



STATE OF DELAWARE
EXECUTIVE DEPARTMENT
OFFICE OF STATE PLANNING COORDINATION

September 22, 2016

Mr. Ken Starke
Caesar Rodney School District
7 Front Street
Wyoming, DE 19934

RE: PLUS review 2016-08-08; Caesar Rodney School District

Dear Ken,

Thank you for meeting with State agency planners on August 24, 2016 to discuss a proposed site plan for an 81,000 square foot elementary school near the intersection of Banning Rd. and Briarbrush Rd. in Kent County.

Please note that this review was for the site feasibility only. If this site is chosen and a site plan is completed, it must be submitted to this office for PLUS review. 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 Kent County is the governing authority over this land, development of this property would need to comply with any and all regulations/restrictions set forth by the County.

Strategies for State Policies and Spending

- This project is located in Investment Level 1 according to the *Strategies for State Policies and Spending*. Investment Level 1 reflects areas that are already developed in an urban or suburban fashion, where infrastructure is existing or readily available, and where future redevelopment or infill projects are expected and encouraged by State policy. Thus, the Office of State Planning Coordination has no objections to this proposed site.

Code Requirements/Agency Permitting Requirements

Delaware Department of Transportation – Contact Bill Brockenbrough 760-2109

- The site access on Briarbush Road (Kent Road 367) and the planned Mildred Grace Avenue must be designed in accordance with DelDOT's Development Coordination Manual. A copy of the Manual is available at <http://www.deldot.gov/information/business/subdivisions/changes/index.shtml>.
- Pursuant to Section P.3 of the Manual, a Pre-Submittal Meeting is recommended before plans are submitted for review. The form needed to request this meeting and guidance on what will be covered there and how to prepare for it is located at http://www.deldot.gov/information/business/subdivisions/Meeting_Request_Form.pdf.
- Section P.5 of the Manual addresses fees that are assessed for the review of development proposals. DelDOT anticipates collecting the Initial Stage Fee when the record plan is submitted for review and the Construction Stage Fee when construction plans are submitted for review.
- Per Section 2.2.2.1 of the Manual, Traffic Impact Studies (TIS) are warranted for developments generating more than 500 vehicle trip ends per day or 50 vehicle trip ends per hour in any hour of the day. From the PLUS application, we see that the total daily trips are estimated at 774 vehicle trip ends per day. Based on that traffic volume, a TIS is warranted for this development.

However, for developments generating less than 2,000 vehicle trip ends per day and less than 200 vehicle trip ends per hour, if the local government does not require a TIS, Section 2.2.2.2 of the Manual provides that DelDOT may accept an Area Wide Study Fee, calculated by multiplying the daily trip generation by \$10, in lieu of requiring a TIS.

An Area Wide Study Fee, when accepted, is set aside for use in funding future traffic studies in the same county as the subject development. Payment of the Fee does not relieve the payer of responsibility for off-site improvements where DelDOT has identified a need for improvements.

The proposed school site would consist of 61 recorded lots and part of the street system and open space in the recorded Barrett Farm subdivision. DelDOT's review of a 2005 TIS for this development identified several off-site improvements needed to support the subdivision that, in our opinion, would also be needed to support the school. A copy of our comments on the TIS is attached. Specific off-site improvements we would anticipate requiring of the school district, unless they are made first by others, include the following:

- Improvement of Banning Road from Briarbush Road to the eastern edge of the Barrett Farm property to meet DelDOT local road standards as nearly as possible within the available right-of-way. These improvements include two 11-foot travel lanes and two 5-foot shoulders.
- An overlay of Banning Road from the eastern edge of the Barrett Farm property to South State Street
- Improvement of Briarbush Road from Banning Road to the north limit of the site frontage to meet DelDOT local road standards as nearly as possible within the available right-of-way. These improvements include two 11-foot travel lanes and two 5-foot shoulders.
- Entering into a signal agreement with DelDOT for the intersection of South State Street and Banning Road.

We would also want to discuss with the school district the possibility of widening Banning Road between the Barrett Farm Property and South State Street by some amount to better accommodate two-way school bus traffic but we recognize that the residential strip development along this section of the road has likely made it difficult to provide five-foot shoulders.

- Per Section 2.3.2 of the Manual, DelDOT may require a Traffic Operational Analysis (TOA) for any development generating 200 or more vehicle trip ends per day. From the PLUS application, we see that the total daily trips are estimated at 774 vehicle trip ends per day. While DelDOT does not presently foresee the need for a separate TOA given the 2005 TIS mentioned above, we do anticipate requiring the school district to revisit the design of intersection of Banning Road, Country Field Drive and the planned Mildred Grace Avenue as part of the plan review process. The entrance to Barrett Farm was designed, to the extent that plans were developed, to accommodate exclusively residential traffic. The proposed school would increase the daily traffic by about 150 vehicle trip ends per day over what was previously contemplated and would significantly increase the number of trips entering and exiting during the weekday morning peak hour.
- Section 3.2.4.2 of the Manual addresses the placement of right-of-way monuments (markers) along the roads on which a property fronts, in this case Briarbush Road and Banning Road. Monuments sufficient to re-establish the permanent rights-of-way after the dedication discussed below should be shown on the plan and provided in the field in accordance with this section.
- As necessary, in accordance with Section 3.2.5 and Figure 3.2.5-a of the Manual, DelDOT will require dedication of right-of-way along the site's frontage on Briarbush Road and Banning Road. By this regulation, this dedication is to provide a minimum of 30 feet of right-of-way from the road centerline on both roads. The following right-of-way dedication note is required, **"An X-foot wide right-of-way is hereby dedicated to the State of Delaware, as per this plat."**

- In accordance with Section 3.2.5.1.2 of the Manual, DelDOT will require the establishment of a 15-foot wide permanent easement across the property frontage on Briarbush Road and Banning Road. The location of the easement shall be outside the limits of the ultimate right-of-way. The easement area can be used as part of the open space calculation for the site. The following note is required, **“A 15-foot wide permanent easement is hereby established to the State of Delaware, as per this plat.”**
- In accordance with Section 3.4 of the Manual, a record plan shall be prepared prior to issuing “Letter of No Objection”. The following information will be required for the “Letter of No Objection” review:
 - Initial Stage Fee Calculation Form
 - Initial Stage Review Fee
 - Gate-Keeping Checklist – Site Plan
 - Design Checklist - Record Plan
 - Sight Distance Spreadsheet
 - Owners and Engineers’ name and e-mail address
 - Record Plan
 - Conceptual Entrance Plan
 - Submission of the Area-Wide Study Fee (If applicable)
- Referring to Section 3.4.2.1 of the Manual, the following items, among other things, are required on the Record Plan:
 - A Traffic Generation Diagram. See Figure 3.4.2-a for the required format and content.
 - All adjacent existing features are required to be shown in accordance with Figure 3.4.2-b.
 - Notes identifying the type of off-site improvements, agreements (signal, letter) contributions and when the off-site improvements are warranted.
- Section 3.5 of the Manual provides DelDOT’s requirements with regard to connectivity. The requirements in Sections 3.5.1 through 3.5.3 shall be followed for all development projects having access to state roads or proposing DelDOT maintained public streets for subdivisions.
- Section 3.5.4.2 of the Development Coordination Manual addresses requirements for shared-use paths and sidewalks. Projects located in Level 1 and 2 Investment Areas are required to install a shared-use path or sidewalk along the State-maintained road frontage. The Subdivision Engineer may waive the requirement where a physical impossibility exists. No such impossibility is evident in this instance. As part of this construction we would expect the school district to provide crosswalks and curb ramps as needed to cross Mildred Grace Avenue at their access points and to cross Banning Road at the intersection of Mildred Grace Avenue and Country Fields Road if these facilities have not been built first by others, i.e. a developer of Barrett Farm.

