



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

January 28, 2008

Jerry Friedel  
Davis, Bowen & Friedel  
One Plaza East, Ste. 200  
P.O. Box 93  
Salisbury, MD 21803

RE: PLUS review – 2007-12-08; Nathaniel's Land at Cherry Walk  
2007-12-07; Nathaniel's Landing at Captain's Hill

Dear Mr. Friedel

Thank you for meeting with State agency planners on January 2, 2008 to discuss the proposed plans for the Nathaniel's Landing at Cherry Walk and Nathaniel's Land at Captains Hill project to be located on the south side of Woodland Ferry Road, just east of the Nanticoke River and North of the Nanticoke Wildlife Area.

According to the information received, you are seeking Site plan approval on two lots for a total of 124 residential units. According to the information received, you split this application into two separate reviews to avoid the DNREC guidelines regarding the number of individual septic systems allowed on a project. Because they are owned by the same person and are linked, they were reviewed through PLUS as one project.

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

This proposal is located in Investment Level 4 according to the *Strategies for State Policies and Spending*, and is within the Low Density area according to the Sussex County certified comprehensive plan. **The comments in this letter are technical, and are not intended to suggest that the State supports this development proposal. This letter does not in any way suggest or imply that you may receive or may be entitled to permits or other approvals necessary to construct the development you indicate or any subdivision thereof on these lands.**

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

This Office recognizes that the proposed is located within a Level 4 Area as defined by the State Strategies for Policy and Spending and is directly adjacent to currently preserved state lands. In addition, the proposed will directly impact the water quality of the Nanticoke River by creating 124 Single Family Homes with individual septic. In addition, this Office has concerns regarding the proposed access point that has been defined which allows access to a proposed marina facility along the river.

As Level 4 projects, Cherry Walk and Captain's Hill have the potential to impact two out of three layers of the Green Infrastructure map (natural resource and recreation priorities and forest): the project's proximity to the Nanticoke Wildlife Area and the loss/fragmentation of forest (34 out of 95 acres or 35.8%, and 29 out of 54 acres or 53.7%, respectively). The projects are also located in an excellent recharge area, which makes the location of 84 and 40 individual on-site septic systems, respectively, even more problematic from a water quality perspective. The two projects should be treated as one, with greater emphasis on the protection of natural resources. To that end, the State would recommend a community wastewater system.

With that said the State does not support this project because these project combined represents major land development that will result in 124 residential units in an Investment Level 4 area according to the *2004 Strategies for State Policies and Spending*. This proposal is located in Investment Level 4 according to the *Strategies for State Policies and Spending*, and is within the Low Density area according to the Sussex County certified comprehensive plan. Investment Level 4 indicates where State investments will support agricultural preservation, natural resource protection, and the continuation of the rural nature of these areas. New development activities and suburban development are not supported in Investment Level 4 areas. These areas are comprised of prime agricultural lands and environmentally sensitive wetlands and wildlife habitats, which should be, and in many cases have been preserved.

From a fiscal responsibility perspective, development of this site is likewise inappropriate. The cost of providing services to development in rural areas is an inefficient and wasteful use of the State's fiscal resources. The project as proposed is likely to bring more than 300 new residents to an area where the State has no plans to invest in infrastructure upgrades or additional services. These residents will need access to such services and infrastructure as schools, police, and transportation. To provide some examples, the State government funds 100% of road maintenance and drainage improvements for the transportation system, 100% of school transportation and paratransit services, up to 80% of school construction costs, and about 90% of the cost of police protection in the unincorporated portion of Sussex County where this development is proposed. Over the longer term, the unseen negative ramifications of this development will become even more evident as the community matures and the cost of maintaining infrastructure and providing services increases.

Because the development is inconsistent with the *Strategies for State Policies and Spending*, the State is opposed to this proposed subdivision

The following are a complete list of comments received by State agencies. The comments have been separated by project.

**2007-12-08 Nathaniel Landing at Cherry Walk**

**Division of Historical and Cultural Affairs – Contact: Terrance Burns 739-5685**

There did not appear to be any historic or cultural resource sites, archaeological sites, or listed national register properties on this site, but the developer should be aware that there are known historic or cultural resource sites nearby, and it is an archaeological site (S-7774; 7S-E-87). Also, according to the historic Beers Atlas/Map of 1868, it did show and indicate that there were a few dwellings close to the area where this project is located. There is a possibility that there could potentially be historic or cultural resources or archaeological resources associated with it.

The developer should be aware and remember that this parcel/property is in a Level 4 area. The nature or context of Level 4 areas are often or usually environmentally sensitive areas. The State Historic Preservation Office of the Division of Historical & Cultural Affairs is not in favor of any type of zoning change, construction, building project, or development in Level-4 areas.

The developer should also be aware that this parcel/property is within the historic vicinity of Broad Creek Hundred. According to the historic Beers Atlas/Map of 1868, there is evidence on the atlas/map that indicates that the vicinity of Broad Creek Hundred does

have some historical areas. The developer should also be aware that it is a possibility that there could potentially be historic or cultural resources on this parcel/property because of the historical background of the area or vicinity. These historic or cultural resources could be archaeological resources such as a cemetery, burial ground, unmarked human remains, or the parts or pieces or something demolished, destroyed, or ruined historically.

Prior to, or before any demolition, ground-disturbing activities or construction on this parcel/property, the State Historic Preservation Office of the Division of Historic & Cultural Affairs recommends that the developer see or review Chapters 53 and 54, in Title 7, of the Delaware State Code. Chapter 53 pertains to the discovery and disposition of “Conservation of Archaeological Resources In or On State Lands”. Chapter 54 pertains to the “Delaware Unmarked Human Remains Act of 1987”, such as the discovery and disposition of Unmarked Human Burials or Skeletal Remains”. The unexpected discovery of unmarked human remains during construction can result in significant delays while the process is carried out.

Also, prior to, or before any demolition, ground-disturbing activities, or construction, the State Historic Preservation Office of the Division of Historic & Cultural Affairs recommends that the developer should consider hiring an archaeological consultant to check or examine parcel/property (project area) thoroughly and see if there is any evidence or indication of potential historic or cultural resources, or archaeological resources such as be a cemetery, burial ground, unmarked human remains, or the parts or pieces or something demolished, destroyed, or ruined historically.

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

Jesse Frederick Conaway and Everett T. Conaway seek to develop 124 single-family detached houses in two nominally separate developments located on the south side of Woodland Ferry Road (Sussex Road 78) and the east bank of the Nanticoke River. Nathaniel’s Landing at Captain’s Hill would consist of 40 houses on a 55.1-acre assemblage of parcels (Tax Parcels 2-32-4.00-6.00, 6.01, 6.04 and 7.01). Nathaniel’s Landing at Cherry Walk would consist of 84 houses on a 105.14-acre assemblage of parcels (Tax Parcels 2-32-4.00-6.00, 6.02 and 6.05). The land is zoned AR-1 and would be developed by right. The separation into two developments appears to have be in response to Department of Natural Resources and Environmental Control (DNREC) guidelines regarding the number of individual septic systems allowed on a project.

Because these developments are proposed for a Level 4 Area, they are inconsistent with the *Strategies for State Policies and Spending*. As part of our commitment to support the *Strategies*, DelDOT refrains from participating in the cost of any road improvements needed to support this development and is opposed to any road improvements that will substantially increase the transportation system capacity in this area. DelDOT will only

support taking the steps necessary to preserve the existing transportation infrastructure and make whatever safety and drainage related improvements are deemed appropriate and necessary. The intent is to preserve the open space, agricultural lands, natural habitats and forestlands that are typically found in Level 4 Areas while avoiding the creation of isolated development areas that cannot be served effectively or efficiently by public transportation, emergency responders, and other public services.

DelDOT strongly supports new development in and around existing towns and municipalities and in areas designated as growth zones in approved Comprehensive Plans. DelDOT encourages the use of transfer of development rights where this growth management tool is available.

If these development proposals are approved, notwithstanding inconsistencies with the relevant plans and policies, DelDOT will provide further technical review and comments.

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

#### **Investment Level 4 Policy Statement**

This project is proposed for an Investment Level 4 area as defined by the *Strategies for State Policies and Spending* and is also located outside of a designated growth area in the relevant municipal and County certified comprehensive plans. According to the *Strategies*, this project is inappropriate in this location. In Investment Level 4 areas, the State's investments and policies, from DNREC's perspective, should retain the rural landscape and preserve open spaces and farmlands. Open space investments should emphasize the protection of critical natural habitat and wildlife to support a diversity of species, and the protection of present and future water supplies. Open space investments should also provide for recreational activities, while helping to define growth areas. Additional State investments in water and wastewater systems should be limited to existing or imminent public health, safety or environmental risks only, with little provision for additional capacity to accommodate further development.

With continued development in Investment Level 4 areas, the State will have a difficult, if not impossible, time attaining water quality (e.g., TMDLs) and air quality (e.g., non-attainment areas for ozone and fine particulates) goals. Present and future investments in green infrastructure, as defined in Governor Minner's Executive Order No. 61, will be threatened. DNREC strongly supports new development in and around existing towns and municipalities and in areas designated as growth zones in certified Comprehensive Plans. We encourage the use of transfer of development rights where this growth management tool is available.

This particular development certainly compromises the integrity of the State Strategies and the preservation goals inherent in many of DNREC's programs. Of particular concern are potential impacts to two out of three layers of the Green Infrastructure map (natural resource and recreation priorities and forest), the loss/fragmentation of forest (34 out of 95 acres or 35.8%), 84 individual on-site septic systems, the project's location in an excellent recharge area, and the project's proximity to the Nanticoke Wildlife Area. While mitigating measures such as conservation design, central wastewater systems instead of individual on-site septic systems, and other best management practices may help mitigate impacts from this project, not doing the project at all is the best avenue for avoiding negative impacts. As such, this project will receive no financial, technical or other support of any kind from DNREC. Any required permits or other authorizations for this project shall be considered in light of the project's conflict with our State growth strategies.

### **Green Infrastructure**

Portions or all of the lands associated with this proposal are within the Livable Delaware Green Infrastructure area established under Governor Minner's Executive Order #61 that represents a network of ecologically important natural resource lands of special State conservation interest.

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

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

### **Soils**

According to the Sussex County soil survey update, Evesboro, Cedartown, Galestown, Lanape, Zekiah, and Mullica were mapped on subject parcels. Evesboro, Cedartown,

and Galestown are excessively to somewhat excessively well-drained upland soils that have moderate limitations for development. Lanape is a very poorly-drained (hydric) soil indicative of tidally-influenced wetlands. Zekiah and Mullica are very poorly-drained soils indicative of nontidal wetlands. Lenape, Zekiah, and Mullica have severe limitations for development and should be avoided.

