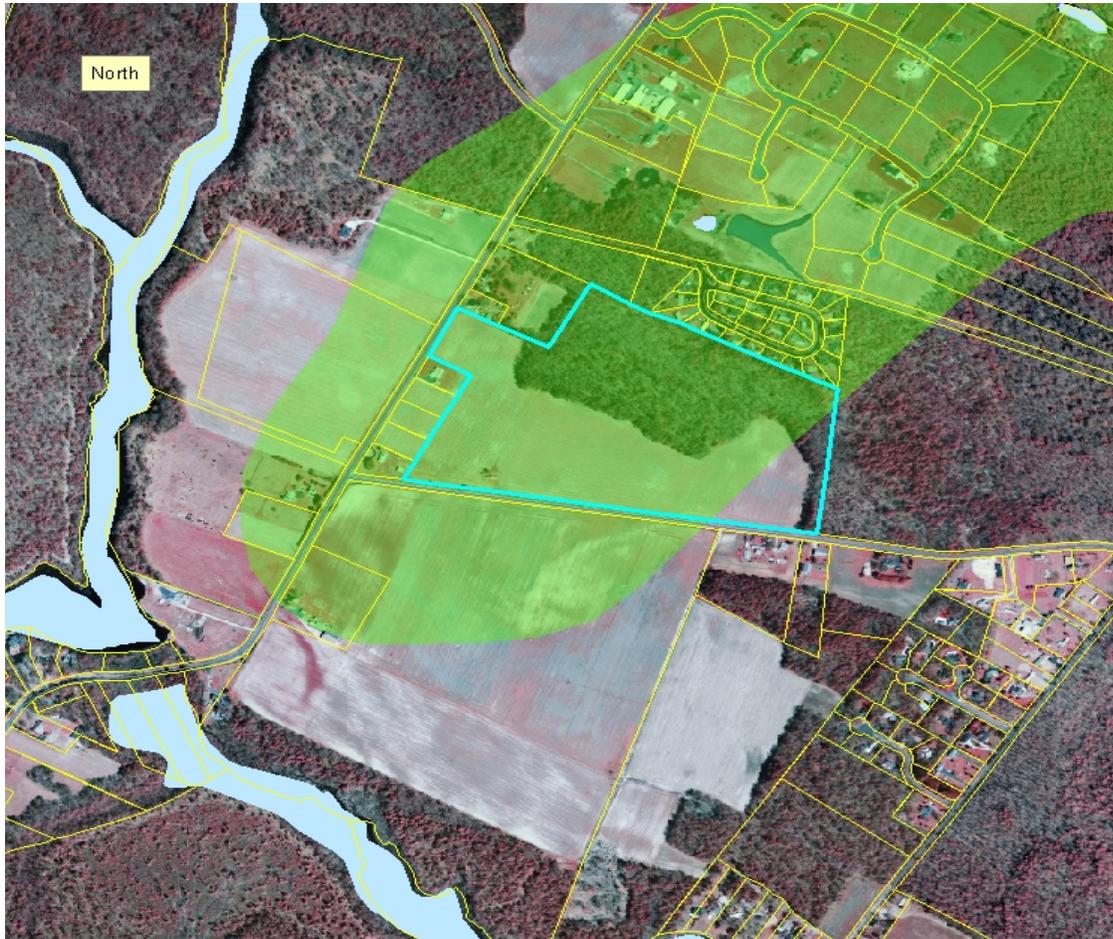
Kauffman, G.J., Wozniak, S.L., and Vonck, K.J., 2005, Delaware Ground-Water Recharge Design Manual: Newark, DE, Water Resources Agency, University of Delaware, p. 31.

http://www.wr.udel.edu/publications/SWAPP/swapp_manual_final/swapp_guidance_manual_supp_1_final.pdf

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#vestigations>

Land of Givens (PLUS 2006-09-05) Excellent ground-water recharge potential areas are highlighted in green.



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 83-W-15.

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. *[If, through the course of construction, it's determined that dewatering will be required, the required dewatering well construction permits will be acquired from DNREC.]*

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

Standard Comments:

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 Jessica Watson, Program Manager, at (302) 856-7219 for details regarding submittal requirements and fees. *{A detailed sediment and stormwater management plan will be prepared and submitted for review and approval by the Sussex Conservation District (SCD).}*

It is strongly recommended that you contact the Sussex Conservation District to schedule a pre-application meeting to discuss the sediment and erosion control and stormwater management components of the plan. The site topography, soils mapping, pre- and post- development runoff, and proposed method(s) and location(s) of stormwater management should be brought to the meeting for discussion. *{Meetings with the Sussex Conservation District have already occurred to determine requirements for onsite stormwater management and outfall considerations.}*

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. *{A NOI will be submitted to DNREC as part of the stormwater management approval process.}*

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. *{The centrally located forested wetland area will be incorporated into the overall stormwater design to be utilized as additional flood storage and groundwater recharge in an attempt to mimic the pre-development hydrology.}*

Each stormwater management facility should have an adequate outlet for release of stormwater. Any drainage conveyed onto this site from neighboring properties must be adequately conveyed through the site to the discharge point without interruption. *{The outfall from the stormwater management system will be through an enclosed storm sewer system offsite, west of Robinsonville Road to Gosling Creek. Agreements for easements have been obtained and a route survey has been performed that verifies gravity flow to the outfall can be achieved. Runoff from adjacent properties and roadways will be accounted for in the overall stormwater management design.}*

Clearly address how Stormwater Quality and Quantity Treatment will be provided. If this project is eligible for a Quantity Waiver, please make the request in the stormwater narrative citing the specific regulation. *{The stormwater management plans and report will clearly identify how stormwater quantity and quality treatment will be achieved. We don't anticipate being eligible for a quantity waiver.}*

Please indicate on the sediment and stormwater management plan who shall be responsible for maintenance of the stormwater management facilities both during construction and after. During the design of the sediment control and stormwater management plan, considerations should be made for maintenance (i.e. access, easements, etc.) of any structures or facilities. *{A note will be placed on the stormwater management plans indicating who will be responsible for maintenance of the stormwater facilities both during and after construction. Access areas and/or easements will be provided on the plans to facilitate maintenance of the stormwater facilities.}*

If a stormwater management pond is going to be utilized as a sediment trap/basin during construction it must be designed to accommodate 3600 cubic feet of storage per acre of contributing drainage area until project stabilization is complete. *{If stormwater ponds are utilized as sediment basins during construction, they will be designed to accommodate 3600 cubic feet of storage per the contributing drainage area.}*

All ponds are required to be constructed per Pond Code 378. *{All stormwater ponds, if applicable, will be constructed in accordance with Pond Code 378.}*

Please note that if the stormwater facilities will impact wetlands, a permit must be provided to the District prior to receiving approval. Please address. *{It is anticipated that the stormwater management facilities will not impact jurisdictional wetlands. If through the development/engineering process it is determined the impacts to wetlands are unavoidable, the appropriate federal and/or state permits will be obtained.}*

Site-Specific Comments:

The District will require a phased plan and sequence of construction for this project. DNREC regulations require no more than 20 acres to be disturbed at more time. Please address. *{Stormwater management and erosion & sediment control plans will be prepared in accordance with contemporary regulations. The proper phasing and sequence of construction will be provided on those plans.}*

Please demonstrate to the District that this project has an adequate outfall. *{The outfall from the stormwater management system will be through an enclosed storm sewer system offsite, west of Robinsonville Road to Gosling Creek. Agreements for easements have been obtained and route survey has been performed that verifies gravity flow to the outfall can be achieved.}*

