



ARCHITECTURE
ENGINEERING

PLANNING OUR
CLIENTS' SUCCESS

December 8, 2006

Constance C. Holland, AICP
State of Delaware
Planning and Coordination
Haslet Armory – Third Floor
122 William Penn Street
Dover, DE 19901

RE: **P.L.U.S. Response Letter**
Markowitz Property
South Murderkill Hundred, Delaware
2006002.00

Dear Ms. Holland:

Below you will find the required PLUS response to your PLUS letter dated March 25, 2006 in reference to the above mentioned project. Each State Comment is listed with the associated response in italics below.

Office of State Planning Coordination – Contact: David Edgell 739-3090

This project is located in Investment Level 2 according to the *State Strategies for Policies and Spending*. This site is also located in the Kent County Growth Zone. Investment Level 2 reflects areas where growth is anticipated by local, county, and State plans in the near term future. State investments will support growth in these areas. Our office has no objections to the proposed development of this project in accordance with the relevant County codes and ordinances.

Action: No action necessary.

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

There is a known prehistoric archaeological site (K-5463) within this parcel. The parcel is immediately adjacent to a late-19th-century house (K-2770) on the southwest corner and across Andrews Lake Rd. from the J. Anderson House (K-2771; Beers Atlas of 1868). Straightening of Andrews Lake Rd. apparently ran behind the Anderson House, cutting it off from its original fields. The existing farmstead within the parcel first shows on the USGS 15' topographic map for Wyoming 1931. There may be archaeological remains associated with this house and the adjacent farmstead on this parcel. There are other areas that have a high potential for prehistoric-period archaeological sites.

Small, rural, family cemeteries often are found in relation to historic farm complexes, such as the Anderson House, usually a good distance behind or to the side of the house (in this case, across the current road from the house). The developer should be aware of Delaware's Unmarked Human Remains Act of 1987,

BECKER MORGAN GROUP, INC.

309 SOUTH GOVERNORS AVENUE
DOVER, DELAWARE 19904
302.734.7950
FAX 302.734.7965

SOUTHBANK OFFICE PARK
307 A STREET
WILMINGTON, DELAWARE 19801
302.888.2600
FAX 302.888.2427

PORT EXCHANGE
SUITE 300
312 WEST MAIN STREET
SALISBURY, MARYLAND 21801
410.546.9100
FAX 410.546.5824

www.beckermorgan.com

which governs the discovery and disposition of such remains. The unexpected discovery of unmarked human remains during construction can result in significant delays while the process is carried out. The Division of Historical and Cultural Affairs will be happy to discuss these issues with the developer; the contact person for this program is Faye Stocum, 302-736-7400.

They request that the developer include sufficient landscaping to screen the neighboring historic houses from the visual and noise intrusions of the development. The DHCA also would appreciate the opportunity to look at the buildings and document any that meet our age criterion prior to any demolition activities. In addition, they would appreciate the opportunity to examine the known site more closely and to look for other archaeological sites and determine something about their location, nature, and extent prior to any ground-disturbing activities.

Action: At this point, we have not been able to identify areas of human remains. However, if encountered during construction, we will take the necessary steps as required by law.

Department of Transportation – Contact: Bill Brockenbrough 760-2109

- 1) Andrews Lake Road and McGinnis Pond Road are classified as local roads. DelDOT's policy is to require dedication of sufficient land to provide a minimum right-of-way width of 30 feet from the centerline on local roads. Therefore DelDOT will require right-of-way dedication along the frontage to provide any additional width needed from this project.

Action: We do not object to the dedication as requested.

- 2) The plan for the development should include a 10-foot wide shared use path in a 15-foot wide permanent easement across the frontage of the site on both roads.

Action: We do not object to the construction of the shared use path as required.

- 3) DelDOT supports the proposed connection to Lake Cove Lane in the Lakewind subdivision and applaud the connectivity that it provides. With that said, they may require improvements to Lake Cove Lane and they will require that the intersection of Lake Cove Lane and McGinnis Pond Road be included in the TIS.

Action: We understand the potential for improvements and we will await the conclusion of the TIS before we speculate as to the extent of the improvements.