## **Wetlands**

Based on the Statewide Wetland Mapping Project (SWMP) maps, tidal and nontidal palustrine forested headwater riparian wetlands were mapped along much of the southern boundary of the parcel identified as Nathaniel's Landing at Cherry Walk. Tidally-influenced wetlands were also mapped along the entire western boundary of Nathaniel's Landing at Cherry Walk and Nathaniel's Landing at Captain's Hill.

Impacts to Palustrine wetlands are regulated by the U.S. Army Corps of Engineers (USACE, or "the Corps") through Section 404 of the Clean Water Act. In addition, individual 404 permits and certain Nationwide Permits from the Corps also require 401 Water Quality Certification from the DNREC Wetland and Subaqueous Land Section and Coastal Zone Federal Consistency Certification from the DNREC Division of Soil and Water Conservation, Delaware Coastal Management Program (DCMP) Section. Each of these certifications represents a separate permitting process. Please be advised that nationwide permits have been suspended in Delaware and are pending further coordination with the Corps. Therefore, contrary to past practices, Coastal Zone Management approval can no longer be assumed. Individual certifications must be granted from the DCMP office for each project intending to utilize a Nationwide Permit. For more information on the Federal Consistency process, please contact the DCMP office at 302.739.9283. 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.

Based on a review of existing buffer research by Castelle et al. (1994), an adequately-sized buffer that effectively protects wetlands and streams, in most circumstances, is about 100-foot in width. In recognition of this research and the need to protect water quality, the Watershed Assessment Section recommends that the applicant maintain/establish a minimum 100-foot upland buffer (planted in native vegetation) from the landward edge of all wetlands and water bodies (including all ditches).

As mentioned previously, riparian headwater draining into the environmentally sensitive Nanticoke River wetlands bound much of the southern boundary of subject parcel. Since protection of the headwater riparian wetlands is critically important for maintaining the

water quality/ecological integrity throughout the entire length of the stream, including the floodplain system further downstream, efforts to protect the riparian wetlands bounding this stream should be considered a priority. Therefore, the Watershed Assessment Section strongly recommends that the applicant maintain/establish a minimum 100-foot upland buffer (planted with native vegetation) from the landward edge of the riparian wetlands. A literature review of existing buffer research by Castelle et al. (1994) has documented consensus among researchers that a 100-foot upland buffer from wetlands and water bodies is the minimum buffer width necessary, under most circumstances, to protect water quality.

### **Impervious Cover**

Based on a review of the PLUS application form, post-construction surface imperviousness was projected to reach 5.6 and 8.2 percent for the of Nathaniel's Landings' projects at Captain's Hill and Cherry Walk, respectively. However, given the projected scope and density of said projects, these estimates appear to significantly understate the actual amount of post-construction surface imperviousness. When calculating surface imperviousness, it is important to consider all created forms of constructed surface imperviousness (i.e., rooftops, sidewalks, roads, and stormwater management and recreational ponds) when calculating surface imperviousness; otherwise, an underestimate of this project's environmental impacts will result. Therefore, surface imperviousness should be recalculated with all of the above-mentioned forms of constructed surface imperviousness included.

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.

### **ERES Waters**

This project is located adjacent to receiving waters of the greater Nanticoke watershed, and designated as having waters of 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). Moreover, provisions defined in subsection 5.6.3.5 of same section, specially authorize the Department to mandate BMPs to meet 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 Nanticoke watershed. A TMDL is the maximum level of pollution allowed for a given pollutant below which a “water quality limited water body” can assimilate and still meet water quality standards to the extent necessary to support use goals such as, swimming, fishing, drinking water and shell fish harvesting. Although TMDLs are required by federal law, states are charged with developing and implementing standards to support these desired use goals. In the greater Nanticoke watershed, “target-rate-nutrient reductions” of 30 and 50 percent will be required for nitrogen and phosphorus, respectively. Additionally, “target-rate-reductions” of 2 percent will be required for bacteria.

### **TMDL Compliance through the PCS**

As indicated above, Total Maximum Daily Loads (TMDLs) for nitrogen and phosphorus have been proposed for the Nanticoke watershed. The TMDL calls for a 30 and 50 percent reduction in nitrogen and phosphorus from baseline conditions. The TMDL also calls for a 2 percent reduction in bacteria. A Pollution Control Strategy (PCS) will be used as a regulatory framework to ensure that these nutrient reduction targets are attained. The Department has developed an assessment tool to evaluate how your proposed development may reduce nutrients to meet the TMDL requirements. Additional nutrient reductions may be possible through the implementation of BMPs such as wider vegetated buffers along watercourses/wetlands, increasing the amount of passive, wooded open space, connection to a central sewer or a performance-based community wastewater disposal system, use of pervious paving materials to reduce surface imperviousness, and the deployment of green-technology stormwater management treatment technologies. Contact Lyle Jones at 302-739-9939 for more information on the assessment tool.

### **Water Supply**

The project information sheets state that an individual on-site well will be used to provide water for the proposed project. Our records indicate that the project is not located in an area where public water service is available. The Division of Water Resources will consider applications for the construction of on-site wells provided the wells can be

constructed and located in compliance with all requirements of the Regulations Governing the Construction and Use of Wells. A well construction permit must be obtained prior to constructing any wells.

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

All well permit applications must be prepared and signed by licensed water well contractors, and only licensed well drillers may construct the wells. Please factor in the necessary time for processing the well permit applications into the construction schedule. Dewatering well permit applications typically take approximately four weeks to process, which allows the necessary time for technical review and advertising.

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

### **Water Resource Protection Areas**

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

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

The construction phase of storm water management ponds requires excavation, hauling, and grading. The heavy equipment used in this phase has the capacity to compact and degrade the structure of the strata that defines the area as an excellent ground-water recharge area (Schueler, 2000). Changes to the structural soil properties may cause significant reduction in recharge capacity. Installing storm-water management ponds in excellent ground-water recharge areas has the potential to contaminate the ground water beneath it and infiltrate into the aquifer.

Ground Water Protection Branch recommends:

- Use Better Management Practices in the design, construction, and maintenance of a storm water management system designed to address water quality with respect to nutrient and other pollutant loads.

The Water Supply Section recommends that the portion of the new development within the excellent ground-water recharge area not exceed 20% impervious cover (DNREC, 2005). The purpose of an impervious cover threshold is to minimize loss of recharge (and associated increases in storm water) and protect the quality and quantity of ground water and surface water supplies.

An allowance for augmenting ground-water recharge should be considered if the impervious cover exceeds 20% but is less than 50% of that portion of the parcel within this area provided the applicant submit an environmental assessment recommending a climatic water budget and facilities to augment recharge. The environmental assessment must document that post-development recharge will be no less than predevelopment recharge when computed on an annual basis (Kauffman, 2005).

The proposed development would change the impervious cover from 0 % to approximately 8.2 %. The Developer provided these numbers on the PLUS application form. This figure appears to be an underestimation of impervious cover.

Ground Water Protection Branch recommends:

- Limiting impervious cover to less than 20%

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

#### References

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

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

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

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

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

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

Schueler, T. R., 2000, The Compaction of Urban Soils, *in* Schueler, T.R., and Holland, H.K., eds., *The Practice of Watershed Protection*: Ellicott City, MD, Center for Watershed Protection, p. 752.

**Map of Nathaniel's Landing at Cherry Walk (PLUS 2007-12- 08)**

Excellent ground-water recharge potential area is highlighted in green. The site plan submitted by the Developer is superimposed on the affected parcel.



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

A detailed sediment and stormwater plan will be required prior to any land disturbing activity taking place on the site. Contact the reviewing agency to schedule a pre-application meeting to discuss the sediment and erosion control and stormwater management components of the plan as soon as practicable. The site topography, soils mapping, pre- and post-development runoff, and proposed method(s) and location(s) of stormwater management should be brought to the meeting for discussion. The plan review and approval as well as construction inspection will be coordinated through the Sussex Conservation District. Contact Jessica Watson at the Sussex Conservation District at (302) 856-7219 for details regarding submittal requirements and fees.

Because of the parcel's location in an impaired watershed and the amount of impervious surface, consider incorporating more green technology BMPs and low impact development practices to reduce stormwater flow and to meet water quality goals.

The Sediment and Stormwater Management Program ensures sediment and erosion control plans and stormwater plans comply with local land use ordinances and policies, including the siting of stormwater management facilities. However, we do not support placement in resource protection areas or the removal of trees for the sole purpose of placement of a stormwater management facility/practice.

### **Drainage**

- The Drainage Program requests that the engineer take precautions to ensure the project does not hinder any off site drainage upstream of the site. The Drainage Program requests that the engineer check existing downstream ditches and pipes for function and blockages prior to the construction.
- The Drainage Program encourages the elevation of rear yards to direct water towards the streets and alleyways where storm drains are accessible for maintenance. However, the Drainage Program recognizes the need for catch basins in yards in certain cases. Therefore, catch basins placed in rear and side yards will need to be clear of obstructions and be accessible for maintenance. Decks, sheds, fences, pools, and kennels can hinder drainage patterns as well as future maintenance to the storm drain or catch basin. Deed restrictions, along with drainage easements recorded on deeds, should ensure adequate future maintenance access.
- An increase of the side yard setback to 15 feet may be needed on all properties with a drainage easement on the side. The increase will allow room for equipment to utilize the entire easement and maneuver free of obstructions if the drainage conveyance requires periodic maintenance or future re-construction. The side yard setback would only increase on the side with the drainage easement.
- All catch basins in rear or side yards should have a 10-foot drainage easement around them on all sides. Place restrictions on fences, sheds, and other structures within the easement to prevent obstructions from being placed next to the catch basin. Record the easement on the deed.
- Have all drainage easements recorded on deeds and place restrictions on obstructions within the easements to ensure access for periodic maintenance or future re-construction. Future property owners may not be aware of a drainage easement on their property if the easement is only on the record plan. However, by recording the drainage easement on the deed, the second owner, and any subsequent owner of the property, will be fully aware of the drainage easement on their property.

## **Floodplains**

The floodplain is not indicated on the site plan. A portion of this property is located in a Zone A floodplain. Both FEMA's and Sussex County's floodplain regulations require that any proposed new development greater than 50 lots or 5 acres develop a base flood elevation and submit it with the proposal.

## **Site Visit Request**

Although we have surveyed portions of the wildlife area, we have never surveyed the project area. In order to make more informed comments, we respectfully request the opportunity to survey the project site. This survey would be conducted at no cost or liability to the developer/land owner. Please note that our staff have decades of experience and utilize survey methods unique to our program. For more information, please contact Edna Stetzar, environmental review coordinator, at (302) 653-2883.