Under the DNREC Health and Safety Memo of 2000, all wet ponds are required to have an open space depth of 3 feet or more that comprises 50-75 percent of the area of the pond. *{If it is determined that a wet pond is the appropriate means of stormwater management, the pond will be designed to maintain the required surface area at three (3) feet or deeper.}*

Consideration should be made for any adjacent properties during the design of this project, including drainage and erosion/sediment control. *{Runoff from adjacent properties and roadways will be accounted for in the overall stormwater management and erosion & sediment control design.}*

Please provide a soil survey report for each SWM basin. *{Geotechnical information in the form of soil borings and/or infiltration tests will be provided with the stormwater management plans as requested.}*

Please incorporate "Green Technology BMPs" in the stormwater management design as stated in the section 10.3.5.1 of the regulations. The District recommends green technology practices such as bioswales between the rear lots to provide drainage and water quality. *{We will consider the use of Green Technology BMP's as part of the overall stormwater management system where site conditions are conducive to their use, as well as other DNREC approved methods.}*

Please provide SCD with a copy of the AutoCAD drawings and HydroCAD files to expedite the review process. *{As is customary, AutoCAD drawings and HydroCAD files will be provided as part of the stormwater management plan submission.}*

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 outfall from the stormwater management system will be through an enclosed storm sewer system offsite, west of Robinsonville Road to Gosling Creek. Agreements for easements have been obtained and a route survey has been performed that verifies gravity flow to the outfall can be achieved. Runoff from adjacent properties and roadways will be accounted for in the overall stormwater management design. An inspection of the outfall area will be performed and pictures will be included as part of the stormwater management report. We don't anticipate any noticeable increases in water volumes or peak discharges downstream and there are only a few downstream landowners prior to flow volumes and flood heights being controlled by a flood control structure located at Goslee Mill Pond.}*

The Drainage Program does not support the removal of trees for the creation of stormwater management areas. *{The stormwater management facility needs to be sited at the topographical low part of the site to avoid a stormwater pump station or massive earth moving to achieve positive drainage flow. Unfortunately, this is also where the low-lying forested wetland areas exist. An attempt to preserve this area to the most practical extent possible has allowed us to protect all of the adjacent wooded wetland area with a minimal amount of tree loss (approximately 1.7 acres in this area).}*

The Drainage Program does not have a clear understanding how stormwater is to be conveyed to the stormwater management areas. The Drainage Program requests that the routing of major stormwater pipes through yards be prohibited. *{The development will be served by a curb & gutter street section that will require the use of inlets and storm sewer for stormwater conveyance. We anticipate that most of this can be taken care of within the street right-of-ways. If there is the occasion that cross drainage through lots cannot be avoided, the appropriate easements will be shown on the record plan.}*

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 rear yards in certain cases. Therefore, catch basins placed in rear yards will need to be clear of obstructions and be accessible for maintenance. Decks, sheds, fences, kennels, and other structures placed along the storm drains, or within 10 feet of the catch basins, can hinder drainage patterns as well as future maintenance to the storm drains or catch basins. Deed restrictions, along with drainage easements recorded on deeds, should ensure adequate future maintenance access. *{The development will be served by a curb & gutter street section that will require the use of inlets and storm sewer for stormwater conveyance. We anticipate that most of this can be taken care of within the street right-of-ways. If there is the occasion that cross drainage through lots cannot be avoided and catch basins are required to be located on private lot areas, the appropriate easements will be shown on the record plan and any restrictions prohibiting structures within those easements will be addressed in the Covenants and Restrictions.}*

The Drainage Program requests a 15-foot side yard setback on all lots with a drainage easement on the side. A 15-foot side yard setback will allow room for equipment to utilize the entire drainage easement and maneuver free of obstructions if the drainage conveyance requires periodic maintenance or future re-construction. *{If it is determined that drainage easements will be required on side lot lines, the side yards adjacent to those easements will have a fifteen (15) foot side yard setback which will be graphically depicted on the final record plan.}*

The Drainage Program requests a 10-foot drainage easement around all catch basins located on private property to ensure adequate room for maintenance. The Drainage Program recommends restrictions on fences, sheds, and other structures within the easement to prevent obstructions from being placed within 10 feet of the catch basin. *{If it is determined that catch basins are required to be located on private lots, a ten (10) foot easement will be provided.}*

Record all drainage easements on deeds and place restrictions on obstructions within the easements to ensure access for periodic maintenance or future re-construction. *{All drainage easements will be recorded on the final record plan and any restrictions on obstructions in drainage easements will be addressed in the Covenants and Restrictions which will also be recorded.}*

For questions or clarifications, please contact Jim Sullivan at (302) 739-9921.

Site Visit Request

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.

In order to provide more informed comments and to make recommendations, the program botanist and zoologist request the opportunity to survey the forest and wetland areas that could potentially be impacted by the project. This would also allow the applicant the opportunity to reduce potential impacts to rare species and unique habitats and to ensure that the project is environmentally sensitive. In addition, a survey of the project site will give staff an opportunity to document the biodiversity of the property before project activities begin. Please contact Bill McAvoy or Kitt Heckscher at (302) 653-2880 to set up a site visit. *{The NOAA's National Marine Fisheries Service has indicated that the proposed project does not appear likely to impact any waterbody where species listed under the jurisdiction of NOAA's National Marine Fisheries Service (NMFS) species are known to occur and no further coordination with NMFS Protected Resource Division is necessary. The Developer, currently, does not own the subject property but would not have a problem with DNREC conducting an onsite survey. If DNREC wishes to perform an onsite survey, I would suggest contacting the current property owners, Russell L. and Dorothy I Givens.}*

Forest Preservation

The amount of forest loss estimated by the applicant should be re-evaluated, as the applicant states 12.7 out of 21.68 acres will be cleared. However, there are at least 42 completely forested lots, 18 partially wooded lots and roadways within the forested area. Not only will these lots be cleared for homes, driveways and garages but subsequently by homeowners for sheds, play areas, pools, kennels etc. Although stated on the site plan, there does not appear to be 18 acres of forest preserved and what is maintained will be fragmented by lots and infrastructure.

- Forest fragmentation separates wildlife populations, increases road mortality, and increases "edge effects" that leave many forest dwelling species, particularly songbirds, vulnerable to predation. Forest clearing causes wildlife to disperse into surrounding areas, often resulting in human/animal conflicts. It also puts greater pressure on nearby Wildlife Areas, Nature Preserves, and other protected lands. A greater effort to preserve forest should be made and this could be accomplished by: *{The plan now under consideration has been substantially revised from the plan that was reviewed by PLUS. Most significantly the number of lots has been reduced from 115 to 92. The updated forest loss estimates are as follows:}*

- *Approximately 11.2 acres will be removed for stormwater management and infra-structure improvements. (this does not include those wooded areas within lots which may be protected from clearing through either deed restrictions or lot owner preference.*
 - *There are now only 25 completely forested lots and 12 partially wooded lots.*
1. Downsizing the current site plan by omitting lots and associated roads so that a larger, connected area of forested open space remains. *[As stated above, the plan has been down-sized from the plan that was previously reviewed by PLUS.]*
 2. Locating stormwater management ponds on the non-forested area of the parcel or utilizing an alternate method of stormwater control that does not require tree clearing. *[The facility needs to be sited at the topographical low part of the site to avoid a stormwater pump station or massive earth moving to achieve positive drainage flow. Unfortunately, this is also where the low-lying forested wetland areas exist. An attempt to preserve this area to the most practical extent possible has allowed us to protect all of the adjacent wooded wetland area with a minimal amount of tree loss (approximately 1.7 acres in this area) to account for the anticipated stormwater management area. Through the engineering phase of the project alternative stormwater systems will be considered and implemented where appropriate that will allow us to reduce the amount of forest removal.]*
 3. If tree clearing occurs despite the recommendations above, clearing should not occur April 1st to July 31st to reduce impacts to birds and other wildlife species that utilize trees for breeding. This recommendation would only protect those species during one breeding season, as once trees are cleared the result is an overall loss of habitat. *[It is not known at this time what the anticipated construction schedule will be. All tree clearing will be performed according to local and state requirements, limits of clearing will staked in the field to insure that only the minimum amount of trees necessary for improvements are cleared.]*

