

DNREC's chief concern is the percentage of impervious cover in an area that includes the City of Lewes' well fields. While we believe the developer adequately estimates impervious cover for the project, this amount – added to the existing impervious cover of the Cape Henlopen High School – has the potential to reduce ground-water recharge of the city's well field. The field consists of a series of shallow public wells that draw water from the shallow unconfined aquifer that receives recharge directly from precipitation. Maintenance of water levels in this aquifer is critical to this coastal community due to long-term risks of salt water intrusion.

## **Fish and Wildlife**

### **Rare Species**

Our field scientists have not surveyed this project area; therefore, we are unable to provide information pertaining to the existence of state-rare or federally listed plants, animals or natural communities at this project site. In the absence of site-specific information, we offer the following comments:

Rare species have been documented downstream within the forested buffer along Pot Hook Creek and Wolfe Glade. Forested habitat along the creek protects water quality by filtering runoff, minimizing bank erosion, and providing shade that moderates water temperature so it is suitable for spawning. Forested riparian habitat also provides vital breeding areas for wetland dependent species and is utilized by wildlife for resting, foraging and as a travel corridor between habitats. Because cumulative impacts are of concern considering the number of developments (and proposed developments) adjacent to the creek we offer the following recommendations:

#### *Recommendation:*

According to the PLUS application form, the existing forested buffer along Pot Hook Creek will be left intact; however, it is not specified how wide the buffer will be if the area “reserved for future expansion/stormwater management” is developed. We highly recommend that at least a 100-foot (preferably 300 feet) buffer is preserved along the creek to protect sensitive rare species, protect water quality and maintain a wildlife habitat along the creek.

### **Mosquito Control**

Development projects within 2-5 miles of large expanses of salt marshes or brackish wetlands can often lead to increased demands for mosquito control services, going beyond what DNREC's Mosquito Control Section currently has the budget or resources to provide. State, county and/or local governments should be prepared to deal with increased budget demands for mosquito control services when approving developments that could potentially have mosquito issues.

Additionally, even though the EPA has scientifically determined that EPA-registered mosquito control insecticides can be applied “without posing any unreasonable risks to human health, wildlife or the environment” (when used in accordance with all product label instructions), avoiding or reducing the use of such pesticides should be employed whenever possible.

For more information about this issue, the applicant can contact Dr. Bill Meredith, Mosquito Control Administrator at (302) 739-9917. *Edna Stetzar - (302) 653-2880, [Edna.Stetzar@state.de.us](mailto:Edna.Stetzar@state.de.us)*

## **Soil and Water**

**Sediment and Stormwater Program.** 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) 856-2105 for details regarding submittal requirements and fees.

Because of the parcel's location in an impaired watershed and the amount of impervious surface, green technology BMPs and low-impact development practices should be considered a priority to reduce stormwater flow and to meet water quality goals.

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

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.

*Sediment/Stormwater and Drainage comments provided by James Sullivan - (302) 739-9921, [James.Sullivan@state.de.us](mailto:James.Sullivan@state.de.us)*

## **Water Resources**

**Soils Assessment.** Based on the NRCS soil survey update Greenwich (GrA), Downer (DoB), Fort Mott (FmB), Hurlock (HvA), and Manahawkin (Ma) were mapped in the immediate vicinity of the proposed construction. The soils mapped as Greenwich, Downer and Fort Mott are well-drained upland soils that, generally, have few limitations for development. Hurlock and Manahawkin are poorly to very poorly-drained wetland associated (hydric) soils that have severe limitations for development, and should be avoided.

