

## Arbors of Cottagedale Apartments

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DNREC commends the developer for his intention to place needed multi-family housing on a brownfield site. However, the nature of the site and the proposed use requires continued approvals and monitoring from DNREC, as outlined below. We hope to continue to work closely with the developer to facilitate the use of this site.

### Soils

According to the Sussex County soil survey update, Downer (DoA & DoB) and Udorthents (UbB) were mapped in the immediate vicinity of the proposed construction. Downer is a well-drained upland soil that, generally, has few limitations for development. Udorthents are soils that have been extensively modified through filling or grading activities and are likely to have variable or “site-specific” limitations for development (See figure 1).



Figure 1: Soil survey mapping in the immediate vicinity of “The Arbors of Cottagedale apartments.”

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### Wetlands

According to the State Wide Wetland Mapping Project (SWMP) maps, palustrine emergent (PEM1A) and palustrine forested wetlands (PFO1A) were mapped on subject parcel (See figure 2).

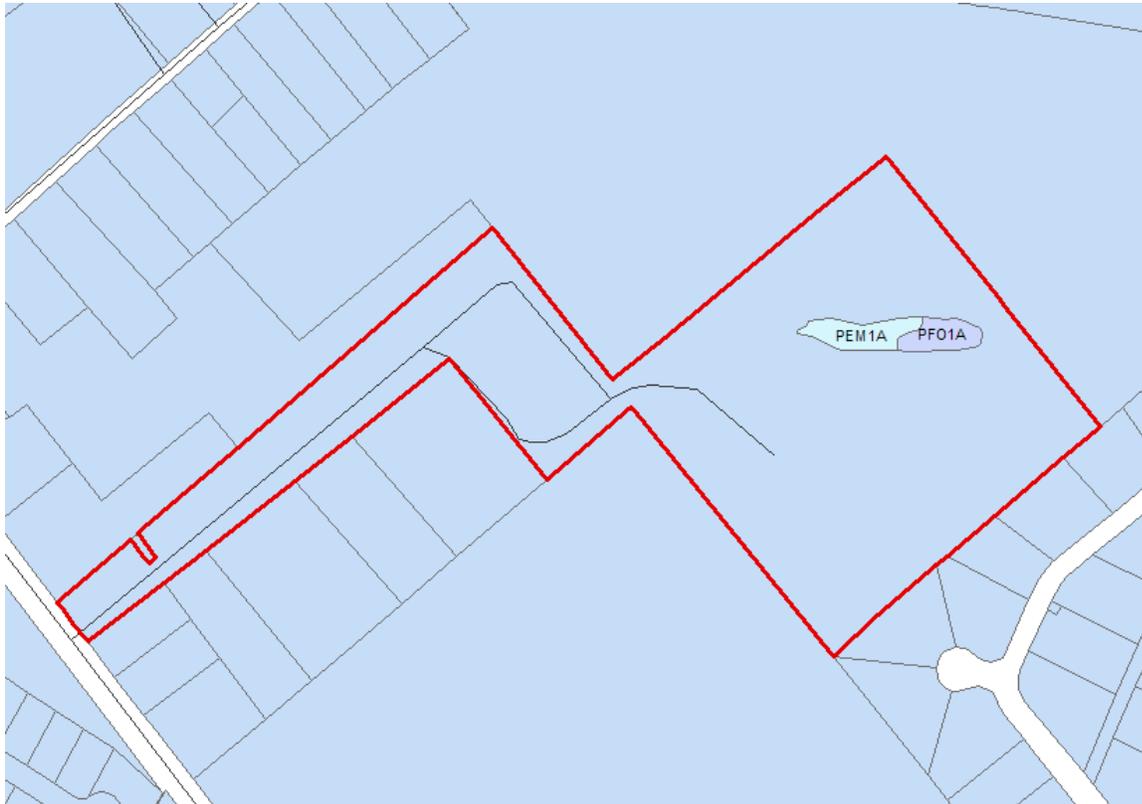


Figure 2: SWMP mapping in the immediate vicinity of “The Arbors of Cottagedale apartments.”

The applicant is responsible for determining whether any State-regulated wetlands (regulated pursuant to 7 Del.C. Chapter 66 and the Wetlands Regulations) are present on the property. This determination can only be made by contacting the Division of Water Resources’ Wetlands and Subaqueous Lands Section at 302/739-9943 and consulting the State’s official wetland regulatory maps, which depict the extent of State jurisdiction. The area regulated by State law may be very different from the area under federal authority. No activity may take place in State-regulated wetlands without a permit from DNREC’s Wetlands Section.