- 4) DelDOT anticipates recommending that the County require a traffic impact study for this subdivision application. Indeed, the developer's engineer has already met with them to establish a scope of work for that study. Studies have been done relatively recently for developments both north and south of this one, so data collection needs may be relatively small for this study.

Action: We have already initiated the TIS process.

- 5) The developer's site engineer should contact Mr. Brad Herb, the DelDOT project manager for Kent County, regarding their specific requirements for streets and access. He may be reached at (302) 266-9600.

Action: Once we complete the TIS process we will meet with Mr. Herb to discuss the site design in an effort to prepare formal submission to Kent County for subdivision plan approval.

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

Green Infrastructure

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

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.

Action: Based on discussions with Jared Adkins, we will be considering the use of a green infrastructure via bioswales for a portion of the development.

Soils

Based on the Kent County soil survey Evesboro, Rumford, Woodstown, and Swamp were mapped in the immediate vicinity of the proposed project. Evesboro is an excessively well-drained upland soil that has moderate limitations on account of its rapid permeability. Rumford is a well-drained upland soil that, generally, has few limitations for development. Woodstown is a moderately well-drained soil of low-lying uplands that has moderate limitations for development. Swamp is a very poorly-drained wetland associated (hydric) soil that has the highest severity level for development.

Action: We will consider the existing soil conditions throughout the design. In addition, we will perform further soil investigations as required by the Kent Conservation District.

Wetlands

Based on Statewide Wetland Mapping Project (SWMP) mapping, palustrine forested riparian wetlands and lacustrine unconsolidated bottom wetlands were mapped along the entire northern boundary of subject parcel. The PLUS application indicates that there are 4.18 acres of non-tidal wetlands on-site, significantly more than indicated on the SWMP maps.

Materials provided do not demarcate the wetland areas; as such it is difficult to discern whether adequate buffers are proposed. The developer is encouraged to maintain no less than a 100-foot vegetated buffer from the edge of wetlands. The developer should note that both DNREC and Army Corps of Engineers discourage allowing lot lines to contain wetlands to minimize potential cumulative impacts resulting from unauthorized and/or illegal activities and disturbances that can be caused by homeowners.

Action: We have performed a wetland delineation and those wetlands are shown on the plan accurately. We do not anticipate development within 100 feet, but can not guarantee that will remain to be the case.

Wetland Permitting Information

PLUS application materials indicate that wetlands have been delineated and that permits will not be necessary. This delineation should be verified by the Army Corps of Engineers through the Jurisdictional Determination process.

If wetland impacts are deemed necessary, please note that impacts to palustrine wetlands are regulated by the Army Corps of Engineers through Section 404 of the Clean Water Act. In addition, individual 404 permits and certain Nationwide Permits from the Army Corps of Engineers also require 401 Water Quality

Certification from the DNREC Wetland and Subaqueous Land Section and Coastal Zone Federal Consistency Certification from the DNREC Division of Soil and Water Conservation, Delaware Coastal Programs Section. Each of these certifications represents a separate permitting process.

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.

Action: we do not anticipate any wetland disturbance at this time and therefore we do not foresee the need to pursue any wetland permitting. It is our intention to obtain a jurisdictional determination from the Army Corp of Engineers.

Impervious Cover

Studies link increases in impervious cover to decreases in water and habitat quality. Studies have also firmly established that irreversible declines in water and habitat quality begin once aggregate watershed surface imperviousness exceeds 10 percent. Based on analyses of 2002 aerial photography by the University of Delaware, the Murderkill watershed had about 8.1 percent impervious cover. Although this data is about 4 years old and likely an underestimate, it underscores the importance of a proactive strategy to mitigate for predictable and likely cumulative environmental impacts. Since the amount of imperviousness generated by this project is likely to be much higher than the desirable watershed threshold of 10 percent, the applicant is strongly advised to pursue best management practices (BMPs) that mitigate or reduce some of the 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 examples of practical BMPs that could easily be implemented to reduce surface imperviousness.

Action: We will limit impervious cover to what is required. We do not anticipate the use of pervious pavers for the development. We will be providing stormwater management structures which will manage stormwater quality in accordance with the current Delaware Sediment and Stormwater Regulations.