Plant Rescue

Since forested wetlands are to be destroyed, filled, or disturbed, we recommend that the developer/landowner contact the Delaware Native Plant Society to initiate a plant rescue. Selected plants from the site of disturbance will be collected by Society members and transplanted to the Society's nursery. Plants will then be used in restoration projects and/or sold at the Society's annual native plant sale. This can be done at no expense or liability to the developer/landowner". Please contact Lynn Redding at (302) 736-7726, (lynn_redding@ml.com) or William A. McAvoy at (302) 653-2880, (william.mcavoy@state.de.us). *[Should the Developer receive subdivision approval from the County and permit approval from the applicable agencies, he has agreed to contact the Delaware Native Plant Society to initiate a plant rescue prior to commencing construction.]*

Potential Hunting Issue

Because the project parcel is part of a larger forest block, legal hunting activities may take place on adjacent properties. Hunting within 100 yards of a dwelling is prohibited and the applicant should contact adjacent landowners to determine if this is going to be an issue. In effect, the adjacent landowner will be losing 100 yards of their property for hunting if there is not a buffer between lot lines and the adjacent property line. There is also noise associated with hunting, such as the discharge of firearms or dogs barking when pursuing game. *[The only adjacent property where this could potentially be an issue is the property to the east, owned by Saw, Inc. There are six (6) lots (lots 12-17) that are within 300 feet of this property boundary. Lots 13 & 14 are the closest to this boundary and have a buffer of greater than 120 feet.]*

Nuisance Geese

Stormwater ponds planned for the subdivision 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 lawns 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 (50 feet) 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, residents or the home-owners association 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. *[If the stormwater management pond is designed as a wet pond, its location is situated such that the northern exposure is adjacent to an existing woodland area. The developer will provide landscaping in the form recommended by DNREC along the east, west*

and southern exposures to deter waterfowl such as Canada Geese and Mute Swans from utilizing these ponds as desirable habitat.]

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. *{The Developer is well aware of the solid waste (construction waste) issues associated with developing a community. He understands that limiting construction waste reduces the burden on our land fills which translates into a substantial cost savings in land fill fees and waste removal. }*

Air Quality

Once complete, vehicle emissions associated with this project are estimated to be 8.8 tons (17,651.3 pounds) per year of VOC (volatile organic compounds), 7.3 tons (14,614.1 pounds) per year of NOx (nitrogen oxides), 5.4 tons (10,782.5 pounds) per year of SO₂ (sulfur dioxide), 0.5 ton (959.8 pounds) per year of fine particulates and 738.3 tons (1,476,508.8 pounds) per year of CO₂ (carbon dioxide). *{Acknowledged.}*

Emissions from area sources associated with this project are estimated to be 3.6 tons (7,119.6 pounds) per year of VOC (volatile organic compounds), 0.4 ton (783.4 pounds) per year of NOx (nitrogen oxides), 0.3 ton (650.1 pounds) per year of SO₂ (sulfur dioxide), 0.4 ton (838.9 pounds) per year of fine particulates and 14.4 tons (28,861.2 pounds) per year of CO₂ (carbon dioxide). *{Acknowledged.}*

Emissions from electrical power generation associated with this project are estimated to be 1.4 tons (2,821.7 pounds) per year of NOx (nitrogen oxides), 4.9 tons (9,814.6 pounds) per year of SO₂ (sulfur dioxide) and 723.8 tons (1,447,647.6 pounds) per year of CO₂ (carbon dioxide) *{Acknowledged.}*

	VOC	NOx	SO ₂	PM _{2.5}	CO ₂
Mobile	8.8	7.3	5.4	0.5	738.3
Residential	3.6	0.4	0.3	0.4	14.4
Electrical Power		1.4	4.9		723.8
TOTAL	12.4	9.1	10.6	0.9	1476.5

For this project the electrical usage via electric power plant generation alone totaled to produce an additional 1.4 tons of nitrogen oxides per year and 4.9 tons of sulfur dioxide per year. *{Acknowledged.}*

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. *{At this time it is not known who will be building the homes, in an effort to mitigate the stated impacts of new construction and related vehicle emissions the Builder should construct ENERGY STAR qualified homes for this development. Sidewalks, a nature trail and multi-use path have been proposed to further help reduce vehicle*

emissions.}

They 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. *{At this time it is not known who will be building the homes, energy alternatives in the form of geothermal and photo voltaic should be made available to home buyers.}*

State Fire Marshal's Office – Contact: Duane Fox 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):

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. *{Tidewater Utilities has indicated, through a "Willing and Able" letter, that there system can meet the required fire flow.}*
- The infrastructure for fire protection water shall be provided, including the size of water mains. *{Water distribution plans will be provided which will depict water main sizes, valves and fire hydrant locations. These plans will be required to be reviewed and approved by the utility provider, the State Fire marshal and the Department of Public Drinking Water.}*

b. **Accessibility:**

- All premises, which the fire department may be called upon to protect in case of fire, and which are not readily accessible from public roads, shall be provided with suitable gates and access roads, and fire lanes so that all buildings on the premises are accessible to fire apparatus. This means that the access road to the subdivision from Cedar Grove Road must be constructed so fire department apparatus may negotiate it. *{The entrance and internal roads for the subdivision will be designed to meet accessibility requirements in accordance with State Fire Marshal requirements.}*
- 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. *{Internal road layout, front yard setbacks and lot configurations will allow for fire apparatus to locate within 100 feet of the dwellings.}*
- 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. *{There is one (1) proposed cul-de-sac street which will have a minimum paved radius of 38 feet.}*
- The use of speed bumps or other methods of traffic speed reduction must be in accordance with Department of Transportation requirements. *{There are no proposed speed bumps or other traffic calming devices.}*
- 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. *{A gated community is not proposed.}*

c. **Gas Piping and System Information:**

- Provide type of fuel proposed, and show locations of bulk containers on plan. *{At this time it is not known if centralized gas will be utilized. If the development will be serviced with a centralized propane gas system, plans will be submitted to the State Fire Marshal for review and approval.}*

d. **Required Notes:**

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

{The required notes will be placed on the plans.}

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, technical services link, plan review, applications or brochures.

Department of Agriculture - Contact: Scott Blaier 698-4500

The Delaware Department of Agriculture has no objections to the proposed application. The *Strategies for State Policies and Spending* encourages environmentally responsible development in areas in Investment Levels 3.

