

# WHITTAKER'S MILL

## A PLANNED RESIDENTIAL COMMUNITY IN YORK COUNTY

**Busch Properties, Inc.  
Mid-Atlantic Communities, LLC**

PLANNING COMMISSION  
YORK COUNTY

JUL 1 2014

### **COMMUNITY IMPACT ASSESSMENT Project Narrative and Executive Summary**

PLANNING COMMISSION

Busch Properties, Inc. is the owner of several parcels of land located at the Interstate 64-Route 199 interchange, in proximity to The Marquis, Water Country USA, and Cheatham Annex. Much of this property has remained undeveloped due to its lack of commercial visibility and challenging topography. In September, 2013, the York County Board of Supervisors placed a mixed-use overlay over this property in recognition of the need for new residents to support the existing commercial development and to create the necessary synergy that will allow this interchange to realize its potential as one of York County's economic priority areas.

Mid-Atlantic Communities is planning a unique residential community on one of these parcels that will satisfy these County objectives by providing the following benefits to York County:

- Provide a range of housing types that appeal to all segments of the market
- Provide ample recreational opportunities for the residents;
- Complement the housing choices to be offered at the Marquis;
- Provide additional disposable income to support existing commercial development in the area;
- Provide for alternative road access from Route 199 to Penniman Road in accordance with York County transportation plans, while simultaneously providing future retail development opportunities as the market dictates;
- Protect the environment by locating low density estate lots and a large nature park adjacent to the Chesapeake Bay Resource Protection buffers; and
- Minimize the proximity of housing along the property's limited boundary with Cheatham Annex.

This project narrative describes the project, introduces the professional design and consulting team and provides a summary of the various issues that the County staff, Planning Commission and Board of Supervisors may take into account in considering any such proposal for a new planned residential community.

## **COMMUNITY DESIGN**

Whittaker's Mill has been designed by Brandon Currence Architects, a pioneer in creating livable communities in Hampton Roads. The design for Whittaker's Mill combines the efficiency and in-town feel of a townhome community oriented toward an open town square at the front of the community while working with the existing topography to create both traditional single family lots and estate lots with dramatic wooded ravine views.

Both the town square and the neighborhood clubhouse and pool provide focal points for community social activities. The town square is located off one of the two main entrances into the community, and the clubhouse and pool enjoy a view of the largest pond in the community, which will be enhanced with a fountain for both aesthetic and water quality benefits.

There is an additional, neighborhood park and playground centrally located within the single family area to provide yet another active recreational amenity within Whittaker's Mill. Sidewalks throughout the community provide easy access to all amenities as well as a way for the residents to enjoy the daily walks that are the most preferred form of exercise in America.

Community garden plots are creatively located within an existing Virginia Power easement, with the benefits of enhancing the appearance of this otherwise wasted space and providing an opportunity for neighbors to share in the gardening experience.

Rounding out the amenity package in Whittaker's Mill is a large, approximately 5-acre nature park that is accessed via a walkway across a wooded ravine. By preserving this area in its natural state, the park provides important environmental as well as recreational and view-shed benefits to the community.

## **CONSISTENCY WITH PDR ORDINANCE STANDARDS**

Whittaker's Mill has been designed to comply with the General Dimensional, density and design requirements of the Planned Development – residential district with very few deviations. Minimum lot widths and distances between buildings meet or exceed PDR standards.

The plan includes a combination of rear-loaded and front-loaded townhouse products with widths that vary from 20 to 28 feet. The actual townhouse mix will evolve based on market demand. For rear loaded townhomes, a reduction in the front yard setback from 20 feet to 15 feet is requested to give these units, especially those around the town square, more of an in-town feel.

All of the open space and recreational acreage standards are met by the Whittaker's Mill plan. The actual size and configuration of the swimming pool has yet to be determined. There are no plans to build tennis courts, which are not widely used and which serve to add impervious surface. The absence of tennis courts is more than compensated for by the existence of the town square, the park/playground in the single family community, the nature park and the community gardens.