TMDLs

Total Maximum Daily Loads (TMDLs) for nitrogen and phosphorus have been promulgated through regulation for the Murderkill 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 Murderkill watershed, a post-development TMDL reduction level of 50 and 30 percent will be required for nitrogen and phosphorus, respectively.

Action: We will provide stormwater management in accordance with the current stormwater regulations and laws.

TMDL Compliance through the PCS

The proposed pollution control strategy will require the completion of a nutrient budget to estimate nutrient load changes following development; documentation of these load changes will be assessed through a nutrient budget protocol. The nutrient budget protocol is a computer-based model that quantifies post-development nutrient loading under a variety of land use scenarios in combination with a variety (or absence) of BMP types and intensities. The post-development loading rate is then compared with the pre-development loading rate to assess whether the project meets the prescribed TMDL nutrient load reductions. Based on a preliminary evaluation of this project using said model (with the applicant's assumptions as reported in the PLUS application), the development as currently conceived **does not** meet the Murderkill watershed TMDL nutrient reduction requirements for nitrogen and phosphorus – the applicant is strongly advised to consider the use of appropriate BMPs and Best Available Technologies (BATs) to ensure compliance. Examples of BMPs or BATs that should be used to significantly reduce nutrient loading from this project, include practices that mitigate or minimize all created forms of surface imperviousness, maintenance/restoration of recommended wetland buffer widths, reductions in the overall amount of forest cover removal, and use of innovative “green-technology” stormwater methodologies rather than conventional open-water stormwater management structures. We suggest that the applicant verify their project's compliance with the specified TMDL loading rates by either contacting the Watershed Assessment Section or running the model themselves. Please contact Lyle Jones at 739-9939 for the acceptable model protocol.

Action: We will provide stormwater management in accordance with the current stormwater regulations and laws.

Water Resource Protection Areas

The DNREC Water Supply Section has determined that the project falls partially within an excellent ground-water recharge area (see attached map). 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. As such, these soils are able to transmit water very quickly from the land surface to the water table. Consequently, ground water in these areas may very readily be adversely affected by land use activities or impervious cover.

The DNREC Water Supply Section recommends that the portion of the new development within the excellent ground-water recharge area not exceed 20% impervious cover. Some allowance for augmenting ground-water recharge should be considered if the impervious cover exceeds 20% but is less than 50% of that portion of the parcel within this area. However, the development should not exceed 50% regardless. A water balance calculation will be necessary to determine the quantity of clean water to be recharged via a recharge basin. 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.

Ideally, relocating any open space areas to the part of the parcel within the excellent ground-water recharge area would decrease the total impervious area. Augmenting the groundwater recharge with clean rooftop run-off systems are another alternative to maintaining the quality and quantity of water recharging the aquifer.

In addition, because the excellent ground water recharge area can so quickly 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.

For more information refer to the Final Source Water Protection Guidance Manual for the Local Governments of Delaware

<http://www.wr.udel.edu/swaphome/phase2/SWPguidancemanual.html>

and

Ground-Water Recharge Design Methodology

http://www.wr.udel.edu/swaphome/phase2/Publications/swapp_manual_final/swapp_guidance_manual_supp_1_2005_05_02.pdf.

Action: We look into this comment further. However, at this point, we do not anticipate providing groundwater recharge design.

Water Supply

The project information sheets state that water will be provided to the project by a provider to be determined. DNREC records indicate that the project site is not located in an area where public water service is available. Any public water utility providing water to the site must obtain a certificate of public convenience and necessity (CPCN) from the Public Service Commission. Information on CPCNs and the application process can be obtained by contacting the Public Service Commission at 302-739-4247. Should an on-site public well be needed, it must be

located at least 150 feet from the outermost boundaries of the project. 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.

Action: Public water service will be provided. We will obtain the necessary permits as required if well pointing is required.

Sediment and Erosion Control/Stormwater Management

1. Land disturbing activities in excess of 5,000 square feet are regulated under the Delaware Sediment and Stormwater Regulations. A detailed sediment and stormwater management plan must be reviewed and approved by the Kent Conservation District prior to any land disturbing activity (i.e. clearing, grubbing, filling, grading, etc.) taking place. The review fee and a completed Application for a Detailed Plan are due at the time of plan submittal to the Kent Conservation District. Construction inspection fees based on developed area and stormwater facility maintenance inspection fees based on the number of stormwater facilities are due prior to the start of construction. Please refer to the fee schedule for those amounts.