Most of the site has been 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 141st 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. *[We’ve recalculated the anticipated impervious area for the site based on this revised plan and the total estimated impervious cover for the site is 11.6 acres (23.5% of the overall site area. Although Sussex County has yet to adopt a water resource protection ordinance, The centrally located forested wetland area will be incorporated into the overall stormwater design to be utilized as additional flood storage and allow for groundwater recharge in an attempt to mimic the pre-development hydrology.]*

This site also overlaps with the State’s Green Infrastructure Investment Strategy Plan. The Forest and Natural Areas layers are present on the entire site. These designations have 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 use. *[We recognize that the site contains valuable resources in the form of wetland and forested areas. Utilization of the County’s Cluster Development Option has enabled the developer to design the subdivision layout to provide for the protection of wetlands and provide for preservation of some forested areas. The revised plan provides for an element of creativity in regards to design concepts which provides a superior design over and above the standard lot development option while affording a degree of protection of significant natural features and resources.]*

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. *[A formal landscape design and plan will be provided as part of the final record subdivision submission. The Developer will utilize the “Right Tree for the Right Place” approach as part of that design.]*

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. *[Perimeter buffers and landscape areas are proposed between perimeter lots and adjacent properties and roads. As a part of the overall landscape design, the Developer will utilize native trees and shrubs.]*

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. *{Although Sussex County does not have a tree mitigation ordinance, the Developer will be submitting a formal landscape design which will augment the loss of forested areas that will be lost.}*

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. *{If the development will be serviced with a centralized propane gas system, Applicable Pipeline Safety Guidelines will be followed.}*

Delaware State Housing Authority – Contact Karen Horton 739-4263

The proposal is for a site plan review for 115 residential units on 49 acres located in the northeast corner of Robinsonville Road and Poastal Road south of Jimtown Road situated in Lewes & Rehoboth Hundred. According to the *State Strategies Map*, the proposal is located in an Investment Level 3 area and inside the growth zone. As a general planning practice, DSHA encourages residential development inside growth zones and where residents will have proximity to services, markets, and employment opportunities. Furthermore, the proposal targets units for first time homebuyers. According to the most recent real estate data collected by DSHA, the average home price in Sussex County is \$236,000. However, families earning respectively 100% of Sussex County's median income only qualify for mortgages of \$171,216, thus creating an affordability gap of \$64,784. The provision of units within reach of families earning at least 100% of Sussex County's median income will ensure housing that is affordable for first time homebuyers. Furthermore, the proposal targets units for first time homebuyers.

To facilitate the units targeted for first time homebuyers, we encourage the developer to apply for Sussex County's Moderately Price Housing Unit Program which provides the following incentives to developers who provide a percentage of units affordable to Sussex County residents of modest income:

- An expedited review;
- Waivers of some or all County fees associated with the County approval process;
- Density bonus.

NOTE: Proposals must be located in Town Centers, Developing Areas, and Environmentally Sensitive Areas according to the County's most recent certified Comprehensive Plan.

A Request for Proposal (RFP) process has been established to select initial program participants. The developer is encouraged to call William C. Lecates, Director of Sussex County's Community Development and Housing Division at (302) 855-7777 to learn more about the RFP application process. *{The Developer has decided not to apply for Sussex County's Moderately Price Housing Unit Program. Home product offering and pricing will be based on market conditions existing at the time of sales and will fall within the current sale price ranges for Sussex County.}*

Department of Education – Contact: John Marinucci 739-4658

1. This proposed development is in the Cape Henlopen School District.
2. DOE offers the following comments on behalf of the Cape Henlopen School District.
3. Using the DOE standard formula, this development will generate an estimated 58 students.
4. DOE records indicate that the Cape Henlopen School Districts' *elementary schools are not at or beyond 100% of current capacity* based on September 30, 2005 elementary enrollment.
5. DOE records indicate that the Cape Henlopen School Districts' *secondary schools are not at or beyond 100% of current capacity* based on September 30, 2005 secondary enrollment.
6. 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 subdivisions within district boundaries.
7. Continued development will cause significant burden to the Cape Henlopen School District without the provision for additional educational infrastructure.
8. The developer is strongly encouraged to contact the Cape Henlopen School District Administration to address the issue of school over-crowding that this development will exacerbate.
9. 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.

{Since this review, school capacity has been increased with the addition of new schools and planned or committed developments are not building out like they were because of the turn down in the residential market. The Developer will work with the CHSD transportation department to incorporate any bus stop shelter ROW and shelter structures as determined and recommended by the school district.}

Sussex County – Contact: Richard Kautz 855-7878

The applicant should coordinate any plans to use an adjacent wastewater public utility with Mr. Lank. A conditional use approval may be necessary. *{The site lies within Tidewater Environmental Services, inc. (TESI) wastewater service territory. TESI will file for a conditional use permit to expand and/or construct the community wastewater system.}*

Sussex County will be considering recommendations regarding 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. *{To date, Sussex County has yet to adopt a source water resource protection ordinance.}*

Because this project is electing to use the amended AR-1 Cluster subdivision density for for 20 additional units, the developer must include in the application the documentation and a plan for the management of all open space. Also, the developer must document for the Planning and Zoning Commission how the proposed development: provides for a total environment and design which are superior to that which would be allowed under the standard lot option; preserves the natural environment and historic or archeological resources; and, will not have an adverse effect on any of the items included under Ordinance Number 1152 (County Code 99-9C). These issues can be addressed by including in the application an explanation of how the developer plans to mitigate the issues raised by the State agencies and the requirements of the County Zoning Ordinance. *{An Exhibit Booklet addressing Chapter 99-9(C) of the Subdivision Code and Chapter 115-25 (E) & (F) of the Zoning Code pertaining to cluster development design requirements has been submitted to the Planning & Zoning Commission and has been made a part of the public record.}*

The Sussex County Engineer Comments:

The project proposes to develop using a private central community wastewater system. We recommend that the wastewater system be operated under a long-term contract with a capable wastewater utility that meets TMDL limits for Delaware's Inland Bays. *{The site lies within Tidewater Environmental Services, inc. (TESI) wastewater service territory and they will be providing central wastewater service to the subdivision.}*

The project is in the Environmentally Sensitive Developing Zone (ESDZ) and Sussex County will consider serving the area within the Inland Bays Planning Area for sewer service. The study will conclude approximately November 2006. The study will develop options for sewer service and make a recommendation. Sussex County requires design and construction of the collection and transmission system to meet Sussex County sewer standards and specifications. A sewer concept plan must be submitted to the Sussex County Engineering Department for review and approval prior to the design of the sewer system. A checklist for concept plans is attached. A review and approval of the treatment and disposal system by the Sussex County Engineering Department is also required. Disposal fields should not be counted as open space. Wastewater disposal fields should be clearly identified on recorded plots. *{The site lies outside of a Sussex county designated sewer service area. The site lies within the Goslee Creek Regional Planning Area which is included as part of the North Coastal Planning Study. This study should be completed in early 2009. The design and collection of the transmission system will be in accordance with Sussex County sewer standards and specifications and a sewer concept plan will be submitted for review and approval prior to the design of the sewer system. TESI will submit treatment and disposal system plans to the Sussex County Engineering Department for their review and approval. Currently, Sussex County ordinances allow for the inclusion of community wastewater areas as part of the open space calculation. Wastewater disposal areas will be clearly delineated on the final record plan.}*

When Sussex County provides sewer service, it is required that the treatment system be abandoned and a direct connection made to the County system at the developers and/or homeowners association expense. For questions regarding the above comments, contact Rob Davis, Sussex County Engineering Department at (302) 855-1299. *{The Developer acknowledges that should County sewer service become available, the community wastewater system will be abandoned and a direct connection to the County sewer system at the Developer's or Homeowners Association expense will be required.}*

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.