## **Rare Species**

In addition to many species of more common plants and animals, several rare species have been documented at the adjacent Nanticoke Wildlife Area. Because the forest is contiguous with the project area, these species likely occur at the project site and could be impacted by the high level of forest removal being proposed:

### *State*

The following rare species could occur within the project area and be impacted by this project:

*Buteo lineatus* (Red-shouldered Hawk), *Setophaga rutillica* (American Redstart), *Strix varia* (Barred Owl), *Opheodrys aestivus* (rough green snake), *Callophrys irus* (frosted elfin), and *Dichanthelium columbianum* (hemlock witch grass)

### *Federal*

There is a population of Delmarva fox squirrel (*Sciurus niger cinereus*, DFS) within the Nanticoke Wildlife Area and they likely occur within the project area. Delmarva fox squirrels are large-bodied tree squirrels that only inhabit mature forests on the Delmarva Peninsula. Threatened mainly by loss of its forested habitat, DFS have been protected as an endangered species since 1967. As required by the Endangered Species Act, the U.S. Fish and Wildlife Service review projects that may harm this species or their habitat.

You or your client will need to contact Trevor Clark of the U.S. Fish and Wildlife Service (410-573-4527). He may recommend simple alterations to your project or suggest you have surveys conducted to determine if Delmarva fox squirrels are present. If you have surveys conducted, they must be done by a federally approved fox squirrel surveyor, be conducted twice; once in the fall, and again between March 15 and May 30. A list of qualified surveyors is available upon request (contact Holly Niederriter at (302) 653-2880). Please note that surveys may confirm the presence of fox squirrels but cannot confirm absence.

Also note that surveys conducted on other properties in the vicinity do not fulfill requirements for the project properties. The forest within your project area is contiguous with the Nanticoke Wildlife Area where there is a known presence of Delmarva fox squirrel. Also, a decision regarding the habitat impact of a nearby cell tower project is not transferable to this project. A residential development has a much larger footprint and impact to the forest than a cell tower.

### **Unique Natural Communities**

#### *Ancient Sand Ridge Forest*

According to our GIS database and aerial photographs, there is a potential for an Ancient Sand Ridge Forest to occur within the proposed project area. This forest type develops on well-drained sandy substrates of ancient, prehistoric sand ridges or dunes. These ridges are unique geologic features on the landscape that were created by wind-blown sediments about 13,000 to 30,000 years ago when the climate was much cooler and drier. The forests are typically composed of several species of oak, as well as species of hickory and pine. Many of these ridges have been identified as occurring along the east side of the Nanticoke River, south of Seaford. However, their distribution in Delaware is not entirely clear and they may be more widespread in Sussex County, as well as in Kent County, but more study is needed. The ancient sand ridge forest type is often home to several State rare plant species and one species in particular; wild lupine (*Lupinus perennis*) is the host plant for a state and globally rare butterfly, the frosted elfin (*Callophrys irus*). More surveys are needed, but there is potential for other rare and uncommon insects and animals to be found within this forest type. Protection of these ancient sand ridges and associated forests are critical to the long term conservation of the states natural heritage.

*Recommendation:* Determine if this unique habitat exists on-site and if so, remove lots and infrastructure to reduce impacts.

#### *Freshwater Tidal and non-tidal marsh areas*

This project has inadequate (50-foot) wetland buffers which could lead to long-term degradation of the marsh habitat through fragmentation and disturbance. Scientific research has proved that buffers less than 100 feet in width are inadequate for the protection of water quality. In addition, upland buffers around wetlands provide critical habitat for wetland dependent species during a portion of their life cycle.

*Recommendation:* Provide at least a 100-foot buffer between wetlands and lots or infrastructure. This will require redesigning the site or omitting both lots and infrastructure.

#### *Atlantic White Cedar Wetlands*

According to our GIS database, there is a potential for Atlantic white cedar wetlands to occur within the project area. This State-rare community typically grows under unique conditions which are often refugia for rare species. This wetland type is sensitive to sedimentation and changes in water quality, especially pH. The hydrological regime is a major determinant of the resulting biota in this system and we are concerned how this project could affect the hydrology of this community.

*Recommendation:* This community should be delineated and left undisturbed with at least a 100-foot (preferably 300 feet) buffer between its boundaries and lots/infrastructure.

#### **Nanticoke Wildlife Area and Impacts to Wildlife Habitat**

This project is adjacent to a relatively undisturbed section of the Nanticoke Wildlife Area (NWA) and the State is concerned that this project will negatively impact these publicly used lands. The developer/landowner is strongly encouraged to contact the Regional Wildlife Area manager, Rob Gano (302-539-3160) and discuss this project.

#### *Concerns:*

- 1) Adequate buffers between the project and the Wildlife Area are critical for reducing impacts, and the proposed buffer between the NWA and the Cherry Walk project is highly insufficient to protect the wildlife area from impacts.
- 2) The close proximity of this project will impact the suitability of the area to support native species. Without an adequate buffer, invasive plant species planted by homeowners or that naturally occur as the area is disturbed by construction, could out compete native and rare species.

3) Both Nathaniel Landing projects will result in the fragmentation of 160 acres of forest and the clearing of at least 66 acres of trees. The forest within the project area is part of a larger forest block known to support many species of wildlife, including those that are rare. Connectivity to tracts to the north will be lost. Essentially this project will convert a forest into 'residential' woods, sever wildlife travel connections to points north, and displace wildlife, putting greater pressure on the wildlife area to provide resources. It is also likely that there will be human/animal conflicts including interactions on the roadways.

Cumulative forest loss throughout the State is of utmost concern to the Division of Fish and Wildlife which is responsible for conserving and managing the State's wildlife (see [www.fw.delaware.gov](http://www.fw.delaware.gov) and the Delaware Code, Title 7). Because of an overall lack of forest protection, we have to rely on applicants and/or the entity that approves the project (i.e. counties and municipalities) to consider implementing measures that will aide in forest loss reduction.

4) Developments adjacent to wildlife areas have often resulted in the illegal use of all terrain vehicles (ATVs) by new residents. ATVs not only destroy habitat, but become an on-going enforcement issue costing the State time and money to enforce. The developer/landowner should make sure new residents are aware that the use of ATVs by non-wildlife area staff is illegal and punishable by law.

5) Trash can become an on-going problem. The developer/landowner should make sure residents are aware that dumping trash in the wildlife area is illegal. Trash can also blow into the wildlife area during construction activities and then from residents. An adequate forested buffer as described above is essential for prevention.

6) Hunting is a recreational opportunity offered to all residents of Delaware, occurs on publicly owned land, is a method of wildlife management, and is well established at this Wildlife Area. Prior to purchasing, residents should be made aware by the developer/land owner that they will be subject to the noise of fire arms and barking dogs that are pursuing game. Hunters may also be using the wildlife area during the early morning hours.

Discharging a fire arm within 100 yards of an occupied dwelling is prohibited and the developer is not providing an adequate buffer to establish a safety zone. Essentially the State will be losing the use of property that can be used by all citizens to a private developer. Refer to Title 7, Delaware Code:

**§ 723. Hunting or trapping in safety zones; penalty.**

- (a) No person, except the owner or occupant, shall discharge a firearm within 100 yards of an occupied dwelling, house or residence or any barn, stable or any other building used in connection therewith, while hunting or trapping for wild birds or wild animals of any kind. The area within said distance shall be a "safety zone," and it shall be unlawful to shoot at any wild bird or wild animal while it is within such safety zone without the specific advance permission of the owner or tenant.

*Recommendations:*

1. DNREC highly recommends that the applicant(s) consider preservation of part or all of the forested area in lieu of development and many incentive-based programs for wildlife management are available to private landowners through our agency. Please contact Shelly Tovell at (302) 735-3600 if the landowner(s) is interested in more information.

If preservation is not going to be considered, then we request the following:

2. DNREC strongly requests that a 100-foot (preferably more, but 100 feet minimum) wooded buffer (without lot lines) be left intact along the NWA boundary and houses are set to the front of the lots to maximize the distance to the State Boundary. There should be at least 150 feet (50 yards) between the house and the NWA boundary, so that the developer is providing at least half the required safety zone distance.
3. Use Smart Design Standards proposed in the Sussex County Comprehensive Plan. This type of design will reduce forest loss, maximize open space, and reduce impervious surfaces. Protection of natural features should be a first priority.
4. To reduce impacts to wildlife habitat, structures proposed within the 'panhandle' should be eliminated and set aside for natural plant communities. Eliminate the proposed paved road to the 'marina' and use the waterfront on the Captain's Hill project for all residents. Turn the old marina road into a walking trail. If the road is constructed as proposed, the 'improvements' will result in immediate impacts to the wildlife area due to pavement, swales, gutters, etc.
5. Eliminate lot #37 which lies immediately along the NWA boundary to allow for more space along the boundary. This lot also causes further fragmentation and degradation of adjacent wetlands.

**State Natural Heritage Site**

Due to the presence of rare species and the presence of a State Natural Area, this project lies within a State Natural Heritage Site. This is one criteria used to determine the presence of Critical Resource Waters. The final decision regarding Critical Resource Waters, if this is an issue, will be made by the U.S. Army Corps of Engineers (USACE or “the Corps”). The information above will aid the Corps in their determination.

### **Fisheries Concerns**

These projects propose not only the reconstruction of a marina but the addition of at least 10 piers. Cumulative impacts to fisheries habitat should be considered as the construction of piers and docks along the Nanticoke River and its tributaries has escalated in recent years. Fisheries research has documented the detrimental effects of shoreline modification: 1) removal of trees along the shoreline can reduce the effects of shading which is important for maintaining water temperature conducive to spawning, 2) alteration of shoreline habitat can affect the distribution of benthic and macro-invertebrates which serve as the forage base for many fish species, 3) direct impacts to important nursery habitat occur by replacing natural habitat with man-made materials along the shoreline, and 4) local habitat modification can lead to changes in species richness.

It should also be noted that the Nanticoke River/Broad Creek complex is the most heavily fished stream in Delaware by licensed anglers, constituting nearly 20% of stream angling overall. It is heavily utilized by both resident and non-resident anglers and has been popular for many years. Statewide, the most sought-after fish by Delaware-licensed anglers is the largemouth bass and the Nanticoke River bass fishery has been the most popular fishery in the State. The Nanticoke River fishery also supports the majority (46 % in 2004) of the largemouth bass tournament angling in Delaware and has been the single most popular tournament site for 15 consecutive years.