- Consistent with Section 3.5.5 of the Manual, any existing or proposed transit stops shall be shown on the Record Plan with applicable bicycle and pedestrian connectivity.
- In accordance with Section 3.8 of the Development Coordination Manual, storm water facilities, excluding filter strips and bioswales, shall be located a minimum of 20 feet from the ultimate State right-of-way along Briarbush Road and Banning Road.
- Referring to Section 4.3 of the Manual, an entrance plan shall be prepared prior to issuing entrance approval. The following information will be required for Entrance Plan review:
 - Construction Stage Fee Calculation Form
 - Construction Review Fee
 - Gate-Keeping Checklist – Entrance Plan
 - Design Checklist - Entrance Plan
 - Auxiliary Lane Spreadsheet
 - Entrance Plan
 - Pipe/Angle Spreadsheet (If applicable)
 - SWM Report and Calculations (If applicable)
- In accordance with Section 5.2.5.6 of the Manual, a separate turning template plan shall be provided to verify vehicles can safely enter and exit the site entrance. As per Section 5.2.3 of the Manual, the entrance shall be designed for the largest vehicle using the entrance.
- In accordance with Section 5.2.9 of the Manual, the Auxiliary Lane Worksheet should be used to determine whether auxiliary lanes are warranted at the site entrance and how long those lanes should be. The worksheet can be found at http://www.deldot.gov/information/business/subdivisions/auxiliary_lane_worksheet.xls. Application of the Worksheet has shown that a left turn lane entering the site is warranted. Given the existing roadway configuration and project location the requirement for a left turn lane has been waived.
- In accordance with Section 5.4 of the Manual, sight distance triangles are required and shall be established in accordance with American Association of State Highway and Transportation Officials (AASHTO) standards. A spreadsheet has been developed to assist with this task. It can be found at <http://www.deldot.gov/information/business/subdivisions/Intersection-Sight-Distance.xls>.
- In accordance with Section 5.14 of the Manual, all existing utilities must be shown on the plan and a utility relocation plan will be required for any utilities that need to be relocated.
- Because the proposed development would not have State-maintained streets, Section 6.4.3 of the Manual, which pertains to the inspection and acceptance of commercial

entrances, applies. Construction inspection responsibilities shall be in accordance with Figure 6.4.3-a. .

- Section 7.7.2 of the Manual addresses the need to provide 20-foot wide drainage easements for all storm drainage systems, open or closed, that fall outside the existing right-of-way or the drainage/utility easement. In accordance with this section, metes and bounds and total areas need to be shown for any drainage easements. The easements should be shown and noted on the record plan.

Department of Natural Resources and Environmental Control – Contact Michael Tholstrup 735-3352

Executive Summary.

Upon reviewing the Caesar Rodney School District project, DNREC has identified that the proposed project is located in an appropriate site with few environmental concerns. Opportunities still exist to reduce the environmental impact and provide additional energy efficiency alternatives on-site.

The proposed development will result in increased impervious surface and new sources of greenhouse gas emissions. The State of Delaware is threatened by climate change and has a goal of reducing greenhouse gas emissions by 30 percent by 2030. Appropriate development and re-development that provides access to public transportation, opportunities to walk and bike to schools, and that employs energy efficient building standards are among key strategies to meet these goals. We encourage the use of high performance building standards and consideration of alternative energy sources to promote clean sustainable energy and reduce greenhouse gas emissions. This could mean siting buildings to take advantage of solar and geothermal systems, and/or including infrastructure for electric vehicle charging stations. We further recommend an abundant use of native vegetation and shade trees throughout the landscape, as well as pervious pavement and green infrastructure, where practicable, to absorb carbon dioxide, protect water quality and provide relief to residents on hot days.

The following pages provide information about applicable regulations and detailed recommendations associated with this project, from various DNREC Divisions. We would like to be a partner in creating appropriate development that protects and highlights the environment as a natural amenity of the landscape. The Department has resources and expertise that are available to help make this a reality.

TMDLs.

- The project is located in the greater Delaware River and Bay drainage area, specifically within the St. Jones River watershed. In this watershed, the State of Delaware has developed specific Total Maximum Daily Load (TMDL) pollutant reduction targets for nitrogen, phosphorus, and bacteria (under the auspices of Section 303(d) of the Clean Water Act). The TMDL for the St. Jones River watershed calls for a 40 percent reduction in nitrogen and phosphorus from baseline conditions. The TMDL also calls for a 90 percent reduction in bacteria from baseline conditions. A TMDL is the maximum level of

pollution allowed for a given pollutant below which a “water quality limited waterbody” can assimilate and still meet State water quality standards (e.g., dissolved oxygen, nutrients, and bacteria; State of Delaware Surface Water Quality Standards, as amended July 11, 2004) to the extent necessary to support use goals such as, swimming, fishing, drinking water and shell fish harvesting.

Water Supply.

- The information provided indicates that Tidewater Utilities will be used to provide water to the proposed project through a central water system. However, our records indicate that the project is located within the public water service area granted to Artesian Water Company under Certificate of Public Convenience and Necessity 03-CPCN-10. We recommend that the developer contact Artesian Water Company to determine the availability of public water. 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 CPCN's and the application process can be obtained by contacting the Public Service Commission at (302) 736-7500.
- 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 take approximately four weeks to process, which allows the necessary time for technical review and advertising. Should you have any questions concerning these comments, please contact Rick Rios, at (302) 739-9944.

Sediment and Erosion Control/Stormwater Management.