A professionally managed homeowners' association will be established and will ensure the perpetuation and maintenance of the common areas, active and passive recreational amenities and any private streets that may be included within the townhome community.

## **COMMUNITY IMPACT ASSESSMENT – EXECUTIVE SUMMARY**

In accordance with the provisions of the York County Zoning Ordinance, a Community Impact Assessment has been prepared for the Whittaker's Mill application. Supporting texts are included in the application package.

### **Environmental and Historic Protection**

Enclosed is an environmental site assessment prepared by Kerr Environmental Services Corporation. This report details the extensive environmental and archaeological work that has been performed on the Whittaker's Mill property, and which was used as the basis to plan the community in the most environmentally-sensitive way possible.

The applicant has also submitted a Water Quality Impact Analysis prepared by AES Consulting Engineers through the Department of Environmental and Development Services requesting a reduction in the Watershed Protection Overlay Buffer to conform to the Chesapeake Bay buffer boundaries. Jones Pond has not been used as a drinking water reservoir for many years, and the Whittaker's Mill Master Plan has been designed to provide ample water quality protection consistent with all federal, state and local requirements.

### **Population Impact and Project Density**

Based on average household size for owner-occupied dwellings of 2.88 persons per household (from the U.S. Census 2012 American Community Survey, York County data), Ted Figura Consulting has estimated that the total, new residential population in Whittaker's Mill will be 640 persons at build out. This represents a mere one percent increase in the County's current population, and is but a fraction of the population increase that could have resulted if the entire Busch property were developed as mixed-use at maximum density. The Whittaker's Mill community will have a residential density of less than 3 residential units per acre as a result of thoughtful design and protection of sensitive land forms.

Any concerns about how this community will affect the County's ultimate build-out population can be easily abated with the understanding that the total projected population of Whittaker's Mill represents only one year of normal population increase in York County. Furthermore, it will be occurring in an area of the County that not only needs additional shoppers, but which also has the transportation and school capacity to easily absorb this number of new residents.

### **Public Facilities and Services**

AES Consulting Engineers has prepared an Analysis of Public Facilities and Services. This analysis confirms that there are ample public services to support the Whittaker's Mill project.

The Whittaker's Mill project will be utilizing public water from Newport News Waterworks, but from a main that was installed by York County. This will result in increased revenues to York County of approximately \$400,000 in County water tap fees that would not otherwise accrue to the County.

Whittaker's Mill will feature a variety of recreational opportunities for its residents, which are detailed in the above section on Community Design. For this reason, the community is not expected to create any marginal demands on County Parks and Recreation capital spending. The incremental operating cost of County recreational programs is accounted for in the Fiscal Impact Analysis referenced below as part of the general cost of government.

### **Fiscal/Economic Impact**

The enclosed Fiscal Impact Analysis prepared by Ted Figura Consulting has determined that the Whittaker's Mill residential community will, in and of itself, generate more annual revenues to the County than the cost of public service demands.

Whittaker's Mill will also enhance the commercial viability of the adjacent, 32-acre parcel of land located between Route 199 and Penniman Road. Once developed, the commercial area will provide further excess tax revenues to the County. All of this is in addition to the positive, spin-off effect of providing additional shoppers for the existing retail establishments located at the Marquis.

By providing funds for road access to this parcel, participating in a joint storm water management plan, and providing new residences with disposable income to the area, Whittaker's Mill represents another key component in helping the Route 199 interchange realize the economic potential envisioned by the County when it declared this area an economic priority area over twenty years ago.

### **Traffic Impact**

Enclosed is a traffic impact analysis prepared by URS Consulting Engineers. This analysis demonstrates that the Whittaker's Mill project does not contribute to traffic congestion in this area and, in fact, provides the opportunity for York County to enhance traffic flow in this area.

To this end, the applicant and developer propose to contribute \$500,000 to York County as a cash proffer as local match for the construction of a new access road from Route 199 to Penniman Road at such time as final developments plans are approved for the project. These funds would be held in escrow by the County until such time as VDOT matching funds are made available for construction.