In addition, most perennial streams and ditches and many intermittent streams and ditches are regulated pursuant to the Subaqueous Lands Act (7 Del.C. Chapter 72) and the Regulations Governing the Use of Subaqueous Lands. Ponds which are connected to other waters are also

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regulated, while isolated ponds are not. Any work in regulated streams, ditches or ponds requires a permit from the Wetlands and Subaqueous Lands Section. An on-site jurisdictional determination is recommended in order to determine whether any regulated watercourses exist on the property. Contact the Wetlands and Subaqueous Lands Section at 302/739-9943 to schedule an on-site visit. Such appointments can usually be scheduled within 2 to 3 weeks.

The applicant should also be reminded that they must avoid construction/filling activities in those areas containing wetlands or wetland associated hydric soils as they are subject to regulatory jurisdiction under Federal 404 provisions of the Clean Water Act. A site-specific field wetlands delineation using the methodology described in the 1987 United States Army 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 field-based jurisdictional wetland delineation (i.e., 1987 USACE manual).

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 (as asserted by the applicant in the PLUS application form), 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 the landward edge of all wetlands and water bodies (including all ditches).

### **Impervious Cover**

The applicant estimates this project’s post-construction surface imperviousness to reach only 56 percent. However, given the scope and density of this project (i.e., as viewed from the conceptual project layout) this estimate appears to be an underestimate. 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; this will ensure a realistic assessment of this project’s likely post-construction

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environmental impacts. Therefore, surface imperviousness should be recalculated to include all of the above-mentioned forms of surface imperviousness in the finalized calculation for surface imperviousness. Failure to do so will significantly understate this project's true environmental impacts. **Note:** wetlands should be excluded from the parcel's total open space area when calculating the parcel's total surface imperviousness.

Studies have shown a strong relationship between increases in impervious cover to decreases in a watershed's overall water quality. It is strongly recommended that the applicant implement best management practices (BMPs) that reduce or mitigate some of 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 Broadkill 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 Broadkill watershed, "target-rate-nutrient reductions" of 40 percent will be required for nitrogen and phosphorus. Additionally, "target-rate-reductions" of 75 percent will be required for bacteria.

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

As indicated above, TMDLs for nitrogen and phosphorus have been proposed for the Broadkill watershed. The TMDL calls for a 40 percent reduction in nitrogen and phosphorus from baseline conditions. The TMDL also calls for a 75 percent reduction in bacteria from baseline conditions. 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 increasing the amount of passive, wooded open space (planted with native woody and herbaceous vegetation), use of pervious paving materials to reduce surface imperviousness, and the deployment of green-technology stormwater management treatment technologies. 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 assessment tool.

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### **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 83-W-15.

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

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.

Potential Contamination Sources exist in the area, and any well permit applications will undergo a detailed review that may increase turnaround time and may require site specific conditions/recommendations. In this case there is a Groundwater Management Zone associated with Jackson Pit located within 1000 feet of the proposed project.

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

### **Sediment and Stormwater**

*Note:* If this site will require remediation under direction of DNREC/DAWM Site Investigation and Remediation Branch, the DNREC/DSWC Sediment & Stormwater Program will be the agency responsible for review and approval of the Sediment & Stormwater Management Plan for any land disturbing activity greater than 5,000 square feet associated with the remediation.

- 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.

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- 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**

- 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 storm water. The Drainage Program requests that the engineer check existing downstream ditches and pipes for function and blockages prior to the construction. Notify downstream landowners of the change in volume of water released on them.
- 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.

### **Recreation**

Creating and connecting sidewalks between communities and commercial areas will encourage walking/biking and reduce the dependence on automobiles. It is recommended that the sidewalks included in this plan connect to adjacent residential developments (specifically to the Eagle Point subdivision just north of this proposed project).

We support the incorporation of a play area within the proposed complex, but recommend repositioning it to a more centralized location. By moving the play area to this location, you will:

1. Make the playground easily accessible and convenient to all residents of the community.
2. Increase the security of the play area- At its proposed location, the play area is isolated and indiscernible. This could create apprehension of parents to allow their kids to use this area. It also increases the incidence of vandalism.