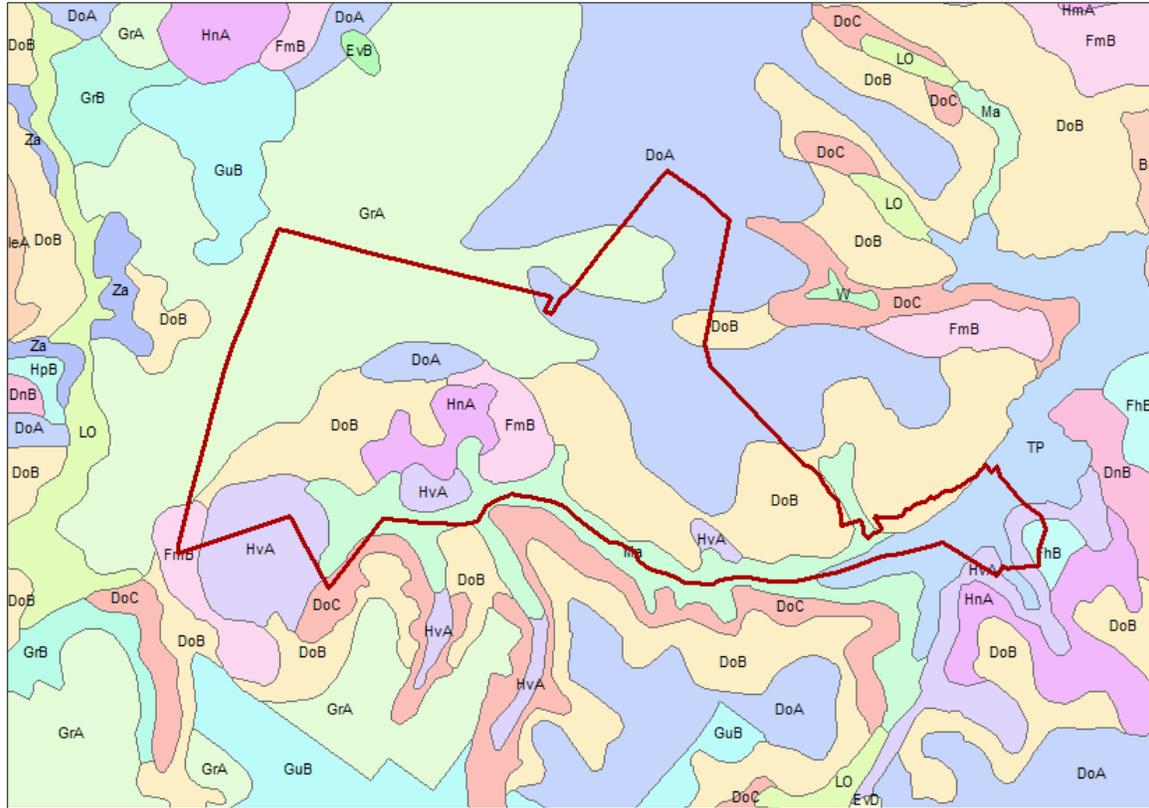


Figure 1: NRCS soil survey update mapping in the immediate vicinity of the Townsend Village Centre project phase.

**Wetlands.** Based on the Statewide Wetland Mapping Project (SWMP) maps, palustrine emergent riparian (PEM1A7) and palustrine forested riparian wetlands (PFO1/4A) were mapped along the southern boundary of subject parcel in the immediate vicinity of the proposed project (Figure 2).



Corps of Engineers (USACE or “the Corps”) manual is the acceptable basis for making a jurisdictional wetland determination for nontidal wetlands in Delaware. The applicant is forewarned that the Corps views the use of the National Wetlands Inventory (NWI) mapping or the Statewide Wetlands Mapping Project (SWMP) mapping as an unacceptable substitute for making such delineations. To ensure compliance with said Corps regulatory requirements, it is strongly recommended that a field wetlands delineation using the above-referenced methodology be performed on this parcel before commencing any construction activities. It is further recommended that the Corps be given the opportunity to officially approve the completed delineation. In circumstances where the applicant or applicant’s consultant delineates what they believe are nonjurisdictional isolated (SWANCC) wetlands, the Corps must be contacted to evaluate and assess the jurisdictional validity of such a delineation. The final jurisdictional authority for making isolated wetlands determinations rests with the Corps; they can be reached by phone at 736-9763.

Based on a review of existing buffer research by Castelle et al. (Castelle, A. J., A. W. Johnson and C. Conolly. 1994. *Wetland and Stream Buffer Requirements – A Review*. J. Environ. Qual. 23: 878-882), an adequately-sized buffer that effectively protects wetlands and streams, in most circumstances, is about 100 feet in width. In recognition of this research and the need to protect water quality, the Watershed Assessment Section recommends that the applicant maintain/establish a minimum 100-foot upland buffer (planted in native vegetation) from all water bodies, including the riparian wetlands that bound the southern portion of this parcel.

**Impervious Surfaces and Best Management Practices.** The applicant estimates this project’s post-construction surface imperviousness to reach only about 59 percent. When calculating surface imperviousness it is important to include all forms of constructed surface imperviousness, such as all paved surfaces including rooftops, sidewalks, driveways, and roads; open-water stormwater management structures and/or ponds; and community wastewater systems (if applicable); this will ensure a realistic assessment of this project’s likely post-construction environmental impacts.

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 this project’s most likely adverse impacts. Reducing the amount of surface imperviousness through the use of pervious paving materials (“pervious pavers”) in lieu of asphalt or concrete in conjunction with an increase in forest cover preservation or additional tree plantings are some examples of practical BMPs that could easily be implemented to help reduce surface imperviousness.