### **SUMMARY**

The development of Whittaker's Mill is consistent with the objectives of the York County Comprehensive Plan, and will complement the existing development at the Route 199 interchange. It will provide a logical transition of land uses from the commercial property adjacent to Route 199, to the townhome community at the front of the property, to the traditional single family lots, to the estate lots and nature park located at the far edges of the community.

Great care has been taken to ensure that the project is sensitive to the concerns of the environment, historic resources and the U.S. Navy. It has been designed to work with the land

and the existing public infrastructure and to provide real economic benefit, both to York County and to the nearby commercial enterprises.

Whittaker's Mill represents the best use of a challenged parcel of land that is ill suited for commercial development, but which is ideal for a master planned residential community. Whittaker's Mill will be a community in the true sense of the word; where neighbors who occupy a variety of housing types can live and play together within walking distance of shopping and dining and with easy access to the Interstate and area employment opportunities.

#### **ENCLOSED REPORTS**

1. Letter of Environmental Findings dated June 27, 2014, prepared by Kerr Environmental Services Corp.
2. Analysis of Impacts to Public Facilities and Services prepared by AES Consulting Engineers
3. Residential and Commercial Impact Study dated June 27, 2014, prepared by Ted Figura Consulting
4. Traffic Impact Analysis dated June 25, 2014, prepared by URS Corp.

**PHASE I CULTURAL RESOURCES SURVEY OF BUSCH PROPERTY  
YORK COUNTY, VIRGINIA  
VDHR File Number:**

**Prepared For:  
Mid-Atlantic Commercial  
110 Mid-Atlantic Place  
Yorktown, Virginia 23693  
(757) 867-8777**

**Prepared By:  
Dawn M. Muir-Frost and Carol D. Tyrer**

**Circa~ Cultural Resource Management, LLC  
453 McLaws Circle, Suite 3  
Williamsburg, Virginia 23185  
(757) 220-5023**

**July 2014**

## ABSTRACT

*In the summer of 2014, Mid-Atlantic Commercial contracted Circa~ Cultural Resource Management, LLC (Circa~) to conduct a Phase I cultural resources survey of approximately 50 developable acres prior to the development of the approximately 77-acre tract. The project tract consists of level uplands with steep to moderate side slopes. The purpose of this Phase I cultural resources survey was to identify and record all historic resources within the project area prior to development of the site. This survey resulted in the identification of two isolated finds, two new archaeological sites, one previously identified architectural resource and no new architectural resources, although two architectural resources were identified adjacent to the project area.*

*No further work is recommended for the two isolated finds as they are not eligible for listing on the National Register of Historic Places. Structure 1 is a circa 1961 ranch style house. The house is currently occupied and in fair condition. The house does not possess any unique characteristics that would separate it from other mid to late 20<sup>th</sup> century housing examples in York County or the Williamsburg area. The design and workmanship of the house are undistinguished and the construction materials are common (Criteria C). A preliminary review of historical records including various maps and historical contexts for York County and the surrounding area did not indicate significant contributions with events (Criteria A) or persons (Criteria B) associated with the property. Considering this, the house does not appear to be potentially eligible for listing on the National Register of Historic Places under Criteria A, B, or C. Thus, Circa~ recommends no further architectural survey work for this house. Structure 2 is a circa 2006 cluster of warehouses. Because the buildings are less than 50 years old, they are not eligible for listing on the National Register of Historic Places. Thus, Circa~ recommends no further architectural survey work on these buildings at this time.*

*Although the project area is located within the boundaries of the Williamsburg Battlefield; only the northeastern area of the battlefield was determined potentially eligible for the National Register of Historic Places. The project area does not fall within this area of the battlefield. In addition to shovel testing, Circa~ also completed a metal-detecting survey of the project tract. No earthworks or artifacts associated with the battlefield were noted or recovered from either the shovel testing or the metal-detecting surveys. The area surrounding the project tract is all ready heavily developed with several housing areas, I-64, Routes 143 and 199, big-box retail, and Water Country USA. Circa~ concurs with the NPS that the battlefield in this area is fragmented and not eligible for listing on the National Register of Historic Places under Criterion A, B, C, or D. The area that is proposed by the NPS as potentially eligible for listing is located out across the stream channel and blocked from the sight of the proposed development by mature woods. Thus, the development as proposed should not adversely impact the viewshed of the battlefield. Therefore, Circa~ recommends no further survey work for this resource within the project area.*