- A detailed Sediment and Stormwater Management Plan must be approved prior to beginning construction. The plan must comply with the current Delaware Sediment and Stormwater Regulations.
- A Notice of Intent (NOI) for Stormwater Discharges Associated with Construction Activity must be submitted along with NOI fee to DNREC Division of Watershed Stewardship prior to Sediment and Stormwater Plan approval. Once the construction activity is complete, as-builts have been approved, and final stabilization is established on the site, a Notice of Termination (NOT) may be submitted to terminate permit coverage for the construction activity.
- Initially, a Stormwater Assessment Study (SAS) must be completed for the project site and submitted to DNREC Sediment and Stormwater Program. Once a complete SAS has been submitted, a project application meeting will be scheduled. At the project application meeting the methods for compliance with the Sediment and Stormwater Regulations will be discussed and submittal requirements, analysis points, and BMPs to pursue will be agreed upon.

Air Quality.

- The applicant shall comply with all applicable Delaware air quality regulations. Please note that the following regulations in Table 2 – Potential Regulatory Requirements may apply to your project:

Table 2: Potential Regulatory Requirements	
Regulation	Requirements
7 DE Admin. Code 1106 - Particulate Emissions from Construction and Materials Handling	<ul style="list-style-type: none"> • Use dust suppressants and measures to prevent transport of dust off-site from material stockpile, material movement and use of unpaved roads. • Use covers on trucks that transport material to and from site to prevent visible emissions.
7 DE Admin. Code 1113 – Open Burning	<ul style="list-style-type: none"> • Prohibit open burns statewide during the Ozone Season from May 1-Sept. 30 each year. • Prohibit the burning of land clearing debris. • Prohibit the burning of trash or building materials/debris.
7 DE Admin. Code 1135 – Conformity of General Federal Actions to the State Implementation Plan	<ul style="list-style-type: none"> • Require, for any “federal action,” a conformity determination for each pollutant where the total of direct and indirect emissions would equal or exceed any of the de minimus levels (See Section 3.2.1)
7 DE Admin. Code 1141 – Limiting Emissions of Volatile Organic Compounds from Consumer and Commercial Products	<ul style="list-style-type: none"> • Use structural/ paint coatings that are low in Volatile Organic Compounds. • Use covers on paint containers when paint containers are not in use.
7 DE Admin. Code 1144 – Control of Stationary Generator Emissions	<ul style="list-style-type: none"> • Ensure that emissions of nitrogen oxides (NO_x), non-methane hydrocarbons (NMHC), particulate matter (PM), sulfur dioxide (SO₂), carbon monoxide (CO), and carbon dioxide (CO₂) from emergency generators meet the emissions limits established. (See section 3.2). • Maintain recordkeeping and reporting requirements.
7 DE Admin. Code 1145 – Excessive Idling of Heavy Duty Vehicles	<ul style="list-style-type: none"> • Restrict idling time for trucks and buses having a gross vehicle weight of over 8,500 pounds to no more than three minutes.

For a complete listing of all Delaware applicable regulations, please look at our website:
<http://www.awm.delaware.gov/AQM/Pages/AirRegulations.aspx>.

Hazardous Waste.

- If it is determined by the Department that there was a release of a hazardous substance on the property in question and the Department requires remediation pursuant to the Hazardous Substance Cleanup Act, the provisions of 7 Del.C., Chapter 91, Delaware

Hazardous Substance Cleanup Act and the Delaware Regulations Governing Hazardous Substance Cleanup shall be followed.

Tank Management.

- If a release of a Regulated Substance occurs at the proposed project site, compliance with 7 Del.C., Chapter 60; 7 Del.C., Chapter 74; and DE Admin. Code 1351, State of Delaware *Regulations Governing Underground Storage Tank Systems* (the UST Regulations) is required.
- No environmental impacts are anticipated; however, per the UST Regulations: Part E, § 1. Reporting Requirements: Any indication of a Release of a Regulated Substance that is discovered by any Person, including but not limited to environmental consultants, contractors, utility companies, financial institutions, real estate transfer companies, UST Owners or Operators, or Responsible Parties shall be reported within 24 hours to:
 - The Department's 24-hour Release Hot Line by calling (800) 662-8802; and
 - The DNREC Tank Management Section by calling (302) 395-2500.

State Historic Preservation Office – Contact Terrence Burns 736-7404

- There is a known house and/or dwelling (K-3361) on the parcel towards Brairbush Road. If any development or project proceeds, the developer should be aware of the Unmarked Human Burials and Skeletal Remains Law, in Chapter 54, of Title 7, of the Delaware Code.

Abandoned or unmarked family cemeteries are very common in the State of Delaware. They are usually in rural or open space areas, and sometimes near or within the boundary of an historic farm site. Even a marked cemetery can frequently have unmarked graves or burials outside of the known boundary line or limit. Disturbing unmarked graves or burials triggers the Delaware's Unmarked Human Burials and Human Skeletal Remains Law (7 Del. C. Ch. 54), and such remains or discoveries can result in substantial delays while the procedures required under this law are carried out. If there is a discovery of any unmarked graves, burials or a cemetery, it is very costly to have them archaeologically excavated and the burials moved. The Division of Historical & Cultural Affairs recommends that owners and/or developers have a qualified archaeological consultant investigate their project area, to the full extent, to see if there is any unmarked cemetery, graves, or burial sites. In the event of such a discovery, the Division of Historical & Cultural Affairs also recommends that the plans be re-drawn to leave the full extent of the cemeteries or any burials on its own parcel or in the open space area of the development, with the responsibility for its maintenance lying with the landowner association or development. If you would like to know more information pertaining to unmarked human remains or cemeteries, please go to the following websites for additional information: www.history.delaware.gov/preservation/umhr.shtml and www.history.delaware.gov/preservation/cemeteries.shtml.

Therefore, prior to any demolition or ground-disturbing activities, the developer should hire an archaeological consultant, to examine the parcel for archaeological resources and plan to avoid those areas. The developer should include sufficient landscaping or barrier between the house (K-3361) and development, in order to protect the house, from adverse noise and visual effects.

- If there is any federal involvement with the project, in the form of licenses, permits, or funds, the federal agency through its client, is responsible for complying with Section 106 of the National Historic Preservation Act (36 CFR 800) and must consider their project's effects on any known or potential cultural or historic resources. Owners and developers who may plan to apply for an Army Corps of Engineers permit or for federal funding, such as HUD or USDA grants, should be aware of the National Historic Preservation Act of 1966 (as amended). Regulations promulgated for Section 106 of this Act stipulate that no ground-disturbing or demolition activities should take place before the Corps or other involved federal agency determines the area of potential effect of the project undertaking. These stipulations are in place to allow for comment from the public, the Delaware State Historic Preservation Office, and the Advisory Council for Historic Preservation about the project's effects on historic properties. Furthermore, any preconstruction activities without adherence to these stipulations may jeopardize the issuance of any permit or funds. If you need further information or additional details pertaining to the Section 106 process and the Advisory Council's role, please review the Advisory Council's website at www.achp.gov.

Recommendations/Additional Information

This section includes a list of site specific suggestions that are intended to enhance the project. These suggestions have been generated by the State Agencies based on their expertise and subject area knowledge. **These suggestions do not represent State code requirements.** They are offered here in order to provide proactive ideas to help the applicant enhance the site design, and it is hoped (**but in no way required**) that the applicant will open a dialogue with the relevant agencies to discuss how these suggestions can benefit the project.