### **Solid and Hazardous Waste**

The site plan appears to show construction over known buried solid waste on the site property. Question 36 on the PLUS application form notes Brownfield remediation and capping, and that the southeasterly portion of the site portion of the site will be remediated. Any construction without removal of the solid waste would likely lead to methane problems as experienced from other developments constructed in the 1960s over debris pits, primarily in New Castle County.

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Other problems which could develop include sinkholes, soil subsidence, and structural damage to buildings. These problems, if encountered, could pose a danger to health and human safety. The solid waste needs to be partially or entirely removed from the property, or a plan to cap the waste along with a gas extraction system needs to be included and approved by the DNREC.

Several staff from DNREC, including the Solid and Hazardous Waste Management Branch met with the developer Paul Robino and his consultant James C. McCulley IV on October 23, 2008. That meeting was held to answer the developer's questions regarding the disposal, removal, and consolidation of solid waste that had been landfilled on the property until the 1980s.

Any solid waste excavated from the property during construction will have to be disposed of in a permitted solid waste facility. The activity of moving solid waste from one buried location at the Jackson Pit site by excavating it and transferring it to another existing waste burial pit onsite will require a solid waste landfill permit. And as a matter of practicality, the site is not large enough to meet the design and siting criteria for the construction of an industrial waste landfill as shown in Section 6 of the Delaware Regulations Governing Solid Waste. Other viable options for management of the solid waste onsite, such as the re-use of clean fill composed of bricks and concrete, or grinding clean wood debris may be used but would require review by DNREC. If the developer requires additional assistance with solid waste management, contact the Solid and Hazardous Waste Management Branch at (302)739-9403.

### **Under/Aboveground Storage Tanks**

There are two (2) inactive LUST sites with ongoing remediation located within a quarter mile of the proposed project:

Name: John Burton Residence  
Facility ID: 5-000598  
Project: S9202042

Name: Diver Chevrolet  
Facility ID: 5-000530  
Project: S9204102

No contamination is anticipated; however, 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 would have to be replaced with ductile steel and nitrile rubber gaskets in the contaminated areas.

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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.

### **Site Investigation and Restoration**

One Site Investigation & Restoration Branch (SIRB) site was found within a half mile radius of the proposed project: the Jackson Pit (DE-0149) site, which is located on the proposed development property.

Jackson Pit was a former borrow pit for sand and gravel. However, unpermitted domestic trash was disposed in the pit. The borrow pit closed in 1982. A Preliminary Assessment was conducted in 1986 with a Site Investigation (SI) in 1987. Due to the high levels of contaminants in the groundwater, the site was placed on the Hazardous Substance Cleanup Act (HSCA) list in 1991. A groundwater study was also conducted on the site in 1995, and it was found that monitoring wells on site had elevated levels of chromium and the pesticide p, p-DDD. A Final Facility Evaluation Report was completed in November 1997.

In October 2003, a deed restriction was placed on the site for the groundwater and the site was identified as being within a Groundwater Management Zone (GMZ). The site received a Certificate of Completion of Remedy (COCR) in September 2004 with the deed restriction. The site is currently in the Operations and Maintenance stage, following completion of the remedy.

No construction or debris-moving activities should be performed in the area with debris and/or solid waste, or within the GMZ without DNREC's prior approval and oversight, as well as necessary permitting, as applicable. Based on the previous use of the proposed project site, which involved the use of hazardous substances, SIRB recommends that a Phase I Environmental Site Assessment be performed prior to development of areas that have not been previously investigated. 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.

### **Air Quality**

Housing developments may unnecessarily emit, or cause to be emitted, significant amounts of air contaminants into Delaware's air, which will negatively impact public health, safety and welfare. These negative impacts are attributable to:

- Emissions that form ozone and fine particulate matter; two pollutants relative to which Delaware currently violates federal health-based air quality standards,
- The emission of greenhouse gases which are associated with climate change, and

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- The emission of air toxics.

Air emissions generated from housing developments include emissions from:

- Area sources like painting, lawn and garden equipment and the use of consumer products like roof coatings and roof primers.
- The generation of electricity needed to support the homes in your development, and
- Car and truck activity associated with the homes in your new development.