*Site 1 appears to have been occupied circa post 1930s and may have been abandoned in the 1960s to 1970s when the property was sold. The artifacts were spread across the site*

*boundaries with clear concentration of artifacts around the house foundations and the edge of the property by the dump. Given the recent date of the artifacts and the absence of cultural layers or features, Circa~ recommends that this site offers no further research potential, and is not eligible for listing in the National Register. No further archaeological testing of this site is recommended.*

*Site 2 correlates with known Native American upland/floodplain margin settlement and land use patterns in this region. A review of Native American sites within one mile of the project area reveals that the majority of the sites on the inland streams consisted of small encampments or resource procurement used for nut, shellfish, or fish gathering, quarries, or hunting sites. The majority of these sites contained artifact counts and types-lithics and pottery- typical to what was recorded at this site.*

*The site does not appear to have been intensively or frequently used based on the limited number of artifacts recovered (17 Native American artifacts). The shovel testing indicates a low density of artifacts and with positive shovel tests restricted to the margin at the base of the slope of a restricted landform. The site does appear to have a single temporal component and intact stratification at the interface between the Strata A and B horizon. However, due to the lack of a quantity and diversity of artifacts, the site is recommended as not eligible for the National Register of Historic Places under Criterion D. Accordingly, no further archaeological investigation appears warranted.*



Kerr Environmental  
Services Corp.

Sustainable Ecological Restoration  
and Environmental Consulting

## OFFICE LOCATIONS

Richmond, Virginia  
Virginia Beach, Virginia

June 27, 2014

Mr. Lamont Myers  
Mid-Atlantic Communities, LLC  
110 Mid-Atlantic Place  
Yorktown, Virginia 23693

*Transmitted Electronically via Email*

**Re: Letter of Findings  
Whitakers Mill Development (± 77 acres & ± 32 acres)  
York County, Virginia**

JUN 27 2014  
10:07 AM

JUL 1 2014

10:07 AM

Dear Mr. Myers,

Kerr Environmental Services (KES) is pleased to provide Mid-Atlantic Communities, LLC with a summary of findings for environmental services completed for the ±77 acre site located at 1500 Penniman Road (GPIN: H14c-1242-1404) and the ± 32 acre site located south of Penniman Road and north of Marquis Center Parkway (GPIN: H13b-3278-4775) in York County, Virginia (**Figure 1**).

KES has performed on site investigations as well as reviewed publically available records to develop a general understanding of the natural and historic resources within the project area. We have addressed potential environmental issues regarding wetlands, Chesapeake Bay Preservation Areas (CBPA), potential presence of threatened and endangered species, potential presence of historical resources, and potential presence of hazardous waste sources. A summary of our findings is as follows:

### FINDINGS

#### *Wetland Delineation and U.S. Army Corps of Engineers Confirmation*

KES has performed a wetland and Waters of the U.S. (WOUS) delineation of both subject parcels. Data was collected pursuant to procedures contained in the *Army Corps of Engineers Wetland Delineation Manual* (1987) and subsequent guidance including the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* (2010). Our investigation found approximately 5.5 acres of wetlands/WOUS on the 77 acre parcel and approximately 480 linear feet of WOUS on the 32 acre parcel. An exhibit depicting the approximated wetland/WOUS boundaries is attached (**Figure 2**). KES has requested confirmation of wetland boundaries by USACE. Any encroachment into the wetlands/WOUS will require coordination with the USACE and/or Virginia Department of Environmental Quality (DEQ).