Delaware Department of Transportation – Contact Bill Brockenbrough 760-2109

- The applicant should expect a requirement that any substation and/or wastewater facilities will be required to have access from an internal driveway with no direct access to Briarbush Road or Banning Road.
- The applicant should expect a requirement that all PLUS and Development Advisory Committee (DAC) comments be addressed prior to submitting plans for review.
- Please be advised that DelDOT adopted an update of the Development Coordination Manual effective April 11, 2016. While in most respects, the changes are incremental, they are located throughout the Manual and could have some effect on the entrance designs.

- Please be advised that as of August 1, 2015, all new plan submittals and re-submittals, including major, minor and commercial plans, shall now be uploaded via the PDCA (Planning Development Coordination Application) with any review fee paid online via credit card or electronic check. Guidance on how to do this is available on our website at <http://www.deldot.gov/information/business/subdivisions/>
- Be advised that the Standard General Notes have been updated and posted to the DeIDOT website. Please begin using the new versions and look for the revision date of July 20, 2016. The notes can be found at http://www.deldot.gov/information/business/subdivisions/Sheet_Notes.doc?052316.

Department of Natural Resources and Environmental Control – Contact Michael Tholstrup 735-3352

Soils Assessment.

- Based on soils survey mapping update, the named soils mapping units mapped on subject parcel are Sassafra (SaA, SaB, & SfB) and Downer (DoA). Both of these soil mapping units are well-drained and, generally, have few limitations for development.

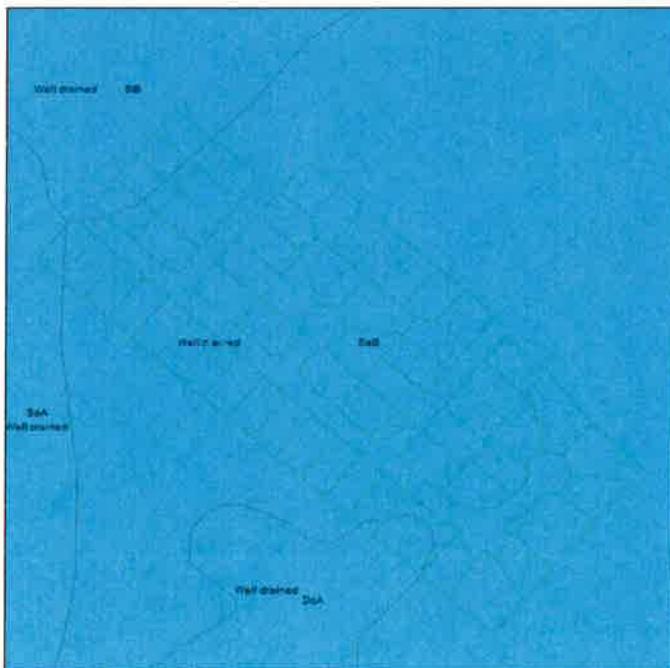
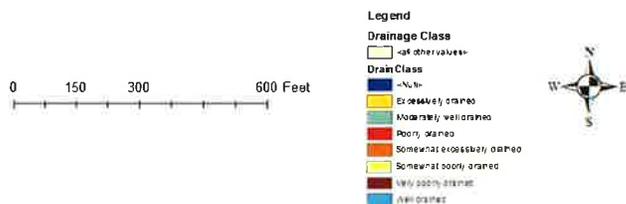


Figure 1. NRCS soil survey mapping update in the immediate vicinity of the proposed construction



Additional information on TMDLs and water quality.

- A Pollution Control Strategy (PCS) to achieve the required TMDL nutrient and bacterial load reduction requirements has been established for the St. Jones watershed. The web link for the St. Jones PCS strategies is as follows:
<http://www.dnrec.delaware.gov/swc/wa/Pages/WatershedManagementPlans.aspx>
- In support of the PCS, the applicant is strongly urged to reduce nutrient and bacterial pollutants through voluntary commitment to the implementation of the following recommended BMPs:
 - Preserve and/or maintain as much of the existing open space as possible; we further suggest additional native tree, shrub and/or native herbaceous vegetation plantings, wherever possible.
 - Calculate post-construction surface imperviousness with all forms of created (or constructed) surface imperviousness (e.g., rooftops, driveways, parking lots, sidewalks, open-water storm water management structures, ponds, and roads) included in the calculation. Omission of any of the above-stated forms of surface imperviousness will result in an underestimate of the actual post-development surface imperviousness and the associated environmental impacts.
 - Employ green-technology storm water management and a rain gardens (in lieu of open-water management structures) as BMPs to mitigate or reduce nutrient and bacterial pollutant runoff. Please contact Lara Allison at (302) 739-9939 for further information about the possibility for installing rain gardens on this parcel.
 - Use pervious paving materials (when compatible with concerns for the protection of excellent recharge areas and/or well-head protection areas via assessment by a DNREC hydrogeologist) instead of conventional paving materials, like asphalt or concrete. This serves to reduce the amount of water and pollutant runoff draining to adjoining streams and wetlands. Pervious pavers are especially recommended for areas designated for parking.
 - Assess nutrient and bacterial pollutant loading at the preliminary project design phase. To this end, the Watershed Assessment Section has developed a methodology known as the “Nutrient Load Assessment protocol.” The protocol is a tool used to assess changes in nutrient loading (e.g., nitrogen and phosphorus) resulting from the conversion of individual or combined land parcels to a changed land use; thus providing applicants and governmental entities with quantitative information about the project’s impact(s) on baseline water quality. We strongly encourage the applicant/developer use this protocol to help design and implement the most effective BMPs. Please contact John Martin or Jen Walls in the Division of Watershed Stewardship, at (302) 739-9939, for more information on the protocol.

Additional information on tank management.

- When contamination is encountered, PVC pipe materials should be replaced with ductile steel and nitrile rubber gaskets in the contaminated areas.
- If any aboveground storage tanks (ASTs) less than 12,500 gallons are installed, they must be registered with the TMS. If any ASTs greater than 12,500 gallons are installed, they are also subject to installation approval by the TMS.
- The Tank Management Section encourages the use of BMPs in considering all environmental effects of activities and implementation and incorporating options to minimize the environmental footprints of activities.
- For more information, please visit online:
<http://www.dnrec.delaware.gov/tanks/Pages/default.aspx> or contact Ross D. Elliott at DNREC-TMS with further questions at (302) 395-2500, or Ross.Elliott@state.de.us

Additional information on hazardous waste sites.