#### *Recommendations:*

1. Omit the proposed individual piers and consider a community pier instead. A single community pier would impact a much smaller area of the shoreline than what is being proposed and would be within walking distance to all residents. The proposed piers encompass approximately +/- 2,000 linear feet of shoreline (according to the applicant at the PLUS meeting).

These structures will also limit shoreline access (where fishing is often optimum) to anglers fishing from boats in the river. As noted above, the Nanticoke River is a highly popular fishing location and shoreline access is decreasing as the number

of piers/docks increase. This part of the river is not private property and should be accessible to all.

2. The necessity for a marina should be carefully considered as negative environmental impacts could outweigh the benefits. This marina will only benefit those who are permitted to use it, but may have wider environmental impacts. This marina has not been active for 40-50 years according to the applicant and will likely need to be completely reconstructed. The effects of an increase in local boat traffic, shoreline wave action, fuel spills, noise, and shoreline hardening could negatively impact adjacent properties including the Wildlife Area.
3. Avoid adding more rip-rap and other manmade materials to the shoreline. Natural materials should be used and restoration is strongly encouraged.

### **Air Quality**

Once complete, vehicle emissions associated with this project are estimated to be 6.4 tons (12,893.1 pounds) per year of VOC (volatile organic compounds), 5.3 tons (10,674.6 pounds) per year of NOx (nitrogen oxides), 3.9 tons (7,875.9 pounds) per year of SO2 (sulfur dioxide), 0.4 ton (701.1 pounds) per year of fine particulates and 539.2 tons (1,078,493.3 pounds) per year of CO2 (carbon dioxide).

***However, because this project is in a level 4 area, mobile emission calculations should be increased by 118 pounds for VOC emissions for each mile outside the designated growth areas per household unit; by 154 pounds for NOx; and by 2 pounds for particulate emissions. A typical development of 100 units that is planned 10 miles outside the growth areas will have additional 59 tons per year of VOC emissions, 77 tons per year of NOx emissions and 1 ton per year of particulate emissions versus the same development built in a growth area (level 1, 2 or 3).***

Emissions from area sources associated with this project are estimated to be 2.6 tons (5,200.4 pounds) per year of VOC (volatile organic compounds), 0.3 ton (572.2 pounds) per year of NOx (nitrogen oxides), 0.2 ton (474.8 pounds) per year of SO2 (sulfur dioxide), 0.3 ton (612.8 pounds) per year of fine particulates and 10.5 tons

(21,081.2 pounds) per year of CO<sub>2</sub> (carbon dioxide).

Emissions from electrical power generation associated with this project are estimated to be 1.0 tons (2,061.1 pounds) per year of NO<sub>x</sub> (nitrogen oxides), 3.6 tons (7,168.9 pounds) per year of SO<sub>2</sub> (sulfur dioxide) and 528.7 tons (1,057,412.2 pounds) per year of CO<sub>2</sub> (carbon dioxide).

	VOC	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Mobile	6.4	5.3	3.9	0.4	539.2
Residential	2.6	0.3	0.2	0.3	10.5
Electrical Power		1.0	3.6		528.7
TOTAL	9.0	6.6	7.7	0.7	1078.4

For this project the electrical usage via electric power plant generation alone totaled to produce an additional 1.0 tons of nitrogen oxides per year and 3.6 tons of sulfur dioxide per year.

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

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

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

The DNREC Energy Office 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.

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.

**State Fire Marshal's Office – Contact: Duane Fox 856-5800**

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.
- The infrastructure for fire protection water shall be provided, including the size of water mains.

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 the main thoroughfares, including Woodland Ferry Road must be constructed so fire department apparatus may negotiate it. . If a "center island" is placed at an entrance into the subdivision or anywhere in the access roadway, it shall be arranged in such a manner that it will not adversely affect quick and unimpeded travel of fire apparatus into the subdivision.
- Fire department access shall be provided in such a manner so that fire apparatus will be able to locate within 100 ft. of the front door.
- Any dead end road more than 300 feet in length shall be provided with a turn-around or cul-de-sac arranged such that fire apparatus will be able to turn around by making not more than one backing maneuver. The minimum paved radius of the cul-de-sac shall be 38 feet. The dimensions of the cul-de-sac or

turn-around shall be shown on the final plans. Also, please be advised that parking is prohibited in the cul-de-sac or turn around.

- The use of speed bumps or other methods of traffic speed reduction must be in accordance with Department of Transportation requirements.
- The local Fire Chief, prior to any submission to our Agency, shall approve in writing the use of gates that limit fire department access into and out of the development or property.

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

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

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

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

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

The proposed developments are in an area designated as Investment Level 4 under the *Strategies for State Policies and Spending*. The *Strategies* do not support this type of isolated development in this area. The intent of this plan is to preserve the agricultural lands, forestlands, recreational uses, and open spaces that are preferred uses in Level 4 areas. The Department of Agriculture opposes the proposed development which conflicts with the preferred land uses, making it more difficult for agriculture and forestry to succeed, and increases the cost to the public for services and facilities.

More importantly, the Department of Agriculture opposes this project because it negatively impacts those land uses that are the backbone of Delaware’s resource industries - agriculture, forestry, horticulture - and the related industries they support. Often new residents of developments like this one, with little understanding or appreciation for modern agriculture and forestry, find their own lifestyles in direct conflict with the demands of these

industries. Often these conflicts result in compromised health and safety; one example being decreased highway safety with farm equipment and cars competing on rural roads. The crucial economic, environmental and open space benefits of agriculture and forestry are compromised by such development. We oppose the creation of isolated development areas that are inefficient in terms of the full range of public facilities and services funded with public dollars. Public investments in areas such as this are best directed to agricultural and forestry preservation.

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

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

This site overlaps with the State’s Green Infrastructure Investment Strategy Plan. The natural areas layer is present on the site. This designation identifies areas of the state that contain inherently valuable resources, as discussed in Governor Minner’s Executive Order Number 61. Areas such as these should be preserved as such, and not developed for residential use.

The Delaware Department of Agriculture supports growth which expands and builds on existing urban areas and growth zones in approved State, county and local plans. Where additional land preservation can occur through the use of transfer of development rights, and other land use measures, we will support these efforts and work with developers to implement these measures. If this project is approved we will work with the developers to minimize impacts to the agricultural and forestry industries.

### *Right Tree for the Right Place*

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

### *Native Landscapes*

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

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

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

### **Delaware State Housing Authority – Contact Vicki Powers 739-4263**

This proposal is for a site plan review of 84 single-family homes on 105.14 acres located on the south side of Woodland Ferry Road, east of the Nanticoke River and north of the Nanticoke Wildlife Area, near Seaford. According to the *State Strategies Map*, the proposal is located in an Investment Level 4 area. As a general planning practice, DSHA encourages residential development only in areas where residents will have proximity to services, markets, and employment opportunities, such as Investment Level 1 and 2 areas outlined in the State Strategies Map. Since the proposal is located in an area targeted for agricultural and natural resource protection, and therefore inconsistent with where the State would like to see new residential development, DSHA does not support this proposal.

### **Department of Education – Contact: John Marinucci 735-4055**

DOE recognizes that this development project is in level 4 of the State Strategies for Policies and Spending and as such, DOE does not support the approval of this project. This proposed development is within the Laurel School District. DOE offers the following comments on behalf of the Laurel School District.

1. Using the DOE standard formula, this development will generate an estimated 42 students.
2. DOE records indicate that the Laurel School Districts' *elementary schools are very close to 100% of current capacity* based on September 30, 2007 elementary enrollment.
3. DOE records indicate that the Laurel School Districts' *secondary schools are not at or beyond 100% of current capacity* based on September 30, 2007 secondary enrollment.
4. While the Laurel School District secondary and elementary schools are not currently beyond capacity, *the district does NOT have adequate student capacity to accommodate the additional students likely to be generated from this development* given the number of planned and recorded residential sub divisions within district boundaries. This development, in conjunction with other planned developments within the district boundaries will cause significant burden to the Laurel School District.
5. The DOE requests that the developer contact the Laurel School District Administration to address the issue of school over-crowding that this development has the potential to cause.
6. The DOE requests that the developer work with the Laurel School District transportation department to establish developer supplied bus stop shelter ROW and shelter structures, interspersed throughout the development as determined and recommended by the local school district.

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

There appears to be a conflict between the concept plan submitted and the tidal wetland as "mapped by the Department of Natural Resources and Environmental Control". The Sussex County Zoning Ordinance at 115-193 A and B requires a 50 foot naturally vegetated buffer landward from tidal wetlands as mapped by DNREC. Given the scale of the concept plan it is difficult to tell for certain but the road to the marina, the marina parking lot, and at least one residential lot appear to be within the tidal wetland as mapped by DNREC or the 50 foot buffer required by Sussex County. A photocopy of the DNREC map was given to the applicant at the PLUS meeting. The developer should work directly with DNREC to rectify any conflict in mapping.

Due to the probable existence of excellent recharge on the site, the developer should prohibit the discharge of roof drains to impervious surfaces; require the segregation and treatment of roof run-off from mechanical system prior to discharge to the recharge area, and use best management practices to ensure that land uses and activities are conducted in such a way as to minimize the impact on, and reduce the risk of contamination to, excellent recharge areas.

The State Wetlands map indicates the possibility of wetlands impacting the location of proposed subdivision lots and roads. Therefore a jurisdictional determination letter should be provided to support the proposed design for that area and that the lot layout does not contain any wetlands. This letter should be obtained prior to the request for approval of any final plan.

The Sussex County Engineer Comments:

Individual on-site wastewater systems are proposed to serve the residential subdivisions. The proposed projects are in the Western Sussex Planning Area, but are not in an area where Sussex County expects to provide sewer service.

For questions regarding these comments, contact Rob Davis, Sussex County Engineering Department at (302) 855-7820.

**2007-12-07 Nathaniel Landing at Captain's Hill**

**Division of Historical and Cultural Affairs – Contact: Terrance Burns 739-5685**

There did not appear to be any historic or cultural resource sites, archaeological sites, or listed national register properties on this site, but the developer should be aware that there are known historic or cultural resource sites nearby, and it is an archaeological site (S-7774; 7S-E-87). Also, according to the historic Beers Atlas/Map of 1868, it did show and indicate that there were a few dwellings close to the area where this project is located. There is a possibility that there could potentially be historic or cultural resources or archaeological resources associated with it.

The developer should be aware and remember that this parcel/property is in a Level 4 area. The nature or context of Level 4 areas are often or usually environmentally sensitive areas. The State Historic Preservation Office of the Division of Historical & Cultural Affairs is not in favor of any type of zoning change, construction, building project, or development in Level-4 areas.