### ***Chesapeake Bay Preservation***

KES assessed the extent of Chesapeake Bay Preservation Act (CBPA) Resource Protection Areas (RPAs) for both parcels pursuant to the York County Chesapeake Bay Preservation Area (CBPA) Ordinance which requires RPA buffers around wetlands and perennial waterbodies. The northern ± 77 acre parcel contains an un-named tributary and several sub-tributaries that drain northeast towards Jones Millpond; the southern ± 32 acre parcel contains the upper reaches of several tributaries draining southeast towards King Creek. To determine the applicability of RPAs, KES assessed perenniality of the features on the site using the North Carolina Stream Classification Form (*Methodology for Identification of Intermittent and Perennial Streams*) which is one of the methods recommended in Chesapeake Bay Local Assistance Board (CBLAD) Guidance: *Determinations of Water Bodies with Perennial Flow*. **Figure 3** shows the limits of perenniality and associated Resource Protection Areas. KES has requested confirmation of RPA limits from York County.

### ***Threatened and Endangered Species***

KES assessed the potential presence of listed threatened or endangered species for the ± 77 parcel. Reviews of the Virginia Department of Game and Inland Fisheries (DGIF) Fish and Wildlife Information Service database (VaFWIS), the U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPaC) and the Center for Conservation Biology Virginia Bald Eagle Nesting database were conducted to determine the potential for State or Federally listed threatened and/or endangered (protected) species in the project vicinity. No bald eagle nests are known to occur within threshold distance of the project vicinity. The USFWS IPaC system indicated that the small whorled pogonia (*Isotria medeoloides*), which is classified as *threatened* by the USFWS has been documented in the vicinity of the subject property. A survey for the small whorled pogonia was completed on the property by GeoMarine Inc. A report dated July 15, 2013 documented that no individuals were found on the property during this survey.

### ***Cultural Resources***

In association with KES, Circa~ Cultural Resource Management, LLC (Circa~) was contracted to complete a Phase I cultural resources survey on approximately 50 developable acres prior to the development of the approximately 77-acre tract. The project tract consists of level uplands with steep to moderate side slopes. Roughly, 27 acres will remain in buffers along the edges of the roads and the stream channels.

Circa~ completed the excavation of shovel tests on a 50-foot grid and a metal-detector survey of the tract this week (6/25/14). The artifacts are currently being washed and analyzed. One 20<sup>th</sup> century house site and bottle dump and one Native American camp were recorded by the survey efforts. The survey findings will be presented in a report format and submitted for review within the upcoming weeks. All field and laboratory methodology, as well as the final report, will be conducted in accordance with standards set forth in the Virginia Department of Historic Resources' *Guidelines for Preparing Archaeological Resource Management Reports* and will

meet the qualifications set forth in the Secretary of Interior's *Professional Qualification Standards*.

***Phase I Environmental Site Assessment***

KES has performed a Phase I Environmental Site Assessment (ESA) on the ± 77 acre parcel in conformance with the scope and limitations of American Society of Testing and Materials (ASTM) Standard E 1527-13. Pursuant to ASTM E 1527-13 §12.8.2, this assessment revealed no evidence of recognized environmental conditions connected with the property. As such, no "additional appropriate investigation" appears necessary at this time. A small area of "nuisance dumping" was observed on the southeastern portion of the property but does not warrant further investigation at this time. Our conclusions are based on the results of our site investigation, records review, and inquiries. The findings could change, based on other information (e.g. additional sampling, excavation, historic records, etc.) that could become available in the future. The Phase I ESA was forwarded to Mid-Atlantic Communities, LLC in June 2014 for your use and for your records.

KES reviewed a Phase I ESA for the ± 32 acre property which was performed by Resource International, LTD and dated July 19, 2013. This Phase I ESA was performed pursuant to the scope and limitations of American Society of Testing and Materials (ASTM) Standard E 1527-05. Pursuant to ASTM E 1527-05 §12.8.2, this assessment revealed no evidence of recognized environmental conditions connected with the property and Resource International, LTD recommended that no "additional appropriate investigation" was necessary.

Please contact me at (757) 963-2008 should you wish to discuss this further. Thank you for this opportunity to be of service.