- DNREC strongly recommends that the land owner perform environmental due diligence of the property by performing a Phase I Environmental Site Assessment (including a title search to identify environmental covenants) in accordance to Section 9105(c) (2) of the Delaware Hazardous Substance Cleanup Act (HSCA). While this is not a requirement under HSCA, it is good business practice and failure to do so will prevent a person from being able to qualify for a potential affirmative defense under Section 9105(c) (2) of HSCA.
- Additional remediation may be required if the project property or site is re-zoned by the county.
- 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. SIRS should also be contacted as soon as possible at (302) 395-2600 for further instructions.

Additional information on air quality.

- DNREC is pleased to see proposed sidewalks and bike paths in the plan. There is an opportunity to connect these sidewalks and bike paths to a larger bicycle and pedestrian network. We encourage the applicant to pursue partnerships that would help create such a pedestrian and bicycle path network. Safe walking and biking paths can encourage both children and adults to get out of their cars and be more active which has significant health benefits for the community. Reducing dependency on vehicular travel also reduces vehicle miles traveled which benefits air pollution and greenhouse gas emissions.
- DNREC encourages developers and builders to consider all sustainable growth practices in their design, and we believe that the air quality impacts associated with the project should be completely considered. New homes and businesses may emit, or cause to be emitted, additional 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;
 - The emission of greenhouse gases which are associated with climate change, and
 - The emission of air toxics.
- Air emissions generated from new homes and businesses include emissions from the following activities:
 - Area sources such as painting, maintenance equipment and the use of consumer products like roof coatings and roof primers.
 - The generation of electricity, and
 - All transportation activity.
 - Based on the information provided, the three air emissions components (i.e., area, electric power generation, and mobile sources) were quantified. Table 2 – Projected Air Quality Emissions represents the actual impact the New Caesar Rodney Elementary School may have on air quality.

Table 2: Projected Air Quality Emissions for New Caesar Rodney Elementary School (Based on projected estimate of 774 trips during peak season)					
Emissions Attributable to Middletown Square (Tons per Year)	Volatile Organic Compounds (VOC)	Nitrogen Oxides (NOx)	Sulfur Dioxide (SO ₂)	Fine Particulate Matter (PM _{2.5})	Carbon Dioxide (CO ₂)
Mobile emissions	2.570841	3.39012	*	*	*

(*) Indicates data is not available.

Note that emissions associated with the actual construction of the apartment community, 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.

- DNREC encourages sustainable growth practices that:
 - Control sprawl;
 - Preserve rural and forested areas;
 - Identify conflicting land use priorities;
 - Encourage growth on previously developed sites and denser communities while at the same time protect our diminishing land base;
 - Coordinate transportation, housing, environment, and climate protection plans with land use plans; and
 - Demonstrate that communities can achieve the qualities of privacy, community, and contact with nature without degrading the natural environment or generating unacceptable environmental costs in terms of congestion, use of natural resources, or pollution.
- Additional measures may be taken to substantially reduce the air emissions identified above. These measures include:

- **Constructing with only energy efficient products.** Energy Star qualified products are up to 30 percent more energy efficient. 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 energy efficiency translates into a percent reduction in pollution. The Energy Star Program is an 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.
 - **Constructing with high albedo, high solar reflectance materials.** This includes roofing and hardscape. These materials help to reduce heat island impacts and, by extension, help to minimize the potential for localized ground-level ozone formation. These materials also help reduce demands on air conditioning systems and save on energy costs.
 - **Providing shade for parking areas.** Approaches may include architectural devices, vegetation, or solar panels. Providing shade for parking areas helps to reduce heat island impacts, and, by extension, helps to minimize the potential for localized ground-level ozone formation. Such measures can also have the additional benefit of channeling or infiltrating stormwater.
 - **Providing charging stations for plug-in electric vehicles.** This measure helps to reduce localized air pollution by supporting the use of non-gasoline powered vehicles. Please refer to the US Department of Energy's website for electric vehicle readiness information:
http://www1.eere.energy.gov/cleancities/electric_vehicle_projects.html. Several charging stations exist nearby in Millsboro, Lewes, and Rehoboth Beach.
 - **Encouraging the use of safe multimodal transportation.** This measure can significantly reduce mobile source emissions. For every vehicle trip that is replaced by the use of a sidewalk or bike path, 7 pounds of VOC and 11.5 pounds of NOx are reduced each year.
 - **Planting trees in vegetative buffer areas.** Native trees reduce emissions by trapping dust particles and 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
- This is a partial list, and there are additional things that can be done to reduce the impact of the development. The applicant should contact the DNREC Division of Air Quality (DAQ) to discuss the above listed measures, and the specific emission mitigation measures that can be incorporated into the New Caesar Rodney Elementary School project. The DAQ point

of contact is Lauren DeVore, and she may be reached at (302) 739-9437 or lauren.devore@state.de.us.

Department of Education-Contact James Penewell 857-3392

- The DOE will continue to work with the district, architect, site engineer, municipal government and various state agencies regarding the project. The DOE reserves the right to provide continued and on-going comments and input as the project develops.

Approval Process

School sites must be approved by the Secretary of Education, the Director of OMB, and the Director of the Office of State Planning Coordination. The *Strategies for State Policies and Spending*, the information contained within this PLUS letter and other factors will be considered when the Secretary and the two Directors make the determination about whether or not to approve a school site.

Once the District decides on a school site or sites to pursue for approval, the district must submit a letter requesting approval of the site(s) to the Department of Education. The letter should be directed to the DOE staff responsible for the capital program. The letter should contain a tax parcel ID #, PLUS review #, and all relevant information regarding the site and the proposed school.

Once a school site has been selected and approved, and the site plan for the school has been designed, a new PLUS review will be required prior to submission of the plan to the local government if the site plan substantially deviates from the concept site plan included with this PLUS application.

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

Sincerely,



Constance C. Holland, AICP
Director, Office of State Planning Coordination

CC: Kent County

Attachment

May 31, 2005

Mr. Michael J. Petit de Mange
Director of Planning
Department of Planning Services
Kent County Administration Building
414 Federal Street, Room 320
Dover, DE 19901

Dear Mr. Petit de Mange:

The attached Traffic Impact Study (TIS) review letter for the **Barrett Farm** subdivision has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TIS to conform to DelDOT's Rules and Regulations for Subdivision Streets and other accepted practices and procedures for such studies. DelDOT accepts this TIS review and concurs with the recommendations. We are providing it to you for your information in your review of the plans for the subject development. If you have any questions concerning this letter or the attached review letter, please contact me at (302) 760-2134.