The developer should also be aware that this parcel/property is within the historic vicinity of Broad Creek Hundred. According to the historic Beers Atlas/Map of 1868, there is evidence on the atlas/map that indicates that the vicinity of Broad Creek Hundred does have some historical areas. The developer should also be aware that it is a possibility that there could potentially be historic or cultural resources on this parcel/property because of the historical background of the area or vicinity. These historic or cultural resources could be archaeological resources such as a cemetery, burial ground, unmarked human remains, or the parts or pieces or something demolished, destroyed, or ruined historically.

Prior to, or before any demolition, ground-disturbing activities or construction on this parcel/property, the State Historic Preservation Office of the Division of Historic & Cultural Affairs recommends that the developer see or review Chapters 53 and 54, in Title 7, of the Delaware State Code. Chapter 53 pertains to the discovery and disposition of “Conservation of Archaeological Resources In or On State Lands”. Chapter 54 pertains to the “Delaware Unmarked Human Remains Act of 1987”, such as the discovery and disposition of Unmarked Human Burials or Skeletal Remains”. The unexpected discovery of unmarked human remains during construction can result in significant delays while the process is carried out.

Also, prior to, or before any demolition, ground-disturbing activities, or construction, the State Historic Preservation Office of the Division of Historic & Cultural Affairs recommends that the developer should consider hiring an archaeological consultant to check or examine parcel/property (project area) thoroughly and see if there is any evidence or indication of potential historic or cultural resources, or archaeological resources such as be a cemetery, burial ground, unmarked human remains, or the parts or pieces or something demolished, destroyed, or ruined historically.

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

Jesse Frederick Conaway and Everett T. Conaway seek to develop 124 single-family detached houses in two nominally separate developments located on the south side of Woodland Ferry Road (Sussex Road 78) and the east bank of the Nanticoke River. Nathaniel’s Landing at Captain’s Hill would consist of 40 houses on a 55.1-acre assemblage of parcels (Tax Parcels 2-32-4.00-6.00, 6.01, 6.04 and 7.01). Nathaniel’s Landing at Cherry Walk would consist of 84 houses on a 105.14-acre assemblage of parcels (Tax Parcels 2-32-4.00-6.00, 6.02 and 6.05). The land is zoned AR-1 and would be developed by right. The separation into two developments appears to have be in response to Department of Natural Resources and Environmental Control (DNREC) guidelines regarding the number of individual septic systems allowed on a project.

Because these developments are proposed for a Level 4 Area, they are inconsistent with the *Strategies for State Policies and Spending*. As part of our commitment to support the

*Strategies*, DelDOT refrains from participating in the cost of any road improvements needed to support this development and is opposed to any road improvements that will substantially increase the transportation system capacity in this area. DelDOT will only support taking the steps necessary to preserve the existing transportation infrastructure and make whatever safety and drainage related improvements are deemed appropriate and necessary. The intent is to preserve the open space, agricultural lands, natural habitats and forestlands that are typically found in Level 4 Areas while avoiding the creation of isolated development areas that cannot be served effectively or efficiently by public transportation, emergency responders, and other public services.

DelDOT strongly supports new development in and around existing towns and municipalities and in areas designated as growth zones in approved Comprehensive Plans. We encourage the use of transfer of development rights where this growth management tool is available.

If these development proposals are approved, notwithstanding inconsistencies with the relevant plans and policies, DelDOT will provide further technical review and comments.

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

#### **Investment Level 4 Policy Statement**

This project is proposed for an Investment Level 4 area as defined by the *Strategies for State Policies and Spending* and is also located outside of a designated growth area in the relevant municipal and County certified comprehensive plans. According to the *Strategies*, this project is inappropriate in this location. In Investment Level 4 areas, the State's investments and policies, from DNREC's perspective, should retain the rural landscape and preserve open spaces and farmlands. Open space investments should emphasize the protection of critical natural habitat and wildlife to support a diversity of species, and the protection of present and future water supplies. Open space investments should also provide for recreational activities, while helping to define growth areas. Additional State investments in water and wastewater systems should be limited to existing or imminent public health, safety or environmental risks only, with little provision for additional capacity to accommodate further development.

With continued development in Investment Level 4 areas, the State will have a difficult, if not impossible, time attaining water quality (e.g., TMDLs) and air quality (e.g., non-attainment areas for ozone and fine particulates) goals. Present and future investments in green infrastructure, as defined in Governor Minner's Executive Order No. 61, will be threatened. DNREC strongly supports new development in and around existing towns and municipalities and in areas designated as growth zones in certified Comprehensive Plans. We encourage the use of transfer of development rights where this growth management tool is available.

This particular development certainly compromises the integrity of the State Strategies and the preservation goals inherent in many of DNREC's programs. Of particular concern are potential impacts to two out of three layers of the Green Infrastructure map (natural resource and recreation priorities and forest), the loss/fragmentation of forest (29 out of 54 acres or 53.7%), 40 individual on-site septic systems, the project's location in an excellent recharge area, and the project's proximity to the Nanticoke Wildlife Area. While mitigating measures such as conservation design, central wastewater systems instead of individual on-site septic systems, and other best management practices may help mitigate impacts from this project, not doing the project at all is the best avenue for avoiding negative impacts. As such, this project will receive no financial, technical or other support of any kind from DNREC. Any required permits or other authorizations for this project shall be considered in light of the project's conflict with our State growth strategies.

### **Green Infrastructure**

Portions or all of the lands associated with this proposal are within the Livable Delaware Green Infrastructure area established under Governor Minner's Executive Order #61 that represents a network of ecologically important natural resource lands of special State conservation interest.

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

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

### **Soils**

According to the Sussex County soil survey update, Evesboro, Cedartown, Galestown, Lanape, Zekiah, and Mullica were mapped on subject parcels. Evesboro, Cedartown, and Galestown are excessively to somewhat excessively well-drained upland soils that have moderate limitations for development. Lanape is a very poorly-drained (hydric) soil indicative of tidally-influenced wetlands. Zekiah and Mullica are very poorly-drained soils indicative of nontidal wetlands. Lanape, Zekiah, and Mullica have severe limitations for development and should be avoided.

### **Wetlands**

Based on the Statewide Wetland Mapping Project (SWMP) maps, tidal and nontidal palustrine forested headwater riparian wetlands were mapped along much of the southern boundary of the parcel identified as Nathaniel's Landing at Cherry Walk. Tidally-influenced wetlands were also mapped along the entire western boundary of Nathaniel's Landing at Cherry Walk and Nathaniel's Landing at Captain's Hill.

Impacts to Palustrine wetlands are regulated by the U.S. Army Corps of Engineers (USACE, or "the Corps") through Section 404 of the Clean Water Act. In addition, individual 404 permits and certain Nationwide Permits from the Corps also require 401 Water Quality Certification from the DNREC Wetland and Subaqueous Land Section and Coastal Zone Federal Consistency Certification from the DNREC Division of Soil and Water Conservation, Delaware Coastal Management Program (DCMP) Section. Each of these certifications represents a separate permitting process. Please be advised that nationwide permits have been suspended in Delaware and are pending further coordination with the Corps. Therefore, contrary to past practices, Coastal Zone Management approval can no longer be assumed. Individual certifications must be granted from the DCMP office for each project intending to utilize a Nationwide Permit. For more information on the Federal Consistency process, please contact the DCMP office at 302.739.9283. 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.

Based on a review of existing buffer research by Castelle et al. (1994), an adequately-sized buffer that effectively protects wetlands and streams, in most circumstances, is about 100-foot in width. In recognition of this research and the need to protect water quality, the Watershed Assessment Section recommends that the applicant maintain/establish a minimum 100-foot upland buffer (planted in native vegetation) from the landward edge of all wetlands and water bodies (including all ditches).

As mentioned previously, riparian headwater draining into the environmentally sensitive Nanticoke River wetlands bound much of the southern boundary of subject parcel. Since protection of the headwater riparian wetlands is critically important for maintaining the water quality/ecological integrity throughout the entire length of the stream, including the floodplain system further downstream, efforts to protect the riparian wetlands bounding this stream should be considered a priority. Therefore, the Watershed Assessment Section strongly recommends that the applicant maintain/establish a minimum 100-foot upland buffer (planted with native vegetation) from the landward edge of the riparian wetlands. A literature review of existing buffer research by Castelle et al. (1994) has documented consensus among researchers that a 100-foot upland buffer from wetlands and water bodies is the minimum buffer width necessary, under most circumstances, to protect water quality.

### **Impervious Cover**

Based on a review of the PLUS application form, post-construction surface imperviousness was projected to reach 5.6 and 8.2 percent for the of Nathaniel's Landings' projects at Captain's Hill and Cherry Walk, respectively. However, given the projected scope and density of said projects, these estimates appear to significantly understate the actual amount of post-construction surface imperviousness. When calculating surface imperviousness, it is important to consider all created forms of constructed surface imperviousness (i.e., rooftops, sidewalks, roads, and stormwater management and recreational ponds) when calculating surface imperviousness; otherwise, an underestimate of this project's environmental impacts will result. Therefore, surface imperviousness should be recalculated with all of the above-mentioned forms of constructed surface imperviousness included.

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.

### **ERES Waters**

This project is located adjacent to receiving waters of the greater Nanticoke watershed, and designated as having waters of 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). Moreover, provisions defined in subsection 5.6.3.5 of same section, specially authorize the Department to mandate BMPs to meet 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 Nanticoke watershed. A TMDL is the maximum level of pollution allowed for a given pollutant below which a “water quality limited water body” can assimilate and still meet water quality standards to the extent necessary to support use goals such as, swimming, fishing, drinking water and shell fish harvesting. Although TMDLs are required by federal law, states are charged with developing and implementing standards to support these desired use goals. In the greater Nanticoke watershed, “target-rate-nutrient reductions” of 30 and 50 percent will be required for nitrogen and phosphorus, respectively. Additionally, “target-rate-reductions” of 2 percent will be required for bacteria.

### **TMDL Compliance through the PCS**

As indicated above, Total Maximum Daily Loads (TMDLs) for nitrogen and phosphorus have been proposed for the Nanticoke watershed. The TMDL calls for a 30 and 50

percent reduction in nitrogen and phosphorus from baseline conditions. The TMDL also calls for a 2 percent reduction in bacteria. A Pollution Control Strategy (PCS) will be used as a regulatory framework to ensure that these nutrient reduction targets are attained. The Department has developed an assessment tool to evaluate how your proposed development may reduce nutrients to meet the TMDL requirements. Additional nutrient reductions may be possible through the implementation of BMPs such as wider vegetated buffers along watercourses/wetlands, increasing the amount of passive, wooded open space, connection to a central sewer or a performance-based community wastewater disposal system, use of pervious paving materials to reduce surface imperviousness, and the deployment of green-technology stormwater management treatment technologies. Contact Lyle Jones at 302-739-9939 for more information on the assessment tool.