Action: We understand the submission requirements and intend to comply with the requirements stated above.

2. The following notes must appear on the record plan:
 - The Kent Conservation District reserves the right to enter private property for purposes of periodic site inspection.

- The Kent Conservation District reserves the right to add, modify, or delete any erosion or sediment control measure, as it deems necessary.
- A clear statement of defined maintenance responsibility for stormwater management facilities must be provided on the Record Plan.

Action: We do not object to providing the notes as stated above.

3. Ease of maintenance must be considered as a site design component and a maintenance set aside area for disposal of sediments removed from the basins during the course of regular maintenance must be shown on the Record Plan for the subdivision.

Action: A maintenance set aside area will be provided.

4. All drainage ways and storm drain should be contained within drainage easements and clearly shown on the plan to be recorded by Kent County.

Action: We intend to provide stormdrain easements as required.

5. A soils investigation supporting the stormwater management facility design is required to determine impacts of the seasonal high groundwater level and soils for any basin design.

Action: We intend to obtain a soils investigation and we will include the soil investigation with the stormwater management report to be submitted to the Kent Conservation District.

Comments:

1. The site is located on a major water body (McGinnis Pond); this will generate concerns from area residents and the District. Great care must be taken with the design and implementation.

Action: Our design will consider the sensitivity of the existing water Body McGinnis Pond.

2. The designer is encouraged to consider the conservation design approach and limit the amount of tree clearing required for the development of the site including the stormwater management facilities shown in the wooded areas.

Action: We intend to clear what is necessary for clearing of the row to install roads and then perform selective clearing for the individual lots.

3. It appears that the site will have an adequate outfall (Beaver Gut Ditch); however, the pond's location within the development will cause the outfall pipe to run down lot lines. This area must be shown on the record plans as open space.

Action: We do not intend for the outfall to run along lots. Any stormwater management outfall will be included within open space as requested.

4. Access to the proposed stormwater facility must be provided for periodic maintenance. This access should be at least 12 feet wide to leading to the facility and around the facility's perimeter.

Action: We will provide the required access.

5. It is recommended that the stormwater management areas be incorporated into the overall landscape plan to enhance water quality and to make the stormwater facility an attractive community amenity.

Action: We will incorporate the stormwater management facility into the overall landscape plan.

6. letter of no objection to re-recording will be provided once the detailed Sediment and Stormwater Management plan has been re-approved.

Action: No action necessary.

7. Proper drainage of developed lots and active open space should be considered in the development of the grading plan for this subdivision.

Action: We will provide grading as necessary to provide positive drainage in all lots and open spaces.

8. Based on the site characteristics, a pre-application meeting is suggested to discuss stormwater management and drainage for this site.

Action: A pre-application meeting was held with Jared Adkins at the Kent Conservation District.

Drainage

Design recommendations:

- The Drainage Program does not support the removal of trees for the construction of stormwater management ponds.

Action: We understand the concern with ponds being located in wooded areas. However, the topography of the site typically dictates the location of stormwater management features. Attempts to contradict the natural grading of the site can present problems with the long term ability of the site to drain properly.

- All drainage easements should be recorded on deeds.

Action: All drainage easements will be shown on the Record Plat.

- The Drainage Program requests that all storm drains and catch basins for this project be on open space or within street right-of-ways. However, the Drainage Program recognizes the need for catch basins in rear yards in certain cases. Therefore, catch basins placed in rear yards will need to be clear of obstructions and be accessible for maintenance. Decks, sheds, fences, 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.

Action: Drainage easements will be provided on all storm drain structures within lots which will preserve that area.

- The Drainage Program requests a 15-foot side yard setback on lots where storm drains and catch basins are on private property to ensure adequate room for future maintenance of the storm drain system. The side yard setback would only increase on the side with the storm drain.

Action: We have no objection to the above comment.