Sincerely,

Todd J. Sammons
Project Engineer

TJS:rr

Enclosures

cc with enclosures: Ms. Constance C. Holland, Office of State Planning Coordination
Mr. Paul Gutmann, Karins and Associates
Mr. Mark Luszcz, McCormick Taylor
Mr. Brad Herb, Johnson, Mirmiran & Thompson
DelDOT Distribution

DelDOT Distribution

Nathan Hayward III, Secretary of Transportation
Frederick H. Schranck, Deputy Attorney General
Darrel Cole, Chief of Community Relations, Public Relations
Carolann D. Wicks, Director, Transportation Solutions (DOTS)
Ralph A. Reeb, Director, Division of Planning
Robert F. Carver, Jr., Pipeline Manager
Michael H. Simmons, Assistant Director, Project Development South, DOTS
Donald D. Weber, Assistant Director, Traffic, DOTS
Joseph Cantalupo, Assistant Director, Statewide & Regional Planning
Gregory P. Oliver, Assistant Director, Statistics, Research and Special Programs
Theodore G. Bishop, Assistant Director, Development Coordination
Thomas E. Meyer, Traffic Studies Manager, Traffic, DOTS
William J. Dryden, Transportation Planner, Project Development South, DOTS
Wayne M. Henderson, Service Development Planner, Delaware Transit Corporation
Drew A. Boyce, Subdivision Engineer, Development Coordination
T. William Brockenbrough, Jr., County Coordinator, Development Coordination

May 31, 2005

Mr. Todd J. Sammons
Project Engineer
DelDOT Division of Planning
P.O. Box 778
Dover, DE 19903

RE: Agreement No. 1294
Traffic Impact Study Review Services
Task No. 32 – Barrett Farm

Dear Mr. Sammons,

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for Barrett Farm prepared by Karins and Associates (Karins), dated March 2005. This review was assigned as Task Number 32. Karins prepared the report in a manner generally consistent with DelDOT's *Rules and Regulations for Subdivision Streets*.

The TIS evaluates the impacts of Barrett Farm, consisting of 350 single-family homes on approximately 130 acres of land in Kent County, Delaware. The developer has proposed two unsignalized access points, one on Banning Road (Kent Road 366) and one on Briarbush Road (Kent Road 367), which would serve the development. The analysis has assumed a 2009 completion date.

Currently, DelDOT is conducting a planning study along South State Street (US 113A), from Delaware Route 1 to Lebanon Road (Delaware Route 10) titled the "South State Street Land Use and Transportation Plan." Some of the issues to be addressed by the study include signalization needs, intersection improvements, potential new connections to Delaware Route 1, and the timing of potential improvements. There are currently no recommendations from the study.

Based on our review of the TIS, we have the following comments and recommendations.

The Banning Road approach at the intersection of South State Street (US 113A) and Banning Road exhibits level of service deficiencies for 2009 projected traffic conditions with the proposed development.

Should the County choose to approve the proposed development, the following items should be incorporated into the site design, should be reflected on the record plan and should be completed during or prior to the first phase of subdivision street construction:

1. The developer should be required to improve Banning Road from Briarbush Road to South State Street to meet DelDOT local road standards as nearly as possible within the

available right-of-way. These improvements should include two eleven-foot travel lanes and two five-foot shoulders.

2. The developer should be required to improve Briarbush Road from Banning Road to Walnut Shade Road (Kent Road 30) to meet DeIDOT local road standards as nearly as possible within the available right-of-way. These improvements should include two eleven-foot travel lanes and two five-foot shoulders.
3. The following bicycle and pedestrian improvements should be included:
 - a. A five-foot bicycle lane should be striped through each of the developments' entrances (in addition to any required turn lanes) in order to facilitate safe and unimpeded bicycle travel.
 - b. Utility covers should be moved outside of any potential bicycle lane or be flush with the pavement.
 - c. Internal sidewalks should be installed within the development.
 - d. A minimum of a ten-foot multi-use path (with a minimum ten foot buffer from the roadway) should be included along the site frontage of the proposed development on both Banning Road and Briarbush Road.

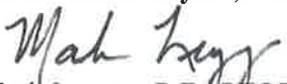
The following item should be incorporated into the site design, should be reflected on the record plan and should be completed prior to the issuance of building permits for the residential units:

4. The developer should enter into a traffic signal agreement with DeIDOT for the intersection of South State Street and Banning Road. The agreement should include pedestrian signals, crosswalks, and interconnection at DeIDOT's discretion.

Please note that this review generally focuses on capacity and level of service issues; additional safety and operational issues will be further addressed through DeIDOT's subdivision review process.

Additional details on our review of this TIS are attached. Please contact me at (302) 738-0203 or through e-mail at mluszcz@mtmail.biz if you have any questions concerning this review.

Sincerely,
McCormick Taylor, Inc.


Mark Luszcz, P.E., PTOE, AICP
Associate

Enclosures

Barrett Farm

May 31, 2005
Page 2

General Information

Report date: March, 2005

Prepared by: Karins and Associates

Prepared for: Intersect Development Corporation, LLC.

Tax parcel: 7-00-10400-01-6800-00001

Generally consistent with DelDOT's Rules and Regulations for Subdivision Streets: Yes.

Project Description and Background

Description: Development of 350 single-family homes

Location: Barrett Farm development is proposed to be south of the Whispering Pines Development and bounded on the south by Banning Road and to the East by Briarbrush Road

Amount of land to be developed: 130 acres

Land use approval(s) needed: No re-zoning would be necessary for this proposed development. The property is currently zoned AC.

Proposed completion date: 2009

Proposed access locations: One proposed access along Briarbrush Road (across from the existing Country Field access) and one four-way intersection along Banning Road.

Livable Delaware

(Source: Delaware Strategies for State Policies and Spending, July 2004)

Location with respect to the Strategies for State Policies and Spending Map of Delaware:

The proposed location of Barrett Farm is located within Investment Level 2 and in the Kent County Growth Zone.

Description of Investment Level:

Investment Level 2:

These areas, generally adjacent to Investment Level 1 Areas, include less developed areas within municipalities, rapidly growing areas that have or will have public water and wastewater services, and may include smaller towns, rural villages, and suburban areas. These areas typically include single-family detached housing developments, commercial and office uses serving primarily local residents, and a limited range of entertainment, parks and recreation, cultural and institutional facilities.

In Investment Level 2 Areas, state investments and policies should be based on available infrastructure to accommodate orderly growth, encourage departure from the typical single-family-dwelling developments, promote a broader mix of housing types and commercial sites, and encourage development that is consistent with the character of the area. Transportation projects should expand or provide roadways, public transportation, pedestrian walkways, bicycle paths, and other transportation modes that manage flow, support economic development efforts, and encourage connections between communities and the use of local streets for local trips.

Proposed Development's Compatibility with Livable Delaware:

According to Livable Delaware, uses of land located within Investment Level 2 include less developed areas within municipalities and typically include single-family dwellings. In addition the proposed development is also located within Kent County's Growth Zone. Therefore this proposed development is generally consistent with Livable Delaware's "State Strategies for State Policies and Spending".