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

This project is located in the low nutrient reduction area requiring a 40 percent reduction in nitrogen and phosphorus; a 40 percent reduction in bacteria is also required. Additional nutrient reductions may be possible through the implementation of Best Management Practices such as wider vegetated buffers along watercourses (and wetlands), increasing passive, wooded open space, use of pervious paving materials to reduce surface imperviousness (i.e., pervious pavers), and the use of green-technology stormwater management technologies.

A Pollution Control Strategy (PCS) is an implementation strategy that identifies the actions necessary to systematically reduce the pollutant loading rate for a given water body, and meet the TMDL reduction requirements specified for that water body. As mentioned previously, the pollutants specifically targeted for reduction in the Inland Bays watershed are nutrients (e.g., nitrogen and phosphorus) and bacteria. A variety of site-specific best management practices (BMPs) will be the primary actions required by the PCS to reduce pollutant loadings. The PCS for the Inland Bays was approved on November 11, 2008, and is now an enforceable regulatory directive.

The Department has developed an assessment tool that will help evaluate whether your proposed development meets the required TMDL nutrient reduction requirements specified by the PCS. Contact Lyle Jones at 302-739-9939 for more information on the PCS and the assessment tool.

*Soils, wetlands, subaqueous lands and TMDL comments provided by John Martin, Watershed Assessment Section, (302) 739-9939, [John.Martin@state.de.us](mailto:John.Martin@state.de.us)*

**Water Supply.** The project information sheets state water will be provided to the project by Tidewater Utilities via a public water system. Our records indicate that the project is located within the public water service area granted to Tidewater Utilities under Certificate of Public Convenience and Necessity 03-CPCN-12.

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

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. *Ricardo Rios - (302) 739-9944, [Ricardo.Rios@state.de.us](mailto:Ricardo.Rios@state.de.us)*

**Water Resource Protection Areas.** The DNREC Water Supply Section has determined that a significant portion of the proposed development falls within the wellhead protection area for the City of Lewes. Wellhead protection areas are surface and subsurface areas surrounding a public water supply well where land use activities or impervious cover may adversely affect the quantity and quality of ground water moving toward such wells. The review did not find any excellent groundwater recharge areas, (see attached map). The project lies within Sussex County. We acknowledge that Sussex County has a source water protection ordinance in place

but we recommend that this project go beyond the requirements of the ordinance and consider our recommendations that will afford this resource additional and much needed protection.

The developer states on the PLUS application form that the proposed development would change the impervious over from 0% to approximately 59%. An ArcMap area calculation verifies that the approximate impervious cover will be 61%.

This amount of impervious cover added to the existing impervious cover of the Cape Henlopen High School has the potential to reduce ground-water recharge of the City of Lewes well field. The City of Lewes well field consists of a series of shallow public wells that draw water from the shallow unconfined aquifer that receives recharge directly from precipitation. Maintenance of water levels in this aquifer is critical to this coastal community due to long term risks of salt water intrusion.

Ideally, the impervious cover should not exceed 20%. The proposed development may exceed the 20% impervious cover threshold within the wellhead protection area, but be no more than 50% impervious, provided the applicant submits an environmental assessment report including a climatic water budget and systems to augment recharge that assure water quality as well as quantity. The environmental impact assessment must document that post-development recharge will be no less than predevelopment recharge when computed on an annual basis.

The applicant may offset the loss of recharge due to impervious cover by constructing recharge basins that convey pretreated rooftop runoff for infiltration to ground water. Refer to Supplement 1 entitled *Ground-Water Recharge Design Methodology*, dated May 2005 or later as revised for the details of how to design recharge facilities in Delaware source water protection areas. The applicant may also offset the loss of recharge by employing better management practices such as pervious cement or pavers.