The Drainage Program requests that the engineer take precautions to ensure the project does not hinder any off site drainage upstream of the project or create any off site drainage problems downstream by the release of on site storm water. The Drainage Program requests that the engineer check existing downstream ditches and pipes for function and blockages prior to the start of construction.

This project is within the Murderkill River Watershed, a designated critical area, with a promulgated Total Maximum Daily Load (TMDL). Preserve existing riparian buffers to aid in the reduction of nutrients, sediment, and other pollutants. For the further enhancement of water quality in the Murderkill watershed, please explore the use of additional water quality measures to filter excess nutrients in stormwater runoff from this site before releasing stormwater into McGinnis Pond.

Action: We will work with the Kent Conservation District throughout the design process to determine the optimal solutions for stormwater management.

Floodplains

Portions of the property are located in the 100-year floodplain where Kent County's floodplain regulations do not allow the subdivision of land.

Action: We do not anticipate development within the floodplain.

Open Space

To maximize the existing buffering capacity and wildlife habitat on site, it is recommended that lot lines and other infrastructure (such as storm water management ponds) be pulled out of the forest.

Action: As a result of existing topography, the stormwater management ponds must be located as shown. We will minimize their impact to the wooded area as much as possible.

Open space containing forest and/or wetlands should be placed into a permanent conservation easement or other permanent protection mechanism. Conservation areas should also be demarked to avoid infringement by homeowners.

Action: The record plan will identify said areas as permanent open space which will preserve the areas.

Rare Species and Wetland Buffers

DNREC has never surveyed this property; however, there are records of both rare plants and animals within McGinnis Pond a public-owned, State-managed pond. The Division of Fish and Wildlife is concerned that run-off from this project could detrimentally affect water quality within the pond. Although the majority of the forest along the pond is going to be left intact initially, McGinnis Pond is the intended outlet for stormwater. Because of the State's concern regarding water quality and the amount of funding and staff time that is spent to manage water quality problems within State-owned ponds, an alternate outlet should be used or a different method of stormwater management employed. The forested riparian buffer should be a minimum of 100 feet (preferably 300 feet) and placed in permanent conservation so that future clearing by homeowners does not occur. County required buffers are currently inadequate for the protection of wetlands.

In addition, the stormwater management ponds need to be removed from the wooded riparian buffer. Trees function in flood abatement and erosion control and it does not make sense to remove them to control stormwater, especially when tree removal can exasperate flooding problems. Alternate methods of stormwater containment should also be explored (such as bioswales, etc.).

Action: We will work with the Kent Conservation District to determine the best solution for stormwater management. We will attempt to minimize the impact to the woodlands. However, the stormwater pond or feature must be located at the low portion of the site to limit earthwork and to maintain the natural drainage of the site.

Forest Preservation

According to the application, at least 13.05 acres of forest will be cleared. However, in reality the amount of forest loss will likely be higher once this site is built out and there is subsequent clearing by landowners for sheds, play areas, pools, etc. DNREC recommends lots and associated infrastructure currently within the woods be omitted from the site plan or relocated to a non-forested portion of the site. These lots are primarily located in the northern and eastern portion of the site.

If tree clearing still occurs despite the recommendations above, clearing should not occur April 1st to July 31st to minimize impacts to birds and other wildlife that utilize forest for breeding.

Action: We will attempt to minimize clearing as much as possible. The 13.05 acres above reflects clearing the entire lots for development. The developer would like to preserve as much of the woods as possible and only clear what is necessary for roads, infrastructure, and homes. We believe that 13.05 acres represents the worst case scenario.

Nuisance Waterfowl

Stormwater management ponds that remain in the site plan may attract waterfowl like resident Canada geese and mute swans. High concentrations of waterfowl in ponds create water-quality problems, leave droppings on lawn and paved areas and can become aggressive during the nesting season. Short manicured lawns around ponds provide an attractive habitat for these species. We recommend native plantings of tall grasses, wildflowers, shrubs, and trees at the edge and within a buffer area (50 feet) around the perimeter. Waterfowl do not feel safe when they can not see the surrounding area for possible predators. These plantings should be completed as soon as possible as it is easier

to deter geese when there are only a few than it is to remove them once they become plentiful. The Division of Fish and Wildlife does not provide goose control services, and if problems arise, residents or the home-owners association will have to accept the burden of dealing with these species (e.g., permit applications, costs, securing services of certified wildlife professionals). Solutions can be costly and labor intensive; however, with proper landscaping, monitoring, and other techniques, geese problems can be minimized.