PLUS Response
23 September 2008
Page 20 of 20

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

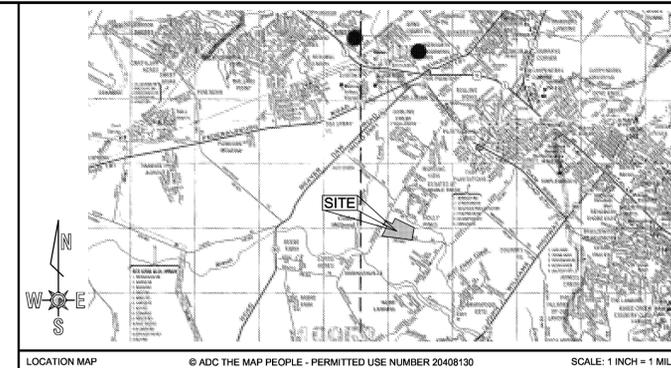
CC: Sussex County

REVISED PRELIMINARY SUBDIVISION PLAN

AR-1 CLUSTER DEVELOPMENT OPTION

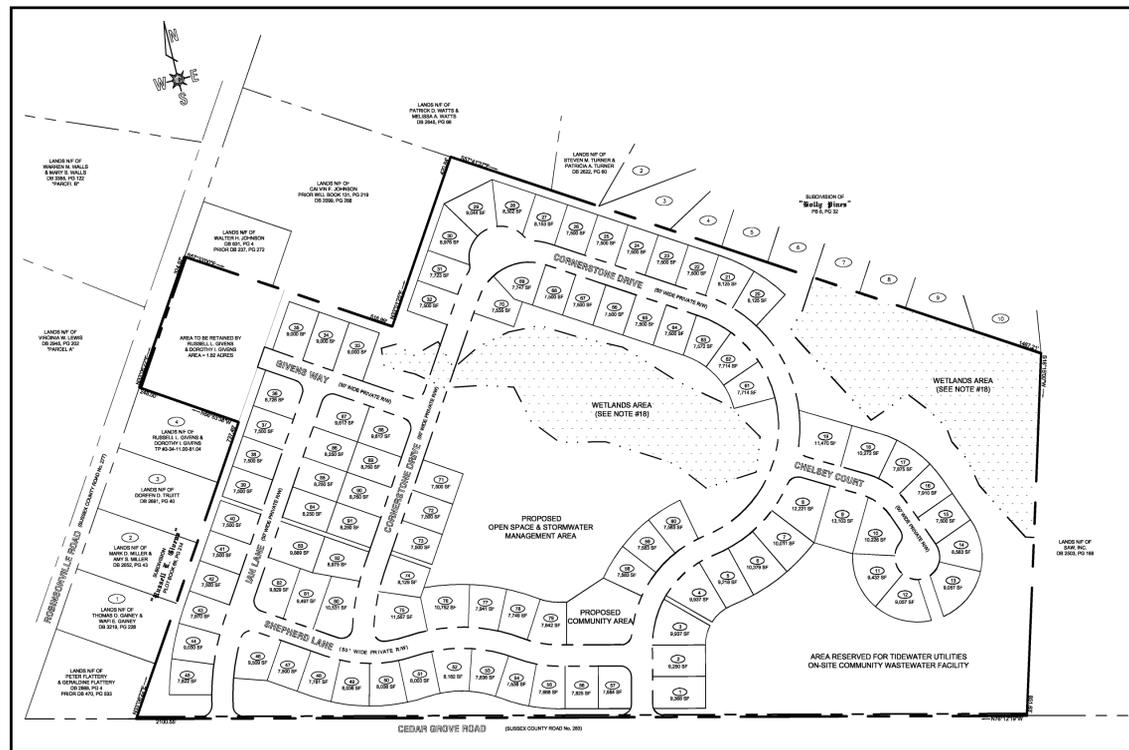
FOR PROPERTY KNOWN AS:

SHEPHERD WALK



U.S.D.A. SOIL SURVEY MAP No. 29 NOT TO SCALE

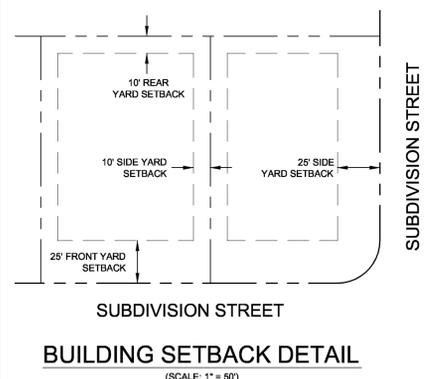
- NOTES:**
- FOR THE MAINTENANCE AND OPERATION OF STREET AND ROAD IMPROVEMENTS, SURFACE DRAINAGE FACILITIES, EROSION AND SEDIMENT CONTROL FACILITIES, SANITARY SEWER FACILITIES, WATER SUPPLY FACILITIES OR OTHER IMPROVEMENTS WHICH MAY BE APPLICABLE REFER TO THE DECLARATION OF COVENANTS AND RESTRICTIONS.
 - EXISTING UTILITIES ARE SHOWN IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO CONTACT "MISS UTILITY" 1-800-282-8555 (3) THREE DAYS PRIOR TO CONSTRUCTION IN ORDER TO VERIFY AND ALLOW FOR THEIR LOCATION AND DEPTH IN THE FIELD.
 - THE CONTRACTOR SHALL PRESERVE ALL TREES ON THE SITE EXCEPT WHERE NECESSARY TO CONSTRUCT PROPOSED STREETS, DWELLINGS, DRIVEWAYS, OR UTILITIES.
 - NO DEBRIS WILL BE BURIED ON THIS SITE.
 - THE STREETS WITHIN THIS SUBDIVISION ARE TO REMAIN PRIVATE AND ARE TO BE CONSTRUCTED IN ACCORDANCE WITH SUSSEX COUNTY MINIMUM STANDARDS.
 - MAINTENANCE OF THE STREETS WITHIN THIS SUBDIVISION WILL BE THE RESPONSIBILITY OF THE DEVELOPER, THE PROPERTY OWNERS WITHIN THIS SUBDIVISION OR BOTH. WHEN ALL LOTS ARE PURCHASED, THE PROPERTY OWNERS WILL BE SOLELY RESPONSIBLE FOR THE MAINTENANCE OF THE INTERIOR STREETS. THE STATE ASSUMES NO RESPONSIBILITY FOR FUTURE MAINTENANCE OF THE STREETS.
 - ALL FIRE LANES, FIRE HYDRANTS, AND FIRE DEPARTMENT CONNECTIONS SHALL BE MARKED IN ACCORDANCE WITH THE STATE FIRE PREVENTION REGULATIONS.
 - THE MINIMUM CUL-DE-SAC PAVED RADIUS SHALL BE THIRTY EIGHT FEET (38').
 - ALL INTERIOR LOT LINES ARE RESERVED FOR THE CENTERLINE OF A TEN (10) FOOT WIDE DRAINAGE AND/OR UTILITY EASEMENT. ALL PERIMETER LOT LINES SHALL HAVE TEN (10) FOOT EASEMENTS ALONG THE INTERIOR SIDE OF THE PERIMETER BOUNDARY. ALL PRIVATE STREET RIGHT-OF-WAYS SHALL HAVE A TEN (10) FOOT EASEMENT ALONG THE EXTERIOR SIDE OF THE RIGHT-OF-WAY.
 - WHEN LAND BEING SUBDIVIDED CONTAINS WETLANDS, EITHER STATE OR FEDERAL, THE DEEDS FOR THOSE LOTS SHALL CONTAIN A DISCLOSURE STATEMENT THAT READS "THIS SITE CONTAINS REGULATED WETLANDS. ACTIVITIES WITHIN THESE WETLANDS MAY REQUIRE A PERMIT FROM THE U.S. ARMY CORPS OF ENGINEERS AND/OR THE STATE OF DELAWARE."
 - MOBILE AND MANUFACTURED HOMES ARE PROHIBITED FROM BEING USED AS DETACHED SINGLE FAMILY DWELLINGS ON INDIVIDUAL LOTS.
 - THIS PROPERTY MAY BE LOCATED IN THE VICINITY OF LAND USED PRIMARILY FOR AGRICULTURAL PURPOSES ON WHICH NORMAL AGRICULTURAL USES AND ACTIVITIES HAVE BEEN AFFORDED THE HIGHEST PRIORITY USE STATUS. IT CAN BE ANTICIPATED THAT SUCH AGRICULTURAL USES AND ACTIVITIES MAY NOW OR IN THE FUTURE INVOLVE NOISE, DUST, MANURE AND OTHER ODORS, THE USE OF AGRICULTURAL CHEMICALS AND NIGHTTIME FARM OPERATIONS. THE USE AND ENJOYMENT OF THIS PROPERTY IS EXPRESSLY CONDITIONED ON ACCEPTANCE OF ANY ANNOYANCE OR INCONVENIENCE WHICH MAY RESULT FROM SUCH NORMAL AGRICULTURAL USES AND ACTIVITIES.
 - THIS SITE IS LOCATED WITHIN ZONE "A". AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, AS DESIGNATED ON THE FLOOD INSURANCE RATE MAP NUMBER 1000500335J LAST REVISED 05 JANUARY 2005.
 - NO SITE PREPARATION, SITE DISTURBANCE, EXCAVATION OR OTHER CONSTRUCTION ACTIVITY SHALL TAKE PLACE UNTIL ALL PERMITS HAVE BEEN ACQUIRED BY THE DEVELOPER AND THE FINAL SUBDIVISION PLAT HAS BEEN APPROVED AND RECORDED.
 - THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.
 - THE APPLICANT SHALL SUBMIT AN ENVIRONMENTAL ASSESSMENT AND PUBLIC FACILITY EVALUATION REPORT AND SKETCH PLAN TO THE DIRECTOR OF PLANNING AND ZONING, A COPY OF WHICH WILL BE FORWARDED TO THE OFFICE OF STATE PLANNING COORDINATION AND MEMBERS OF THE TECHNICAL ADVISORY COMMITTEE FOR REVIEW AND COMMENT IN ACCORDANCE WITH SECTION 115-194.3 OF THE CODE OF SUSSEX COUNTY.
 - THE CONTRACTOR SHALL PRESERVE ALL TREES ON THE SITE EXCEPT WHERE NECESSARY TO CONSTRUCT PROPOSED STREETS, BUILDINGS, STORMWATER MANAGEMENT FACILITIES, UTILITIES, DRIVEWAYS, OR PARKING AREAS.
 - THE WETLANDS AREAS DELINEATED AND SHOWN ON THE PLAN MEET THE CRITERIA FOUND IN THE 1987 CORPS OF ENGINEERS WETLAND DELINEATION MANUAL AND REGULATORY GUIDANCE DOCUMENTS RELEASED ON OCTOBER 7, 1991 AND MARCH 6, 1992. HOWEVER THESE WETLAND AREAS ARE DISCONNECTED FROM ANY SIGNIFICANT DRAINAGE FEATURE (ISOLATED WETLAND) AND MAY NOT FALL UNDER THE JURISDICTION OF THE U.S ARMY CORPS. A FORMAL JURISDICTIONAL DETERMINATION (JD) REQUEST HAS BEEN SUBMITTED TO THE CORP. FOR THEIR REVIEW.
 - LOT NOS. 1 & 45-57 SHALL BE REQUIRED TO TAKE ACCESS FROM AN INTERNAL SUBDIVISION STREET ONLY. NO DIRECT ACCESS TO SUSSEX COUNTY ROAD NO'S. 277 & 283 WILL BE PERMITTED.