### **Water Supply**

The project information sheets state that individual on-site well(s) will be used to provide water for the proposed project. DNREC records indicate that the project is not located in an area where public water service is available. The Division of Water Resources will consider applications for the construction of on-site wells provided the wells can be constructed and located in compliance with all requirements of the current Regulations Governing the Construction and Use of Wells. A well construction permit must be obtained prior to constructing each and every well(s).

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

All well permit applications must be prepared and signed by licensed water well contractors, and only licensed well drillers may construct the wells. Please factor in the necessary time for processing the well permit applications into the construction schedule. Dewatering well permit applications typically take approximately four weeks to process, which allows the necessary time for technical review and advertising.

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

### **Water Resource Protection Areas**

The Water Supply Section has determined that the project falls entirely within an excellent ground-water recharge area for Sussex County (see following map and attached

map). The site plans show storm water management ponds in the area of excellent recharge.

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

The construction phase of storm water management ponds requires excavation, hauling, and grading. The heavy equipment used in this phase has the capacity to compact and degrade the structure of the strata that defines the area as an excellent ground-water recharge area (Schueler, 2000). Changes to the structural soil properties may cause significant reduction in recharge capacity. Installing storm-water management ponds in excellent ground-water recharge areas has the potential to contaminate the ground water beneath it and infiltrate into the aquifer.

Ground Water Protection Branch recommends:

- Use Better Management Practices in the design, construction, and maintenance of a storm water management system designed to address water quality with respect to nutrient and other pollutant loads.

The Water Supply Section recommends that the portion of the new development within the excellent ground-water recharge area not exceed 20% impervious cover (DNREC, 2005). The purpose of an impervious cover threshold is to minimize loss of recharge (and associated increases in storm water) and protect the quality and quantity of ground water and surface water supplies.

An allowance for augmenting ground-water recharge should be considered if the impervious cover exceeds 20% but is less than 50% of that portion of the parcel within this area provided the applicant submit an environmental assessment recommending a climatic water budget and facilities to augment recharge. The environmental assessment must document that post-development recharge will be no less than predevelopment recharge when computed on an annual basis (Kauffman, 2005).

The proposed development would change the impervious over from 0.2 % to approximately 5.6 %. The Developer provided these numbers on the PLUS application form. This figure appears to be an underestimation of impervious cover.

Ground Water Protection Branch recommends:

- Limiting impervious cover to less than 20%

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

#### References

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

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

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

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

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

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

Schueler, T. R., 2000, The Compaction of Urban Soils, *in* Schueler, T.R., and Holland, H.K., eds., *The Practice of Watershed Protection*: Ellicott City, MD, Center for Watershed Protection, p. 752.

**Map of Captain's Hill (PLUS 2007-12-07)** Excellent ground-water recharge potential area is highlighted in green. The site plan submitted by the Developer is superimposed on the affected parcel.



Because of the parcel's location in an impaired watershed and the amount of impervious surface, consider incorporating more green technology BMPs and low impact development practices to reduce stormwater flow and to meet water quality goals.

The Sediment and Stormwater Management Program ensures sediment and erosion control plans and stormwater plans comply with local land use ordinances and policies, including the siting of stormwater management facilities. However, we do not support placement in resource protection areas or the removal of trees for the sole purpose of placement of a stormwater management facility/practice.

### **Drainage**

- The Drainage Program requests that the engineer take precautions to ensure the project does not hinder any off site drainage upstream of the site. The Drainage Program requests that the engineer check existing downstream ditches and pipes for function and blockages prior to the construction.
- The Drainage Program encourages the elevation of rear yards to direct water towards the streets and alleyways where storm drains are accessible for maintenance. However, the Drainage Program recognizes the need for catch basins in yards in certain cases. Therefore, catch basins placed in rear and side yards will need to be clear of obstructions and be accessible for maintenance. Decks, sheds, fences, pools, and kennels can hinder drainage patterns as well as future maintenance to the storm drain or catch basin. Deed restrictions, along with drainage easements recorded on deeds, should ensure adequate future maintenance access.
- An increase of the side yard setback to 15 feet may be needed on all properties with a drainage easement on the side. The increase will allow room for equipment to utilize the entire easement and maneuver free of obstructions if the drainage conveyance requires periodic maintenance or future re-construction. The side yard setback would only increase on the side with the drainage easement.
- All catch basins in rear or side yards should have a 10-foot drainage easement around them on all sides. Place restrictions on fences, sheds, and other structures within the easement to prevent obstructions from being placed next to the catch basin. Record the easement on the deed.
- Have all drainage easements recorded on deeds and place restrictions on obstructions within the easements to ensure access for periodic maintenance or future re-construction. Future property owners may not be aware of a drainage

easement on their property if the easement is only on the record plan. However, by recording the drainage easement on the deed, the second owner, and any subsequent owner of the property, will be fully aware of the drainage easement on their property.

### **Site Visit Request**

Although DNREC has surveyed portions of the wildlife area, they have never surveyed the project area. In order to make more informed comments, DNREC respectfully requests the opportunity to survey the project site. This survey would be conducted at no cost or liability to the developer/land owner. Please note that staff have decades of experience and utilize survey methods unique to our program. For more information, please contact Edna Stetzar, environmental review coordinator, at (302) 653-2883.

### **Rare Species**

In addition to many species of more common plants and animals, several rare species have been documented at the adjacent Nanticoke Wildlife Area. Because the forest is contiguous with the project area, these species likely occur at the project site and could be impacted by the high level of forest removal being proposed:

#### *State*

The following rare species could occur within the project area and be impacted by this project:

*Buteo lineatus* (Red-shouldered Hawk), *Setophaga rutillica* (American Redstart), *Strix varia* (Barred Owl), *Opheodrys aestivus* (rough green snake), *Callophrys irus* (frosted elfin), and *Dichanthelium columbianum* (hemlock witch grass)

#### *Federal*

There is a population of Delmarva fox squirrel (*Sciurus niger cinereus*, DFS) within the Nanticoke Wildlife Area and they likely occur within the project area. Delmarva fox squirrels are large-bodied tree squirrels that only inhabit mature forests on the Delmarva Peninsula. Threatened mainly by loss of its forested habitat, DFS have been protected as an endangered species since 1967. As required by the Endangered Species Act, the U.S. Fish and Wildlife Service review projects that may harm this species or their habitat. You or your client will need to contact Trevor Clark of the U.S. Fish and Wildlife Service (410-573-4527). He may recommend simple alterations to your project or suggest you have surveys conducted to determine if Delmarva fox squirrels are present. If you have

surveys conducted, they must be done by a federally approved fox squirrel surveyor, be conducted twice; once in the fall, and again between March 15 and May 30. A list of qualified surveyors is available upon request (contact Holly Niederriter at (302) 653-2880). Please note that surveys may confirm the presence of fox squirrels but cannot confirm absence.

Also note that surveys conducted on other properties in the vicinity do not fulfill requirements for the project properties. The forest within your project area is contiguous with the Nanticoke Wildlife Area where there is a known presence of Delmarva fox squirrel. Also, a decision regarding the habitat impact of a nearby cell tower project is not transferable to this project. A residential development has a much larger footprint and impact to the forest than a cell tower.

### **Unique Natural Communities**

#### *Ancient Sand Ridge Forest*

According to DNREC GIS database and aerial photographs, there is a potential for an Ancient Sand Ridge Forest to occur within the proposed project area. This forest type develops on well-drained sandy substrates of ancient, prehistoric sand ridges or dunes. These ridges are unique geologic features on the landscape that were created by wind-blown sediments about 13,000 to 30,000 years ago when the climate was much cooler and drier. The forests are typically composed of several species of oak, as well as species of hickory and pine. Many of these ridges have been identified as occurring along the east side of the Nanticoke River, south of Seaford. However, their distribution in Delaware is not entirely clear and they may be more widespread in Sussex County, as well as in Kent County, but more study is needed. The ancient sand ridge forest type is often home to several State rare plant species and one species in particular; wild lupine (*Lupinus perennis*) is the host plant for a state and globally rare butterfly, the frosted elfin (*Callophrys irus*). More surveys are needed, but there is potential for other rare and uncommon insects and animals to be found within this forest type. Protection of these ancient sand ridges and associated forests are critical to the long term conservation of the states natural heritage.

*Recommendation:* Determine if this unique habitat exists on-site and if so, remove lots and infrastructure to reduce impacts.

#### *Freshwater Tidal and non-tidal marsh areas*

This project has inadequate (50-foot) wetland buffers which could lead to long-term degradation of the marsh habitat through fragmentation and disturbance. Scientific research has proved that buffers less than 100 feet in width are inadequate for the

protection of water quality. In addition, upland buffers around wetlands provide critical habitat for wetland dependent species during a portion of their life cycle.

*Recommendation:* Provide at least a 100-foot buffer between wetlands and lots or infrastructure. This will require redesigning the site or omitting both lots and infrastructure.

#### *Atlantic White Cedar Wetlands*

According to our GIS database, there is a potential for Atlantic white cedar wetlands to occur within the project area. This State-rare community typically grows under unique conditions which are often refugia for rare species. This wetland type is sensitive to sedimentation and changes in water quality, especially pH. The hydrological regime is a major determinant of the resulting biota in this system and we are concerned how this project could affect the hydrology of this community.

*Recommendation:* This community should be delineated and left undisturbed with at least a 100-foot (preferably 300 feet) buffer between its boundaries and lots/infrastructure.

#### **Nanticoke Wildlife Area and Impacts to Wildlife Habitat**

This project is adjacent to a relatively undisturbed section of the Nanticoke Wildlife Area (NWA) and the State is concerned that this project will negatively impact these publicly used lands. The developer/landowner is strongly encouraged to contact the Regional Wildlife Area manager, Rob Gano (302-539-3160) and discuss this project.

#### *Concerns:*

1. Adequate buffers between the project and the Wildlife Area are critical for reducing impacts, and the proposed buffer between the NWA and the Cherry Walk project is highly insufficient to protect the wildlife area from impacts.
2. The close proximity of this project will impact the suitability of the area to support native species. Without an adequate buffer, invasive plant species planted by homeowners or that naturally occur as the area is disturbed by construction, could out compete native and rare species.