Action: We will consider tall grasses when preparing the landscape plan.

State Resource Area

The Office of Nature Preserves appreciates the effort of the applicant to mostly remain out of the wooded area located at the north end of the property. Recently, the Open Space Council moved to amend the current State Resource Area maps and identified the forested section of this site as a State Resource Area. State Resource Area lands include any open lands characterized by great natural scenic beauty, or whose existing openness, natural condition or present state of use, if retained, would maintain important recreational areas and wildlife habitat, and enhance the present or potential value of abutting or surrounding urban development, or would maintain or enhance the conservation of natural or scenic resources, including environmentally sensitive areas.

It is with this in mind that the Office of Nature Preserves strongly suggests that the applicant redesign the project in such a way as to maintain the integrity of the forested State Resource Area and remove the lots and stormwater basins that intrude into it.

Action: We have already met with the Kent Conservation District to discuss alternative stormwater management solutions to reduce the amount of woodlands to be removed. We will attempt to reduce the impact to the woodlands. Please see previous comments regarding the woodlands.

Underground Storage Tanks

There is one inactive LUST site located near the proposed project:

McGinnis Pond Maintenance Shop, Facility # 1-000564, Project # K9504091

No environmental impact is expected from the above inactive LUST site. However, should any underground storage tank or petroleum contaminated soil be discovered during construction, the Tank Management Branch must be notified as soon as possible. It is not anticipated that any construction specifications would need to be changed due to petroleum contamination. However, should any unanticipated contamination be encountered and PVC pipe is being utilized, it will need to be changed to ductile steel with nitrile rubber gaskets in the contaminated areas.

Action: If underground storage tanks are encountered, we will follow the proper procedures as required.

Solid Waste

Each Delaware household generates approximately 3,600 pounds of solid waste per year. On average, each new house constructed generates an additional 10,000 pounds of construction waste. Due to Delaware's present rate of growth and the impact that growth will have on the state's existing landfill capacity, the applicant is

requested to be aware of the impact this project will have on the State's limited landfill resources and, to the extent possible, take steps to minimize the amount of construction waste associated with this development.

Action: The developer will encourage site contractors to limit construction waste.

Air Quality

Once complete, vehicle emissions associated with this project are estimated to be 18.5 tons (36,991.0 pounds) per year of VOC (volatile organic compounds), 15.3 tons (30,626.0 pounds) per year of NOx (nitrogen oxides), 11.3 tons (22,596.5 pounds) per year of SO2 (sulfur dioxide), 1.0 ton (2,011.5 pounds) per year of fine particulates and 1,547.1 tons (3,094,248.8 pounds) per year of CO2 (carbon dioxide).

Emissions from area sources associated with this project are estimated to be 7.5 tons (14,920.1 pounds) per year of VOC (volatile organic compounds), 0.8 ton (1,641.7 pounds) per year of NOx (nitrogen oxides), 0.7 ton (1,362.4 pounds) per year of SO2 (sulfur dioxide), 0.9 ton (1,758.0 pounds) per year of fine particulates and 30.2 tons (60,482.9 pounds) per year of CO2 (carbon dioxide).

Emissions from electrical power generation associated with this project are estimated to be 3.0 tons (5,913.3 pounds) per year of NOx (nitrogen oxides), 10.3 tons (20,567.9 pounds) per year of SO2 (sulfur dioxide) and 1,516.9 tons (3,033,765.8 pounds) per year of CO2 (carbon dioxide).

	VOC	NOx	SO ₂	PM _{2.5}	CO ₂
Mobile	18.5	15.3	11.3	1.0	1547.1
Residential	7.5	0.8	0.7	0.9	30.2
Electrical Power		3.0	10.3		1516.9
TOTAL	26.0	19.1	22.3	1.9	3094.2

For this project the electrical usage via electric power plant generation alone totaled to produce an additional 3.0 tons of nitrogen oxides per year and 10.3 tons of sulfur dioxide per year.