These three air emissions components (i.e., area, electric power generation, and mobile sources) are quantified below, based on a per household/residential unit emission factor that was developed using 2002 Delaware data. These emissions in the table represent the actual impact the Arbors of Cottagedale Apartments development may have.

Emissions Attributable to Arbors of Cottagedale Apartments Subdivision (Tons per Year)

	Volatile Organic Compounds (VOC)	Nitrogen Oxides (NO <sub>x</sub> )	Sulfur Dioxide (SO <sub>2</sub> )	Fine Particulate Matter (PM <sub>2.5</sub> )	Carbon Dioxide (CO <sub>2</sub> )
Direct Residential	6.7	0.7	0.6	0.8	27.1
Electrical Power Generation	ND*	2.6	9.2	ND*	1,359.5
Mobile	16.6	13.7	10.1	0.9	1,386.6
<b>Total</b>	<b>23.3</b>	<b>17.0</b>	<b>19.9</b>	<b>1.7</b>	<b>2,773.2</b>

(\*) Indicates data is not available.

Note that emissions associated with the actual construction of the subdivision, including automobile and truck traffic from working in, or delivering products to the site, as well as site preparation, earth moving activities, road paving and other miscellaneous air emissions, are not reflected in the table above.

### Recommendations:

The applicant shall comply with all applicable Delaware air quality regulations. These regulations include:

<b>Regulation 6 -</b> Particulate Emissions from Construction and Materials Handling	<ul style="list-style-type: none"> <li>• Using dust suppressants and measures to prevent transport of dust off-site from material stockpile, material movement and use of unpaved roads.</li> <li>• Using covers on trucks that transport material to and from site to prevent visible emissions.</li> </ul>
<b>Regulation 1113 –</b> Open Burning	<ul style="list-style-type: none"> <li>• Prohibiting open burns statewide during the Ozone Season from May 1-Sept. 30 each year.</li> <li>• Prohibiting the burning of land clearing debris.</li> </ul>

	<ul style="list-style-type: none"> <li>• <b>Prohibiting the burning of trash or building materials/debris.</b></li> </ul>
<b>Regulation 1145 – Excessive Idling of Heavy Duty Vehicles</b>	<ul style="list-style-type: none"> <li>• <b>Restricting idling time for trucks and buses having a gross vehicle weight of over 8,500 pounds to no more than three minutes.</b></li> </ul>

Additional measures may be taken to substantially reduce the air emissions identified above. These measures include:

- **Constructing only energy efficient homes.** Energy Star qualified homes are up to 30% more energy efficient than typical homes. These savings come from building envelope upgrades, high performance windows, controlled air infiltration, upgraded heating and air conditioning systems, tight duct systems and upgraded water-heating equipment. Every percentage of increased energy efficiency translates into a percent reduction in pollution. The Energy Star Program is excellent way to save on energy costs and reduce air pollution.
- **Offering geothermal and/or photo voltaic energy options.** These systems can significantly reduce emissions from electrical generation, and from the use of oil or gas heating equipment.
- **Providing tie-ins to the nearest bike paths and links to any nearby mass transport system.** These measures can significantly reduce mobile source emissions.
- **Funding a lawnmower exchange program.** New lawn and garden equipment emits significantly less than equipment as little as 7 years old, and may significantly reduce emissions from this new development. The builder could fund such a program for the new occupants.

Additionally, the following measures will reduce emissions associated with the actual construction phase of the development:

- **Using retrofitted diesel engines during construction.** This includes equipment that are on-site as well as equipment used to transport materials to and from site.
- **Using pre-painted/pre-coated flooring, cabinets, fencing, etc.** These measures can significantly reduce the emission of VOCs from typical architectural coating operations.
- **Planting trees at residential units and in vegetative buffer areas.** Trees reduce emissions by trapping dust particles and by replenishing oxygen. Trees also reduce energy emissions by cooling during the summer and by providing wind breaks in the winter, whereby reducing air conditioning needs by up to 30 percent and saving 20 to 50 percent on fuel costs.

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This is a partial list, and there are additional things that can be done to reduce the impact of the development on air quality. The applicant should submit a plan to the DNREC Air Quality Management Section which address the above listed measures, and that details all of the specific emission mitigation measures that will be incorporated into the Arbors of Cottagedale Apartments development. Air Quality Management Section points of contact are Phil Wheeler and Deanna Morozowich, and they may be reached at (302) 739-9402.