3. Both Nathaniel Landing projects will result in the fragmentation of 160 acres of forest and the clearing of at least 66 acres of trees. The forest within the project area is part of a larger forest block known to support many species of wildlife, including those that are rare. Connectivity to tracts to the north will be lost. Essentially this project will convert a forest into 'residential' woods, sever wildlife travel connections to points north, and displace wildlife, putting greater pressure on the wildlife area to provide resources. It is also likely that there will be human/animal conflicts including interactions on the roadways.

Cumulative forest loss throughout the State is of utmost concern to the Division of Fish and Wildlife which is responsible for conserving and managing the State's wildlife (see [www.fw.delaware.gov](http://www.fw.delaware.gov) and the Delaware Code, Title 7). Because of an overall lack of forest protection, we have to rely on applicants and/or the entity that approves the project (i.e. counties and municipalities) to consider implementing measures that will aide in forest loss reduction.

4. Developments adjacent to wildlife areas have often resulted in the illegal use of all terrain vehicles (ATVs) by new residents. ATVs not only destroy habitat, but become an on-going enforcement issue costing the State time and money to enforce. The developer/landowner should make sure new residents are aware that the use of ATVs by non-wildlife area staff is illegal and punishable by law.
5. Trash can become an on-going problem. The developer/landowner should make sure residents are aware that dumping trash in the wildlife area is illegal. Trash can also blow into the wildlife area during construction activities and then from residents. An adequate forested buffer as described above is essential for prevention.
6. Hunting is a recreational opportunity offered to all residents of Delaware, occurs on publicly owned land, is a method of wildlife management, and is well established at this Wildlife Area. Prior to purchasing, residents should be made aware by the developer/land owner that they will be subject to the noise of fire arms and barking dogs that are pursuing game. Hunters may also be using the wildlife area during the early morning hours.

Discharging a fire arm within 100 yards of an occupied dwelling is prohibited and the developer is not providing an adequate buffer to establish a safety zone. Essentially the State will be losing the use of property that can be used by all citizens to a private developer. Refer to Title 7, Delaware Code:

**§ 723. Hunting or trapping in safety zones; penalty.**

- (b) No person, except the owner or occupant, shall discharge a firearm within 100 yards of an occupied dwelling, house or residence or any barn, stable or any other building used in connection therewith, while hunting or trapping for wild birds or wild animals of any kind. The area within said distance shall be a "safety zone," and it shall be unlawful to shoot at any wild bird or wild animal while it is within such safety zone without the specific advance permission of the owner or tenant.

*Recommendations:*

1. DNREC highly recommends that the applicant(s) consider preservation of part or all of the forested area in lieu of development and many incentive-based programs for wildlife management are available to private landowners through our agency. Please contact Shelly Tovell at (302) 735-3600 if the landowner(s) is interested in more information.

If preservation is not going to be considered, then we request the following:

2. We strongly request that a 100-foot (preferably more, but 100 feet minimum) wooded buffer (without lot lines) be left intact along the NWA boundary and houses are set to the front of the lots to maximize the distance to the State Boundary. There should be at least 150 feet (50 yards) between the house and the NWA boundary, so that the developer is providing at least half the required safety zone distance.
3. Use Smart Design Standards proposed in the Sussex County Comprehensive Plan. This type of design will reduce forest loss, maximize open space, and reduce impervious surfaces. Protection of natural features should be a first priority.
4. To reduce impacts to wildlife habitat, structures proposed within the 'panhandle' should be eliminated and set aside for natural plant communities. Eliminate the proposed paved road to the 'marina' and use the waterfront on the Captain's Hill project for all residents. Turn the old marina road into a walking trail. If the road is constructed as proposed, the 'improvements' will result in immediate impacts to the wildlife area due to pavement, swales, gutters, etc.

**State Natural Heritage Site**

Due to the presence of rare species and the presence of a State Natural Area, this project lies within a State Natural Heritage Site. This is one criteria used to determine the

presence of Critical Resource Waters. The final decision regarding Critical Resource Waters, if this is an issue, will be made by the U.S. Army Corps of Engineers (USACE or “the Corps”). The information above will aid the Corps in their determination.

### **Fisheries Concerns**

These projects propose not only the reconstruction of a marina but the addition of at least 10 piers. Cumulative impacts to fisheries habitat should be considered as the construction of piers and docks along the Nanticoke River and its tributaries has escalated in recent years. Fisheries research has documented the detrimental effects of shoreline modification: 1) removal of trees along the shoreline can reduce the effects of shading which is important for maintaining water temperature conducive to spawning, 2) alteration of shoreline habitat can affect the distribution of benthic and macro-invertebrates which serve as the forage base for many fish species, 3) direct impacts to important nursery habitat occur by replacing natural habitat with man-made materials along the shoreline, and 4) local habitat modification can lead to changes in species richness.

It should also be noted that the Nanticoke River/Broad Creek complex is the most heavily fished stream in Delaware by licensed anglers, constituting nearly 20% of stream angling overall. It is heavily utilized by both resident and non-resident anglers and has been popular for many years. Statewide, the most sought-after fish by Delaware-licensed anglers is the largemouth bass and the Nanticoke River bass fishery has been the most popular fishery in the State. The Nanticoke River fishery also supports the majority (46 % in 2004) of the largemouth bass tournament angling in Delaware and has been the single most popular tournament site for 15 consecutive years.

### *Recommendations:*

1. Omit the proposed individual piers and consider a community pier instead. A single community pier would impact a much smaller area of the shoreline than what is being proposed and would be within walking distance to all residents. The proposed piers encompass approximately +/- 2,000 linear feet of shoreline (according to the applicant at the PLUS meeting).

These structures will also limit shoreline access (where fishing is often optimum) to anglers fishing from boats in the river. As noted above, the Nanticoke River is a highly popular fishing location and shoreline access is decreasing as the number

- of piers/docks increase. This part of the river is not private property and should be accessible to all.
2. The necessity for a marina should be carefully considered as negative environmental impacts could outweigh the benefits. This marina will only benefit those who are permitted to use it, but may have wider environmental impacts. This marina has not been active for 40-50 years according to the applicant and will likely need to be completely reconstructed. The effects of an increase in local boat traffic, shoreline wave action, fuel spills, noise, and shoreline hardening could negatively impact adjacent properties including the Wildlife Area.
  3. Avoid adding more rip-rap and other manmade materials to the shoreline. Natural materials should be used and restoration is strongly encouraged.

### **Air Quality**

Once complete, vehicle emissions associated with this project are estimated to be 3.1 tons (6,139.6 pounds) per year of VOC (volatile organic compounds), 2.5 tons (5,083.2 pounds) per year of NO<sub>x</sub> (nitrogen oxides), 1.9 tons (3,750.4 pounds) per year of SO<sub>2</sub> (sulfur dioxide), 0.2 ton (333.9 pounds) per year of fine particulates and 256.8 tons (513,568.3 pounds) per year of CO<sub>2</sub> (carbon dioxide).

***However, because this project is in a level 4 area, mobile emission calculations should be increased by 118 pounds for VOC emissions for each mile outside the designated growth areas per household unit; by 154 pounds for NO<sub>x</sub>; and by 2 pounds for particulate emissions. A typical development of 100 units that is planned 10 miles outside the growth areas will have additional 59 tons per year of VOC emissions, 77 tons per year of NO<sub>x</sub> emissions and 1 ton per year of particulate emissions versus the same development built in a growth area (level 1, 2 or 3).***

Emissions from area sources associated with this project are estimated to be 1.2 tons (2,476.4 pounds) per year of VOC (volatile organic compounds), 0.1 ton (272.5 pounds) per year of NO<sub>x</sub> (nitrogen oxides), 0.1 ton (226.1 pounds) per year of SO<sub>2</sub> (sulfur dioxide), 0.1 ton (291.8 pounds) per year of fine particulates and 5.0 tons (10,038.7 pounds) per year of CO<sub>2</sub> (carbon dioxide).

Emissions from electrical power generation associated with this project are estimated to be 0.5 tons (981.5 pounds) per year of NO<sub>x</sub> (nitrogen oxides), 1.7 tons (3,413.8 pounds) per year of SO<sub>2</sub> (sulfur dioxide) and 251.8 tons (503,529.6 pounds) per year of CO<sub>2</sub> (carbon dioxide).

	VOC	NOx	SO <sub>2</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Mobile	3.1	2.5	1.9	0.2	256.8
Residential	1.2	0.1	0.1	0.1	5.0
Electrical Power		0.5	1.7		251.8
TOTAL	4.3	3.1	3.7	0.3	513.6

For this project the electrical usage via electric power plant generation alone totaled to produce an additional 0.5 tons of nitrogen oxides per year and 1.7 tons of sulfur dioxide per year.

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

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

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

The DNREC Energy Office 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.

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.

**State Fire Marshal's Office – Contact: Duane Fox 856-5800**

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):

**b. Fire Protection Water Requirements:**

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

**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 the main thoroughfares must be constructed so fire department apparatus may negotiate it. Fire department access shall be provided in such a manner so that fire apparatus will be able to locate within 100 ft. of the front door.
- The use of speed bumps or other methods of traffic speed reduction must be in accordance with Department of Transportation requirements.
- The local Fire Chief, prior to any submission to our Agency, shall approve in writing the use of gates that limit fire department access into and out of the development or property.

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

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

**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

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

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

The proposed developments are in an area designated as Investment Level 4 under the *Strategies for State Policies and Spending*. The *Strategies* do not support this type of isolated development in this area. The intent of this plan is to preserve the agricultural lands, forestlands, recreational uses, and open spaces that are preferred uses in Level 4 areas. The Department of Agriculture opposes the proposed development which conflicts with the preferred land uses, making it more difficult for agriculture and forestry to succeed, and increases the cost to the public for services and facilities.

More importantly, the Department of Agriculture opposes this project because it negatively impacts those land uses that are the backbone of Delaware's resource industries - agriculture, forestry, horticulture - and the related industries they support. Often new residents of developments like this one, with little understanding or appreciation for modern agriculture and forestry, find their own lifestyles in direct conflict with the demands of these industries. Often these conflicts result in compromised health and safety; one example being decreased highway safety with farm equipment and cars competing on rural roads. The crucial economic, environmental and open space benefits of agriculture and forestry are compromised by such development. We oppose the creation of isolated development areas that are inefficient in terms of the full range of public facilities and services funded with public dollars. Public investments in areas such as this are best directed to agricultural and forestry preservation.

A portion of this 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 141<sup>st</sup> General Assembly in June of 2001, requires the counties and municipalities with over 2,000 people to adopt as part of the update and implementation of their 2007 comprehensive land use plans, areas delineating excellent ground-water recharge potential areas. Furthermore, the counties and municipalities are

required to adopt regulations by December 31, 2007 governing land uses within those areas to preserve ground-water quality and quantity.