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

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

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

The Energy office in DNREC is in the process of training builders in making their structures more energy efficient. The Energy Star Program is excellent way to save on energy costs and reduce air pollution. They highly recommend this project development and other residential proposals increase the energy efficiency of their homes.

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 find a lawnmower exchange program for their new occupants.

Action: We will look into the use of Energy Star equipment for homes.

State Fire Marshal’s Office – Contact: John Rossiter 739-4394

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 Andrews Lake Rd 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.
- 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.delawarestatefiremarshal.com, technical services link, plan review, applications or brochures.

Action: We have no objection to the above comments.

Department of Agriculture - Contact: Milton Melendez 698-4500

The Delaware Department of Agriculture has no objections to the development of this property. The *Strategies for State Policies and Spending* encourages environmentally responsible development within Investment Level 2 areas.

Portions of this site have been designated as an “Excellent and Good Recharge” areas, meaning that the area has valuable ground water recharge qualities. Additionally, this site overlaps with the State’s Green Infrastructure Investment Strategy Plan. The Forest layer is present in this site; this designation identifies areas that possess unique natural features that are valuable for preservation. The Department encourages the developer consider the value of these designations in their plans, and make every reasonable attempt to maintain them.

Action: See previous comments concerning preserving woodland areas.

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.

Action: No action necessary.

Delaware State Housing Authority – Contact Karen Horton 739-4263

This proposal is to develop a 241 single-family lot (8,000 sq. ft. minimum) subdivision with public roads and utilities. The proposed development is located on Andrews Lake Road in the Kent County growth zone. According to the *State Strategies Map*, the proposal is located in an Investment Level 2 area. DSHA supports this proposal because residents will have proximity to services, markets, and employment opportunities. Furthermore, the proposal targets units for first time homebuyers. According to the most recent real estate data collected by DSHA, the average home price in Kent County is \$189,500. However, families earning respectively 80%-100% of Kent County’s median income, only qualify for mortgages of \$138,205 - \$176, 741. The provision of units within reach of families earning at least 80%-100% of Kent County’s median income would help increase housing opportunities for first time homebuyers. To note another positive aspect of the proposed development is the use of mixed housing types to serve first time homebuyers, move-up buyers, and second homebuyers.

Action: No action necessary.

Department of Education – Contact: John Marinucci 739-4658

DOE offers the following comments on behalf of the Lake Forest School District.

1. Using the DOE standard formula, this development will generate an estimated 121 students.
2. DOE records indicate that the Lake Forest School Districts' *elementary schools are at or beyond 100% of current capacity* based on September 30, 2005 elementary enrollment.
3. DOE records indicate that the Lake Forest School Districts' *secondary schools are very close to 100% of current capacity* based on September 30, 2005 secondary enrollment.
4. This development will create additional elementary and secondary student population growth which will further compound the existing shortage of space. The developer is strongly encouraged to contact the Lake Forest School District Administration to address the issue of school over-crowding that this development will exacerbate.
- 5.

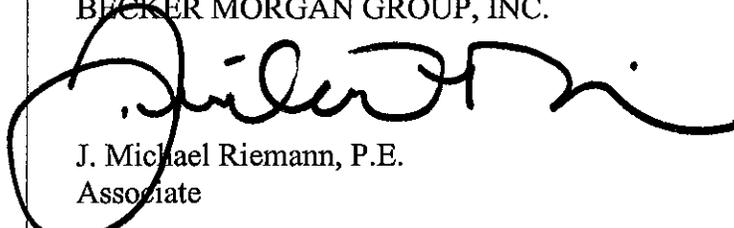
DOE requests developer work with the Lake Forest School District transportation department to establish developer supplied bus stop shelter ROW and shelter structures, interspersed throughout the development as determined and recommended by the local school district.

Action: It is our understanding with the passing of the recent ordinance which requires a school impact fee for new construction, that this will provide funds to the associated school district for capital improvements. We do not object to the ordinance and will provide the impact fees as outlined in the ordinance.

Please call with any questions that you may have.

Sincerely,

BECKER MORGAN GROUP, INC.



J. Michael Riemann, P.E.
Associate

JMR/rlh