SITE LOCATION PLAN
SCALE: 1"=200'

TAX PARCEL No.:
3-34-11.00-81.00

SITUATE IN
LEWES & REHOBOTH HUNDRED
SUSSEX COUNTY * STATE OF DELAWARE



SITE TRAFFIC GENERATION DIAGRAM & GENERAL INFORMATION

SITE DATA:
GROSS ACREAGE: 47.55 ACRES
ZONING DISTRICT: AR-1
PROPOSED USE: 91 SINGLE FAMILY DWELLING UNITS + 1 RESIDUAL LOT

SITE GENERATION DATA:
EST. A.D.T.: 968 VPD
EST. FUTURE A.D.T.: 3,394 VPD (A.A.D.T. + A.D.T.)
EST. PEAK HOUR: 76 VPH
(1) DENOTES AM PEAK HOUR

Ref: 7th edition of the TRIP GENERATION

WETLANDS CERTIFICATION
I, BEN KULP, CERTIFY THAT THIS PROPERTY HAS BEEN EXAMINED FOR JURISDICTIONAL AND NON-JURISDICTIONAL WETLANDS IN ACCORDANCE WITH CRITERIA FOUND IN THE 1987 CORPS OF ENGINEERS WETLAND DELINEATION MANUAL AND REGULATORY GUIDANCE DOCUMENTS RELEASED ON OCTOBER 7, 1991 AND MARCH 6, 1992. THE DELINEATION HERE SHOWN, IN MY BEST PROFESSIONAL JUDGMENT ACCURATELY DEPICTS BOTH STATE AND FEDERAL WETLANDS PRESENT WITHIN THE SUBJECT PROPERTY.

DEVELOPER'S CERTIFICATION
I, GORDON KANE, HEREBY CERTIFY THAT CORNERSTONE DEVELOPERS IS THE LEGAL REPRESENTATIVE OF THE OWNER OF THE PROPERTY SHOWN ON THIS PLAN, THAT THE PLAN WAS MADE AT ITS DIRECTION, THAT IT ACKNOWLEDGES THE SAME TO BE ITS ACT, AND DESIRES THE PLAN TO BE DEVELOPED IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.

ENGINEER'S CERTIFICATION
I, ROGER A. GROSS, P.E. HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF DELAWARE, AND THAT THE PLAN SHOWN AND DESCRIBED HEREON, CONSISTING OF TWO SHEETS, HAS BEEN PREPARED UNDER MY SUPERVISION AND TO THE BEST OF MY KNOWLEDGE AND BELIEF IS TRUE AND CORRECT TO THE ACCURACY REQUIRED BY ACCEPTED STANDARDS AND PRACTICES AND BY THE SUSSEX COUNTY SUBDIVISION AND ZONING REGULATIONS.