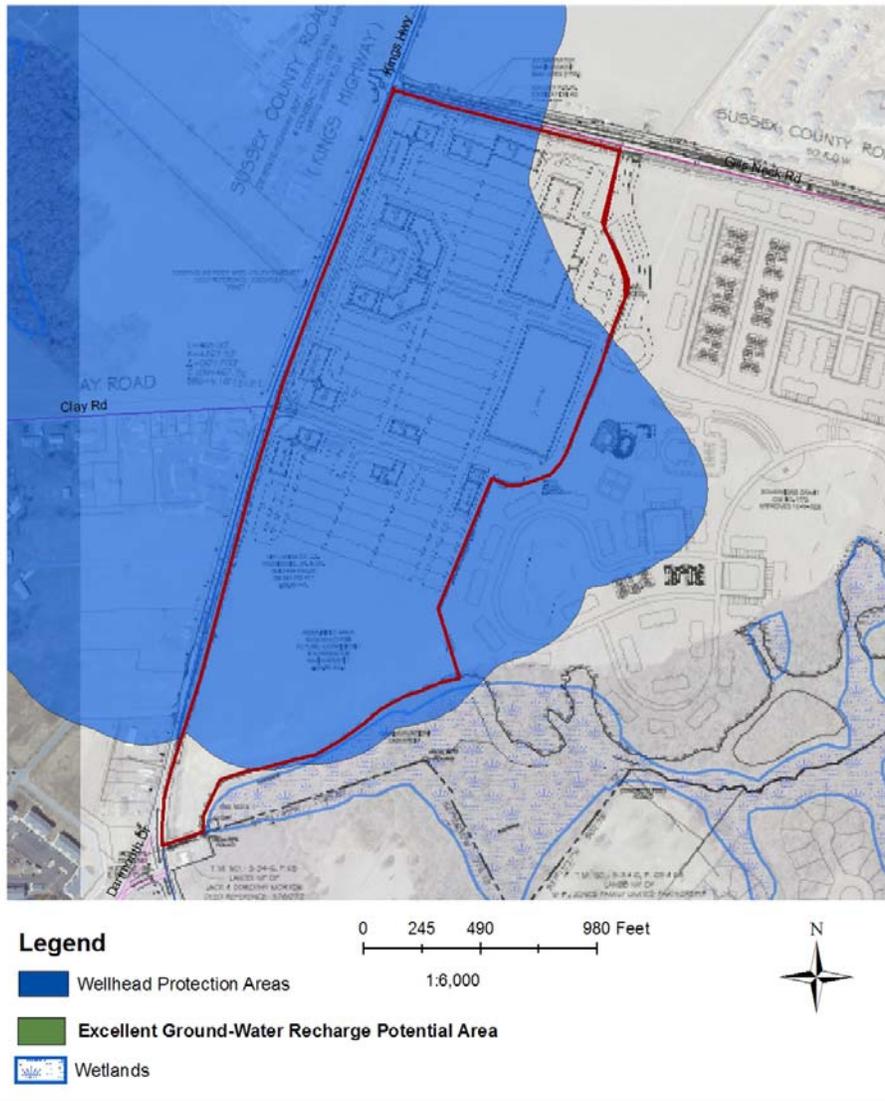
*Recommendation:*

GPB recommends reducing impervious cover to 50% and perform an environmental assessment report prepared by a Delaware Registered Professional Engineer and/or Professional Geologist.

In addition, because the wellhead protection area is the source of public drinking water for the City of Lewes, 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.

### Townsend Village Centre (PLUS 2009-04-06)

The site plan submitted with the application is overlain by the Wellhead Protection Area for the City of Lewes.



Anne Mundel - (302) 739-9945, [Anne.Mundel@state.de.us](mailto:Anne.Mundel@state.de.us)

## Air and Waste

**Hazardous Waste Sites.** No SIRB sites or salvage yards were found within a ½-mile radius of the proposed development. However, based on the previous agricultural use of the proposed project site, which may have involved the use of pesticides and herbicides, SIRB recommends that a Phase I Environmental Site Assessment be performed prior to development. In addition, should a release or imminent threat of a release of hazardous substances be discovered during the course of development (e.g., contaminated water or soil), construction activities should be

discontinued immediately and DNREC should be notified at the 24-hour emergency number (800-662-8802). SIRB should also be contacted as soon as possible at 302-395-2600 for further instructions. *Krystal Stanley* - (302) 395-2644, [Krystal.Stanley@state.de.us](mailto:Krystal.Stanley@state.de.us)

**Tank Management Branch.** There are three (3) inactive LUST sites located within a quarter mile from the proposed project.

Name: Cape Henlopen High School (Inactive)  
Facility ID: 5-000894  
Project: S9907129

Name: Mills Property (Inactive)  
Facility ID: 5-000848  
Project: S9703040

Name: Uni Mart #02008 (Inactive)  
Facility ID: 5-000110  
Project: S9706088

Should any underground storage tanks or petroleum contaminated soil be discovered by any person during construction, the DNREC-TMB at (302) 395-2500 and the DNREC Emergency Response Hotline at (800) 662-8802 must be notified within 24 hours.

Should any contamination be encountered, PVC pipe materials will have to be replaced with ductile steel and nitrile rubber gaskets in the contaminated areas.

Also, please note that if any aboveground storage tanks (ASTs) less than 12,500 gallons are installed, they must be registered with the TMB. If any ASTs greater than 12,500 gallons are installed, they are also subject to installation approval by the TMB. *Elizabeth Wolff* - (302) 395-2500, [Elizabeth.Wolff@state.de.us](mailto:Elizabeth.Wolff@state.de.us)