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

This site overlaps with the State’s Green Infrastructure Investment Strategy Plan. The natural areas layer is present on the site. This designation identifies areas of the state that contain inherently valuable resources, as discussed in Governor Minner’s Executive Order Number 61. Areas such as these should be preserved as such, and not developed for residential use.

The Delaware Department of Agriculture supports growth which expands and builds on existing urban areas and growth zones in approved State, county and local plans. Where additional land preservation can occur through the use of transfer of development rights, and other land use measures, we will support these efforts and work with developers to implement these measures. If this project is approved we will work with the developers to minimize impacts to the agricultural and forestry industries.

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

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

#### *Native Landscapes*

The Delaware Department of Agriculture and the Delaware Forest Service encourages the developer to use native trees and shrubs to buffer the property from the adjacent land-use activities near this site. A properly designed forested buffer can create wildlife habitat corridors and improve air quality to the area by removing six to eight tons of carbon dioxide annually and will clean our rivers and creeks of storm-water run-off pollutants.

To learn more about acceptable native trees and how to avoid plants considered invasive to our local landscapes, please contact the Delaware Department of Agriculture Plant Industry Section at (302) 698-4500.

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

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

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

This proposal is for a site plan review of 40 single-family homes on 55 acres located on the south side of Woodland Ferry Road, east of the Nanticoke River and north of the Nanticoke Wildlife Area, near Seaford. According to the *State Strategies Map*, the proposal is located in an Investment Level 4 area. As a general planning practice, DSHA encourages residential development only in areas where residents will have proximity to services, markets, and employment opportunities, such as Investment Level 1 and 2 areas outlined in the State Strategies Map. Since the proposal is located in an area targeted for agricultural and natural resource protection, and therefore inconsistent with where the State would like to see new residential development, DSHA does not support this proposal.

**Department of Education – Contact: John Marinucci 735-4055**

DOE recognizes that this development project is in level 4 of the State Strategies for Policies and Spending and as such, DOE does not support the approval of this project. This proposed development is within the Laurel School District. DOE offers the following comments on behalf of the Laurel School District.

1. Using the DOE standard formula, this development will generate an estimated 20 students.
2. DOE records indicate that the Laurel School Districts' *elementary schools are very close to 100% of current capacity* based on September 30, 2007 elementary enrollment.
3. DOE records indicate that the Laurel School Districts' *secondary schools are not at or beyond 100% of current capacity* based on September 30, 2007 secondary enrollment.
4. While the Laurel School District secondary and elementary schools are not currently beyond capacity, *the district does NOT have adequate student capacity to accommodate the additional students likely to be generated from this*

- development* given the number of planned and recorded residential sub divisions within district boundaries. This development, in conjunction with other planned developments within the district boundaries will cause significant burden to the Laurel School District.
5. The DOE requests that the developer contact the Laurel School District Administration to address the issue of school over-crowding that this development has the potential to cause.
  6. The DOE requests that the developer work with the Laurel School District transportation department to establish developer supplied bus stop shelter ROW and shelter structures, interspersed throughout the development as determined and recommended by the local school district.

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

Due to the probable existence of excellent recharge on the site, the developer should prohibit the discharge of roof drains to impervious surfaces; require the segregation and treatment of roof run-off from mechanical system prior to discharge to the recharge area, and use best management practices to ensure that land uses and activities are conducted in such a way as to minimize the impact on, and reduce the risk of contamination to, excellent recharge areas.

The State Wetlands map indicates the possibility of wetlands impacting the location of proposed subdivision lots and roads. Therefore a jurisdictional determination letter should be provided to support the proposed design for that area and that the lot layout does not contain any wetlands. This letter should be obtained prior to the request for approval of any final plan.

The Sussex County Engineer Comments:

Individual on-site wastewater systems are proposed to serve the residential subdivisions. The proposed projects are in the Western Sussex Planning Area, but are not in an area where Sussex County expects to provide sewer service.

For questions regarding these comments, contact Rob Davis, Sussex County Engineering Department at (302) 855-78

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

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

Sincerely,

A handwritten signature in cursive script that reads "Constance C. Holland". The signature is written in black ink and is positioned above the printed name and title.

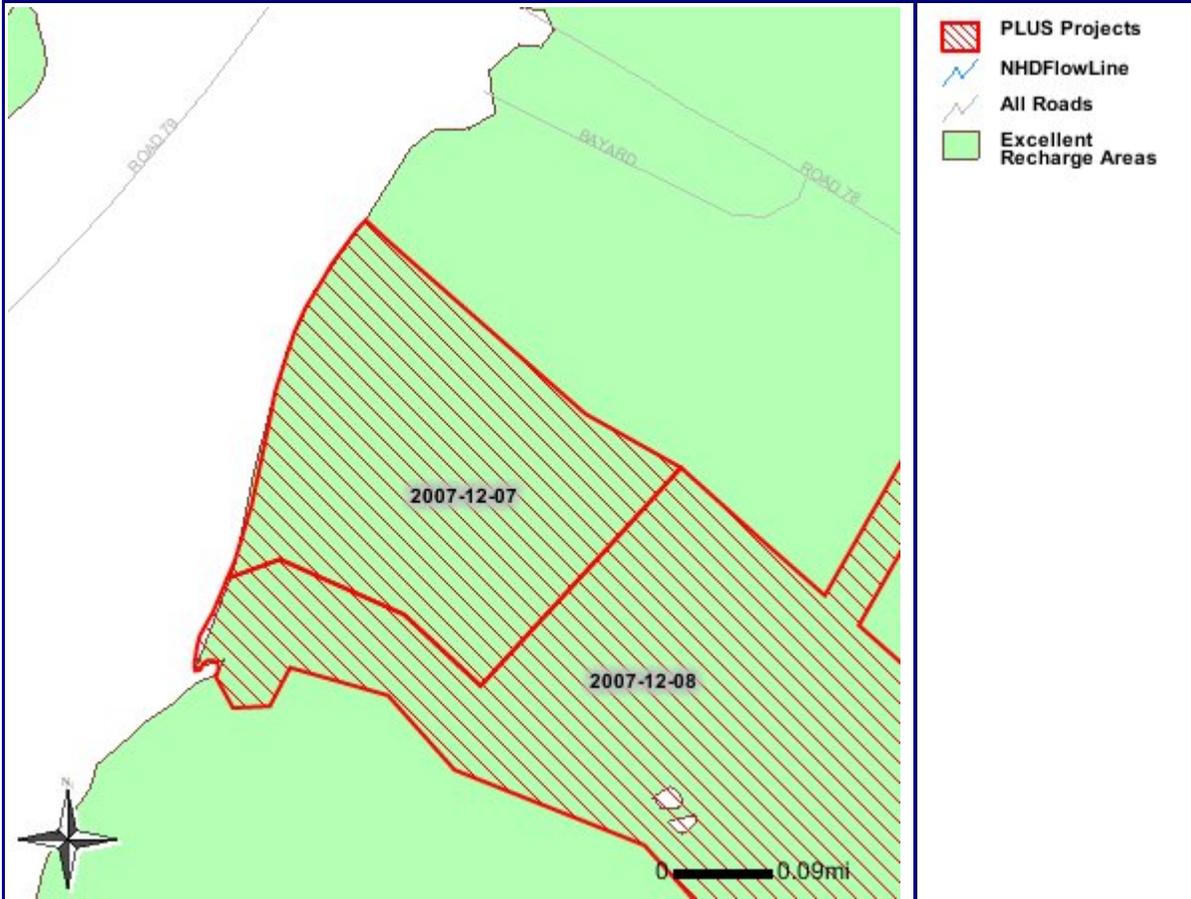
Constance C. Holland, AICP  
Director

CC: Sussex County



# Captains Hill

2007-12-07



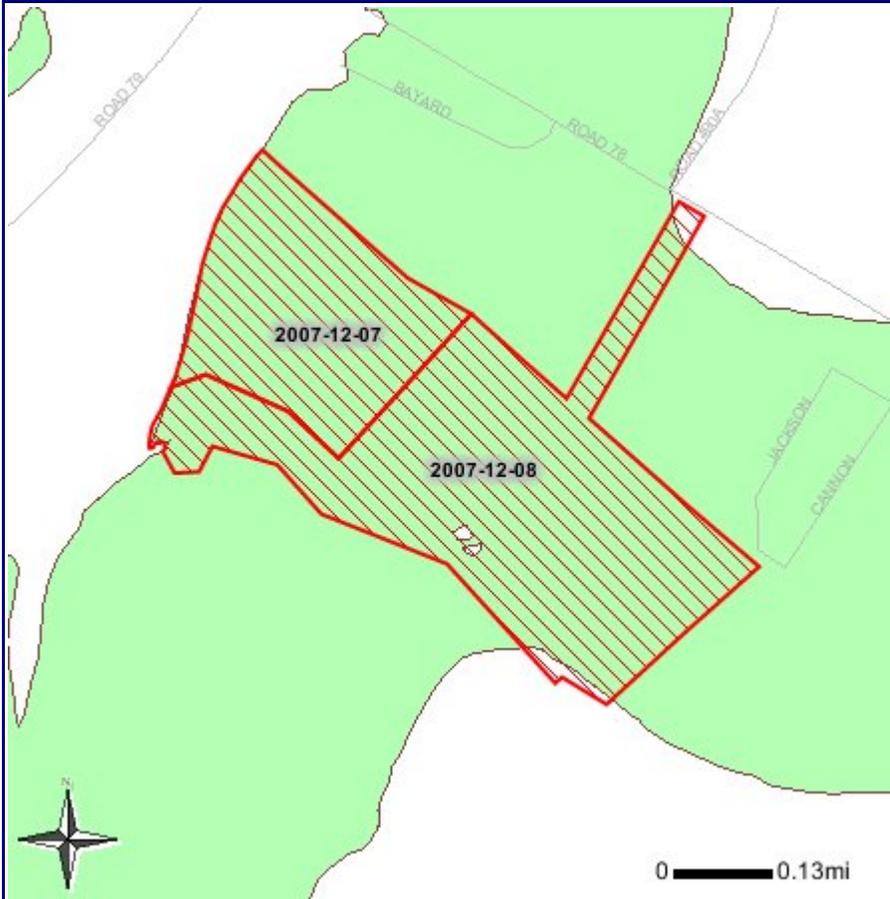
This map was produced by the Delaware Department of Natural Resources and Environmental Control.





# Cherry Walk

2007-12-08



- PLUS Projects
- NHDFlowLine
- All Roads
- Excellent Recharge Areas

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