County Comprehensive Plan

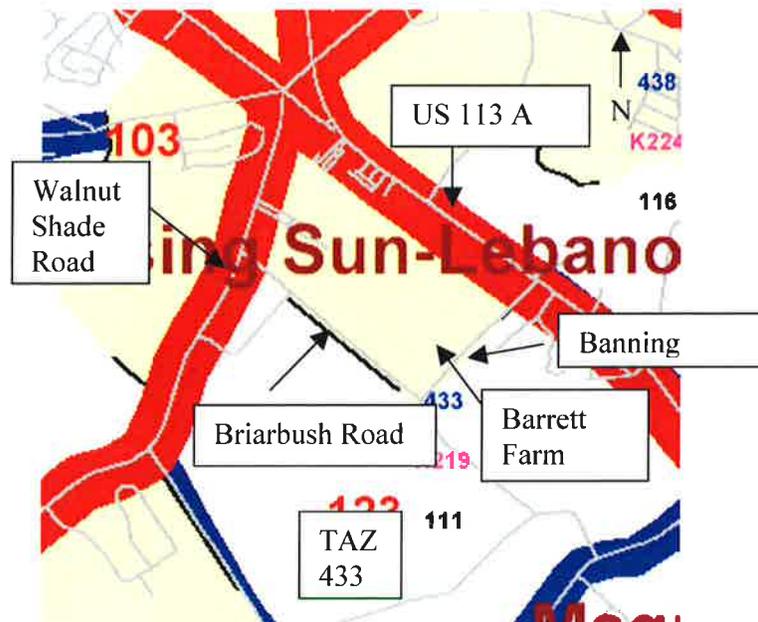
The proposed development is located within Kent County boundaries.

Kent County Comprehensive Plan: *(Source: Kent County 2002 Comprehensive Plan)* The proposed development is located in an area designated as low density (1 – 2.9 dwelling units per acre). For areas designated as a growth zone, two units per acre are allowed.

Proposed Development's Compatibility with Comprehensive Plans: The proposed development is consistent with Kent County's Comprehensive Plan.

Transportation Analysis Zones (TAZ) where development would be located: 433 (Peninsula Code designation).

TAZ Boundaries:



Current employment estimate for TAZs: 74 jobs in 2000

Future employment estimate for TAZs: 95 jobs in 2030

Current population estimate for TAZs: 902 people in 2000

Future population estimate for TAZs: 1295 people in 2030

Current household estimate for TAZs: 346 houses in 2000

Future household estimate for TAZs: 488 houses in 2030

Relevant committed developments in the TAZs: Country Field

Would the addition of committed developments to current estimates exceed future projections: No

Would the addition of committed developments and the proposed development to current estimates exceed future projections: Yes

Relevant Projects in the DelDOT Capital Transportation Program (2005-2010)

DelDOT is currently studying US 113A (South State Street) from Delaware Route 1 (Little Heaven) to Lebanon Road (SR 10) to identify needed improvements along the corridor. This study is being performed with the Dover/Kent County Metropolitan Planning Organization (MPO). Based on Karins' conversation with Mr. Bruce Allen of DelDOT, an advisory committee is looking at the projected number of dwelling units within the area as well as the future traffic volumes for the years 2025 to 2030. Mr. Allen explained that one of the goals of

this study is to implement a monitoring system that would be tied to the increasing average daily traffic (ADT) volumes. When a predetermined threshold of ADT volume is met, a detailed intersection study detailing specific improvements, would follow. No committee recommendations are available at this time. However, some examples of what the committee is expected to review includes the following:

- Evaluation of the existing unsignalized intersections to determine if these intersections might require a signal in the future.
- Review if additional connections to Route 1 will be necessary if so, where these connections could take place.
- Review any intersection improvements that may be necessary in the future due to increased traffic.

Trip Generation

Trip generation for the proposed development was computed using comparable land uses and equations contained in Trip Generation, Seventh Edition, published by the Institute of Transportation Engineers (ITE). Land Use Code 210 (single family detached homes) was utilized to estimate the amount of new traffic generated for the proposed development of the Riverside Plaza:

- 350 single family detached homes (ITE code 210)

Table 1. Trip Generation

Land Use 210 – Single Family Homes	Morning Peak Hour			Evening Peak Hour		
	In	Out	Total	In	Out	Total
350 Single Family Detached Homes	64	190	254	209	122	331
TOTAL	64	190	254	209	122	331

Overview of TIS

Intersections examined:

- 1) South State Street & Banning Road/Golden Oak Drive
- 2) Walnut Shade Road & Briarbush Road
- 3) Banning Road & Briarbush Road
- 4) Banning Road/Country Field Access & East/West proposed site access
- 5) Briarbush Road & North/South Proposed Site Access

Conditions examined:

- 1) 2004 existing conditions
- 2) 2009 with committed developments
- 3) 2009 with committed developments and completion of the Barrett Farm development

Peak hours evaluated: weekday morning and evening peak hours

Committed developments considered:

- Country Field (60 Single Family Detached Units)

Intersection Descriptions

South State Street & Banning Road:

Type of Control: unsignalized t-intersection

Eastbound approach: (South State Street) one shared thru/left lane and one right turn lane.

Westbound approach: (South State Street) one shared thru/left lane and one bypass lane.

Northbound approach: (Banning Road) one stop-controlled shared left /thru/right lane.

Southbound approach: (Golden Oak Drive) private drive with low volume directly across from Banning Road

Walnut Shade Road & Briarbush Road:

Type of Control: unsignalized t-intersection

Westbound approach: (Briarbush Road) one stop-controlled shared left /thru/right lane.

Northbound approach: (Route 24) one shared thru/right-turn lane.

Southbound approach: (Route 24) one shared thru/left-turn lane.

Banning Road & Briarbush Road:

Type of Control: unsignalized t-intersection

Eastbound approach: (Briarbush Road) one shared thru/left lane.

Westbound approach: (Briarbush Road) one shared thru/right lane.

Southbound approach: (Banning Road) one stop-controlled shared left-turn/thru/right-turn lane.

Banning Road & East/West Site Access:

Type of Control: future two-way stop controlled intersection

Eastbound approach: (Barrett Farm Site Access) proposed stop-controlled shared left /thru/right lane.

Westbound approach: (Country Field Site Access) proposed stop-controlled shared left/thru/right lane.

Northbound approach: (Banning Road) one shared left /thru/right lane.

Southbound approach: (Banning Road) one shared left /thru/right lane.

Briarbush Road & North/South Site Access:

Type of Control: future two-way stop controlled intersection

Eastbound approach: (Briarbush Road) one shared left /thru/right lane.

Westbound approach: (Briarbush Road) one shared left /thru/right lane.

Northbound approach: (Barrett Farm Site Access) proposed stop-controlled shared left /thru/right lane.

Southbound approach: (Barrett Farm Site Access) proposed stop-controlled shared left-turn/thru/right lane.

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: There is currently no existing transit service in the area surrounding the proposed project; however, bus service is available via the park and ride located at Moores Lake Shopping Center to the north of the study area.