BEN KULP
MERESTONE CONSULTANTS, INC.
5215 WEST WOODMILL DRIVE
WILMINGTON, DE 19808
PHONE: (302) 992-7900
FAX: (302) 992-7911

GORDON KANE
CORNERSTONE DEVELOPERS
P.O. BOX 630
NORTHFIELD, NJ 08225
PHONE: (609) 646-2687
FAX: (609) 646-2731

ROGER A. GROSS, P.E.
MERESTONE CONSULTANTS, INC.
19633 BLUE BIRD LANE, SUITE 7
REHOBOTH BEACH, DELAWARE 19971
PHONE: (302) 226-5880
FAX: (302) 226-5883

MERESTONE CONSULTANTS, INC.
ENGINEERS - PLANNERS - SURVEYORS

5215 W. WOODMILL DRIVE
WILMINGTON, DE 19808
PHONE: 302-992-7900
FAX: 302-992-7911

19633 BLUE BIRD LANE, SUITE 7
REHOBOTH BEACH, DE 19971
PHONE: 302-226-5880
FAX: 302-226-5883

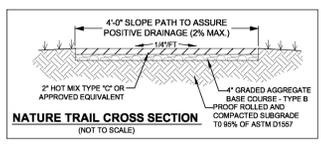
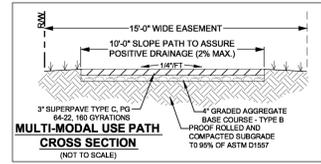
- PLAN DATA:**
- PARCEL I.D. No. * 3-34-11.00-81.00
 - DEED REFERENCE * D.B. 470, PG 533
 - ZONING DISTRICT * AR-1 (AGRICULTURAL / RESIDENTIAL)
ENVIRONMENTALLY SENSITIVE DEVELOPMENT DISTRICT OVERLAY ZONE
 - SEWAGE DISPOSAL * TIDEWATER UTILITIES, INC. ON-SITE COMMUNITY WASTEWATER SYSTEM
SEWERAGE IS SUBJECT TO APPROVAL OF THE SUSSEX COUNTY DEPARTMENT OF PUBLIC WORKS AND THE DELAWARE STATE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL.
 - WATER SUPPLY * TIDEWATER UTILITIES, INC. CENTRAL WATER SYSTEM
WATER IS SUBJECT TO THE APPROVAL OF THE DELAWARE STATE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL AND THE DELAWARE DIVISION OF PUBLIC HEALTH.
 - DEVELOPER * GORDON KANE
CORNERSTONE DEVELOPERS
P.O. BOX 630
NORTHFIELD, NJ 08225
 - OWNER * RUSSELL L. GIVENS & DOROTHY I. GIVENS
18785 ROBINSONVILLE ROAD
LEWES, DE 19958
 - VERTICAL DATUM * NAVD 88
 - HORIZONTAL DATUM * DELAWARE STATE PLANE COORDINATE SYSTEM (NAD83)
 - LOT AREA RATIONALE * GROSS AREA = 49.37 AC.
AREA RETAINED BY RUSSELL L. GIVENS & DOROTHY I. GIVENS = 1.82 AC.
ADJUSTED GROSS AREA = 47.55 AC. (100.00%)
AREA DEDICATED TO CEDAR GROVE ROAD = 0.24 AC. (0.50%)
AREA DEDICATED TO ROBINSONVILLE ROAD = 0.03 AC. (0.06%)
AREA IN SINGLE FAMILY LOTS = 17.95 AC. (37.75%)
AREA DEDICATED TO PRIVATE STREETS = 6.29 AC. (13.23%)
AREA IN PRIVATE OPEN SPACE / STORMWATER (AREA IN WETLANDS (AREA RESERVED FOR COMMUNITY AREA (AREA RESERVED FOR COMMUNITY WASTEWATER AREA) = 23.04 AC. (48.46%)
= 6.96 AC.)
= 0.49 AC.)
= 5.59 AC.)
 - PROJECT DENSITY * NO. OF SINGLE FAMILY LOTS = 92
GROSS AREA (AR-1 CLUSTER) = 47.55 AC.
GROSS DENSITY = 1.91 D.U./AC.
 - HEIGHT, AREA & BULK TABLE * MINIMUM LOT AREA = 7,500 SF
AVERAGE LOT SIZE = 8,499 SF
MAXIMUM LOT SIZE = 13,103 SF
MINIMUM REQUIRED OPEN SPACE = 30%
MINIMUM FRONT YARD SETBACK = 25 FEET
MINIMUM SIDE YARD SETBACK = 10 FEET
MINIMUM REAR YARD SETBACK = 10 FEET
MINIMUM LOT WIDTH = 60 FEET
 - WOODLAND PRESERVATION RATIONALE * EXISTING GROSS WOODLAND AREA = 21.88 AC. (100.00%)
WOODLAND AREAS TO BE PRESERVED = 0.50 AC. (48.43%)
WOODLAND AREAS TO BE REMOVED = 11.18 AC. (51.57%)
(WOODLAND AREAS DO NOT INCLUDE THOSE AREAS EXISTING WITHIN LOTS WHICH MAY BE PROTECTED TO SOME EXTENT FROM CLEARING THROUGH DEED RESTRICTIONS OR INDIVIDUAL LOT OWNER PREFERENCE.)

PURPOSE NOTE:
THE PURPOSE OF THIS PLAN IS TO REVISE THE PRELIMINARY SUBDIVISION PLAN FOR SHEPHERD WALK AS SUBMITTED TO SUSSEX COUNTY PLANNING & ZONING ON JANUARY 29, 2007. BY THE FOLLOWING CHANGES:
1) THE NUMBER OF LOTS HAS BEEN REDUCED FROM 112 TO 91.
2) A DENSITY BONUS PURSUANT TO SECTION 115-25B (3) OF THE SUSSEX COUNTY CODE IS NO LONGER BEING SOUGHT.
3) THE AMOUNT OF OPEN SPACE HAS BEEN INCREASED FROM 19.72 ACRES (40.5%) TO 23.20 ACRES (48.8%).

SHEET INDEX:

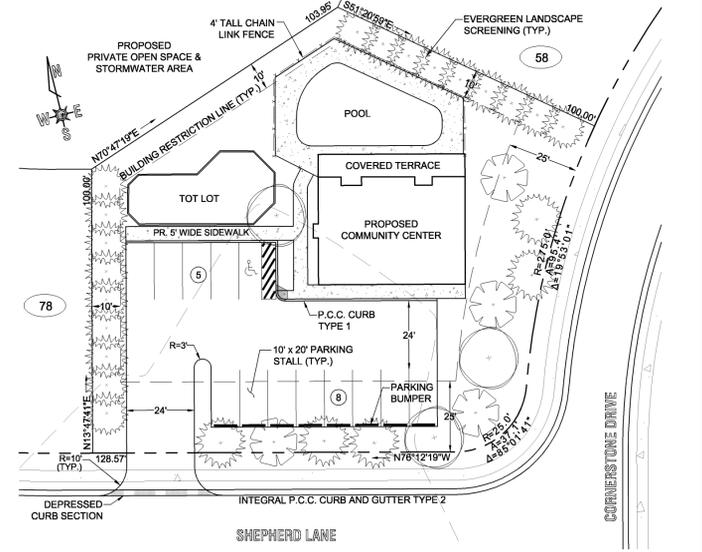
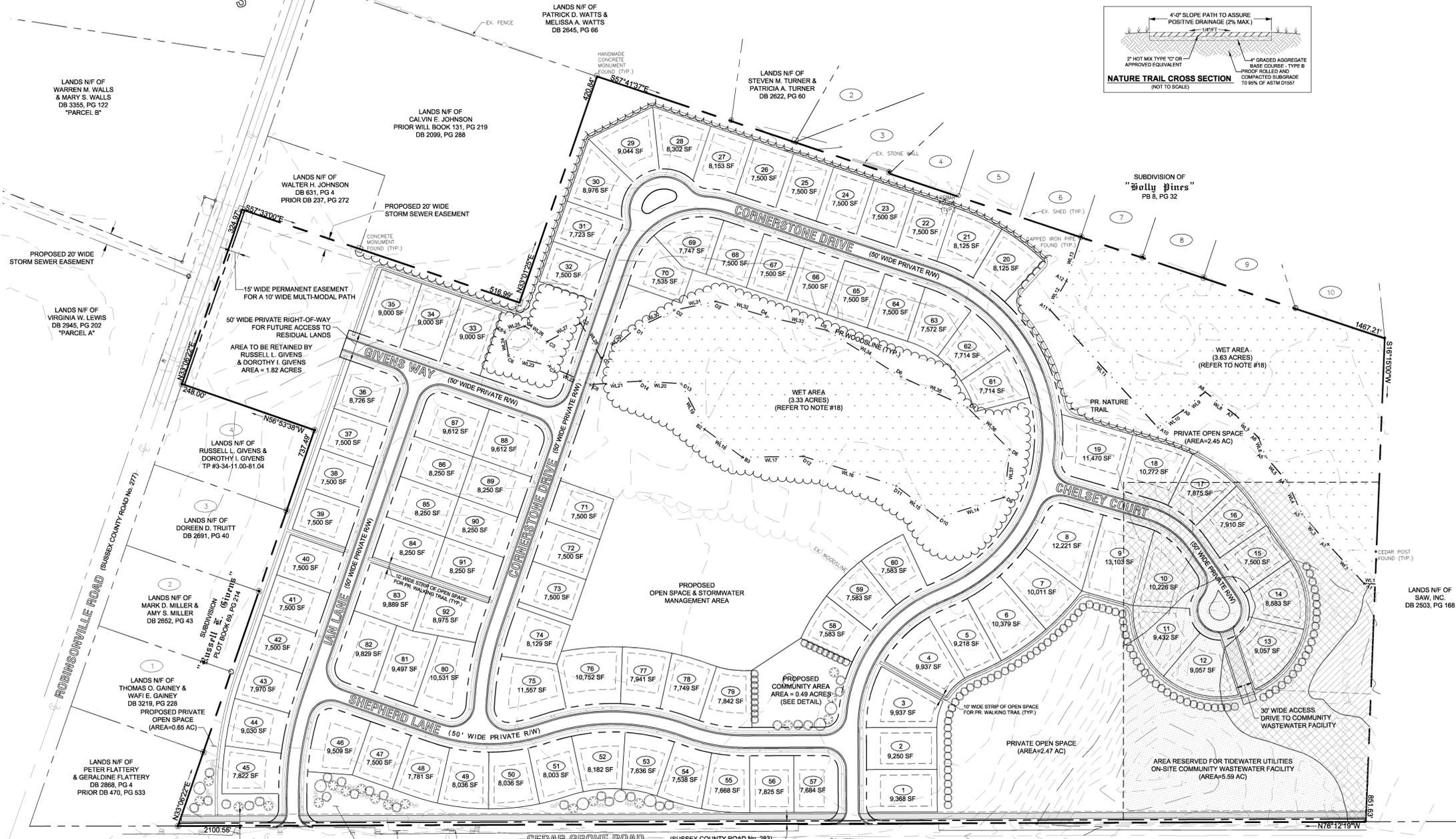
COVER PLAN SHEET No. P-1
PRELIMINARY SUBDIVISION PLAN SHEET No. P-2

REVISED: 10 SEPTEMBER 2007 PER NEW LAYOUT
28 DECEMBER 2006 PER PLUS COMMENTS
DATE: 02 OCTOBER 2006 SHEET No. P-1



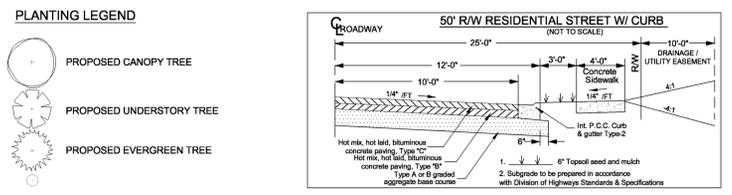
LINE	BEARING	LENGTH
WL1	N73°45'00"W	18.48'
WL2	N28°37'17"W	93.41'
WL3	N27°03'31"W	70.45'
WL4	N10°55'51"W	64.94'
WL5	N27°01'47"W	57.09'
WL6	N06°19'09"W	34.95'
WL7	N31°31'19"W	57.46'
WL8	N38°59'13"W	67.10'
WL9	S64°16'50"W	51.78'
WL10	S69°47'29"W	52.70'
WL11	N28°38'08"W	282.32'
WL12	N44°17'26"E	57.97'
WL13	N32°18'23"E	81.32'
WL14	S86°44'11"W	123.53'
WL15	N38°29'23"W	92.39'
WL16	N61°43'31"W	172.01'
WL17	N76°48'43"W	108.49'
WL18	N39°30'20"W	82.88'
WL19	N13°12'42"W	89.94'
WL20	N72°06'41"W	71.79'
WL21	N80°08'58"W	89.32'
WL22	N51°37'54"W	78.68'
WL23	N78°35'30"W	177.27'
WL24	N04°32'43"E	42.57'
WL25	N88°36'23"E	37.52'
WL26	S40°45'44"E	47.63'
WL27	N74°52'50"E	67.67'
WL28	S16°41'28"E	71.91'
WL29	N63°13'32"E	78.55'
WL30	N78°35'30"W	177.27'
WL31	S87°59'34"E	74.84'
WL32	S59°23'43"E	94.34'
WL33	S63°15'57"E	108.48'
WL34	S44°08'21"E	155.09'
WL35	S51°12'19"E	128.89'
WL36	S31°15'43"E	105.66'
WL37	S20°33'18"W	84.07'

LEGEND	
PROPERTY LINE	---
BUILDING RESTRICTION LINE	---
CENTERLINE	---
ELECTRIC LINES	—OHE—OHE—
TREELINE	~ ~ ~ ~
PR. LIMITS OF CLEARING	~ ~ ~ ~
CONCRETE MONUMENT FOUND	□
CAPPED REBAR FOUND	●
IRON PIPE FOUND	○
REBAR FOUND	○
SIGN	□
UTILITY POLE	□
TELEPHONE BOX	□
WATER VALVE	□
CEDAR POST	□
CONCRETE MONUMENT FOUND (HANDMADE)	□
COMMUNICATIONS UTILITY BOX	□



REVISED PRELIMINARY SUBDIVISION PLAN
 FOR PROPERTY KNOWN AS:
SHEPHERD WALK
 ALSO KNOWN AS:
LANDS OF RUSSELL L. & DOROTHY I. GIVENS
 PREPARED FOR:
CORNERSTONE DEVELOPERS
 SITUATE IN:
LEWES & REHOBOTH HUNDRED * SUSSEX COUNTY
STATE OF DELAWARE
 TAX PARCEL #: 3-34-11.00-81.00
 SCALE: 1" = 100'

WASTEWATER AREAS LEGEND	
---	AREA INVESTIGATED / DELINEATED BY GEO-TECHNOLOGY ASSOCIATES, INC.
▨	HCGF AQUIC HAPLUDULT
▩	HCGE-HCGH AQUIC ARENIC HAPLUDULT & OXYAQUIC HAPLUDULT
▧	HCGK-HCGO ARENIC HAPLUDULT & TYPIC HAPLUDULT



APPROVED: _____ DATE: _____
 PROFESSIONAL ENGINEER

MERESTONE CONSULTANTS, INC.
 ENGINEERS - PLANNERS - SURVEYORS

8215 WEST WOODMILL DRIVE 19633 BLUE BIRD LANE, SUITE 7
 WILMINGTON, DE 19808 REHOBOTH BEACH, DE 19971
 PH: 302-992-7900 PH: 302-226-5980
 FAX: 302-992-7911 FAX: 302-226-5983

DATE	REVISION	CHKD.	DRAWN BY:	DATE:	SHEET#:
09/10/07	PER NEW LAYOUT	R.A.G.	A.M.S.	02 OCTOBER 2006	P-2
12/28/06	PER PLUS COMMENTS	S.R.M.			

PLAN #: 21309R-324287