Planned transit service: Karins contacted Mr. Wayne Henderson who indicated that there are no plans for additional bus stops or new bus routes.

Existing bicycle and pedestrian facilities: According to the Delaware Bicycle Touring Map for Kent and Sussex Counties, Briarbush Road, Banning Road and South State Street are all listed as having above average cycling conditions. Walnut Shade is identified as having average cycling conditions. Although these conditions are listed as average or above average, Banning Road, Briarbush Road and Walnut Shade road do not have paved shoulders and therefore there is limited pavement available for a vehicle to share with a bicycle. There are no pedestrian facilities currently found at the study intersection or along the frontage of either roadway bordering the property.

Planned bicycle and pedestrian facilities: Barrett Farm development would fall within Investment Level 2 on the Strategies for State Policies and Spending Map. As consistent with developments located within Investment Level 2, bicycle lanes should be designed with a minimum 5 foot width shoulder striped through the frontage of the development in order to facilitate safe and unimpeded bicycle travel. Connections to the existing pedestrian networks should be provided as well as internal sidewalks within the development. A five-foot sidewalk should be included along the frontage of the subject development.

Previous Comments

All comments from DeIDOT's preliminary TIS review letter were addressed in the Final TIS submission.

HCS Analysis Comments

South State Street & Banning Road

- 1) McCormick Taylor calculated slightly different truck percentages in the AM peak hour than the TIS used.
- 2) McCormick Taylor did not program in a percent grade on the Banning Road approach, the TIS had a -1% grade along Banning Road.
- 3) The TIS did not analyze this alternative with a signal because it was not warranted based on peak hour volumes; however since McCormick Taylor is recommending a signal agreement for this intersection, it was analyzed with a signal.

Walnut Shade Road & Briarbush Road

No comments.

Briarbush Road and Banning Road

No comments.

Banning Road & North/South Site Access

No comments.

Briarbush Road & East/West Site Access

No comments.

Table 2
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Barrett Farm Development
Report dated March, 2005
Prepared by Karins and Associates

Unsignalized Intersection ¹	LOS per TIS		LOS per McCormick Taylor Review	
	Weekday AM	Weekday PM	Weekday AM ²	Weekday PM ³
South State Street & Banning Road				
2004 Existing				
NB Banning Road Approach	D (29.7)	C (23.3)	D (29.6)	C (23.4)
EB State Street Left	A (8.5)	A (9.3)	A (8.5)	A (9.3)
2009 Without Site Development				
NB Banning Road Approach	D (29.4)	D (29.6)	D (29.0)	D (29.6)
EB State Street Left	A (8.5)	A (9.7)	A (8.5)	A (9.7)
2009 With Site Development				
NB Banning Road Approach	F (68.0)	F (68.1)	F (65.6)	F (69.0)
EB State Street Left	A (8.6)	B (10.4)	A (8.6)	B (10.4)

Signalized Intersection ¹	LOS per TIS		LOS per McCormick Taylor Review	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
South State Street & Banning Road				
2009 With Site Development ⁴	--	--	B (0.73)	B (0.62)

¹ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analysis, those numbers are X-critical, a composite volume-to-capacity ratio.

² McCormick Taylor calculated slightly different truck percentages in the AM peak hour than the TIS used.

³ McCormick Taylor did not program in a percent grade on the Banning Road approach, the TIS had a -1% grade along Banning Road.

⁴ The TIS did not analyze this alternative with a signal because it was not warranted based on peak hour volumes; however since McCormick Taylor is recommending a signal agreement for this intersection, it was analyzed with a signal.

Table 3
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Barrett Farm Development
Report dated March, 2005
Prepared by Karins and Associates

Unsignalized Intersection ⁵	LOS per TIS		LOS per McCormick Taylor Review	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Walnutshade Road & Briarbush Road				
2004 Existing				
SB Walnut Shade Road Left	A (7.7)	A (7.7)	A (7.7)	A (7.7)
WB Briarbush Road Approach	B (10.5)	B (11.7)	B (10.5)	B (11.7)
2009 Without Site Development				
SB Walnut Shade Road Left	A (7.8)	A (7.8)	A (7.8)	A (7.8)
WB Briarbush Road Approach	B (10.5)	B (12.2)	B (10.5)	B (12.2)
2009 With Site Development				
SB Walnut Shade Road Left	A (7.8)	A (8.0)	A (7.8)	A (8.0)
WB Briarbush Road Approach	B (11.6)	B (13.8)	B (11.6)	B (13.8)

⁵ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analysis, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 4
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Barrett Farm Development
Report dated March, 2005
Prepared by Karins and Associates

Unsignalized Intersection ⁶	LOS per TIS		LOS per McCormick Taylor Review	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Briarbush Road and Banning Road				
2004 Existing				
SB Banning Road Approach	A (9.0)	A (9.2)	A (9.0)	A (9.2)
EB Briarbush Road Left	A (7.4)	A (7.3)	A (7.4)	A (7.3)
2009 Without Site Development				
SB Banning Road Approach	A (8.9)	A (9.1)	A (8.9)	A (9.1)
EB Briarbush Road Left	A (7.4)	A (7.4)	A (7.4)	A (7.4)
2009 With Site Development				
SB Banning Road Approach	A (9.2)	A (9.2)	A (9.2)	A (9.2)
EB Briarbush Road Left	A (7.5)	A (7.4)	A (7.5)	A (7.4)

⁶ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analysis, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 5
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Barrett Farm Development
Report dated March, 2005
Prepared by Karins and Associates

Unsignalized Intersection ⁷	LOS per TIS		LOS per McCormick Taylor Review	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Banning Road & North/South Site Access				
2009 Without Site Development				
SB Banning Road Left	A (7.3)	A (7.3)	A (7.3)	A (7.3)
WB Country Field Access	A (8.7)	A (8.8)	A (8.7)	A (8.8)
2009 With Site Development				
NB Banning Road Left	A (7.3)	A (7.5)	A (7.3)	A (7.5)
SB Banning Road Left	A (7.4)	A (7.4)	A (7.4)	A (7.4)
EB Barrett Farm Access	B (10.0)	B (10.7)	B (10.0)	B (10.7)

⁷ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analysis, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 6
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Barrett Farm Development
Report dated March, 2005
Prepared by Karins and Associates

Unsignalized Intersection ⁸	LOS per TIS		LOS per McCormick Taylor Review	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Briarbush Road & East/West Site Access				
2009 With Site Development				
NB Barrett Farm Access Approach	A (9.5)	B (10.1)	A (9.5)	B (10.1)
SB Barrett Farm Access Approach	A (9.1)	A (8.9)	A (9.1)	A (8.9)
EB Briarbush Road Left	A (7.4)	A (7.4)	A (7.4)	A (7.4)
WB Briarbush Road Left	A (7.3)	A (7.5)	A (7.3)	A (7.5)

⁸ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analysis, those numbers are X-critical, a composite volume-to-capacity ratio.