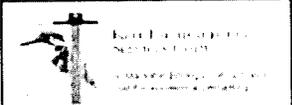
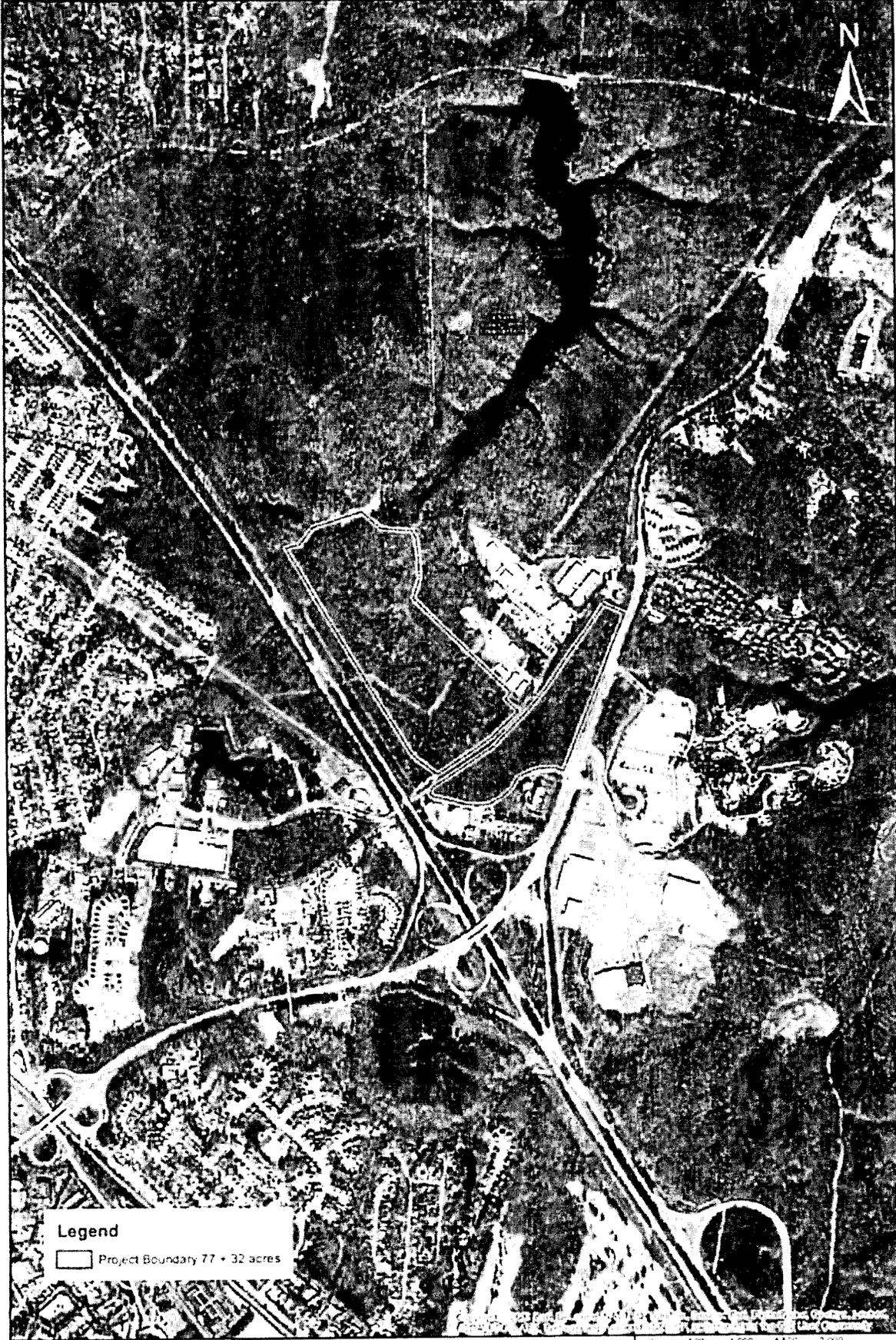
Sincerely,  
**Kerr Environmental Services Corp.**



Abigail Brassfield  
Senior Environmental Scientist

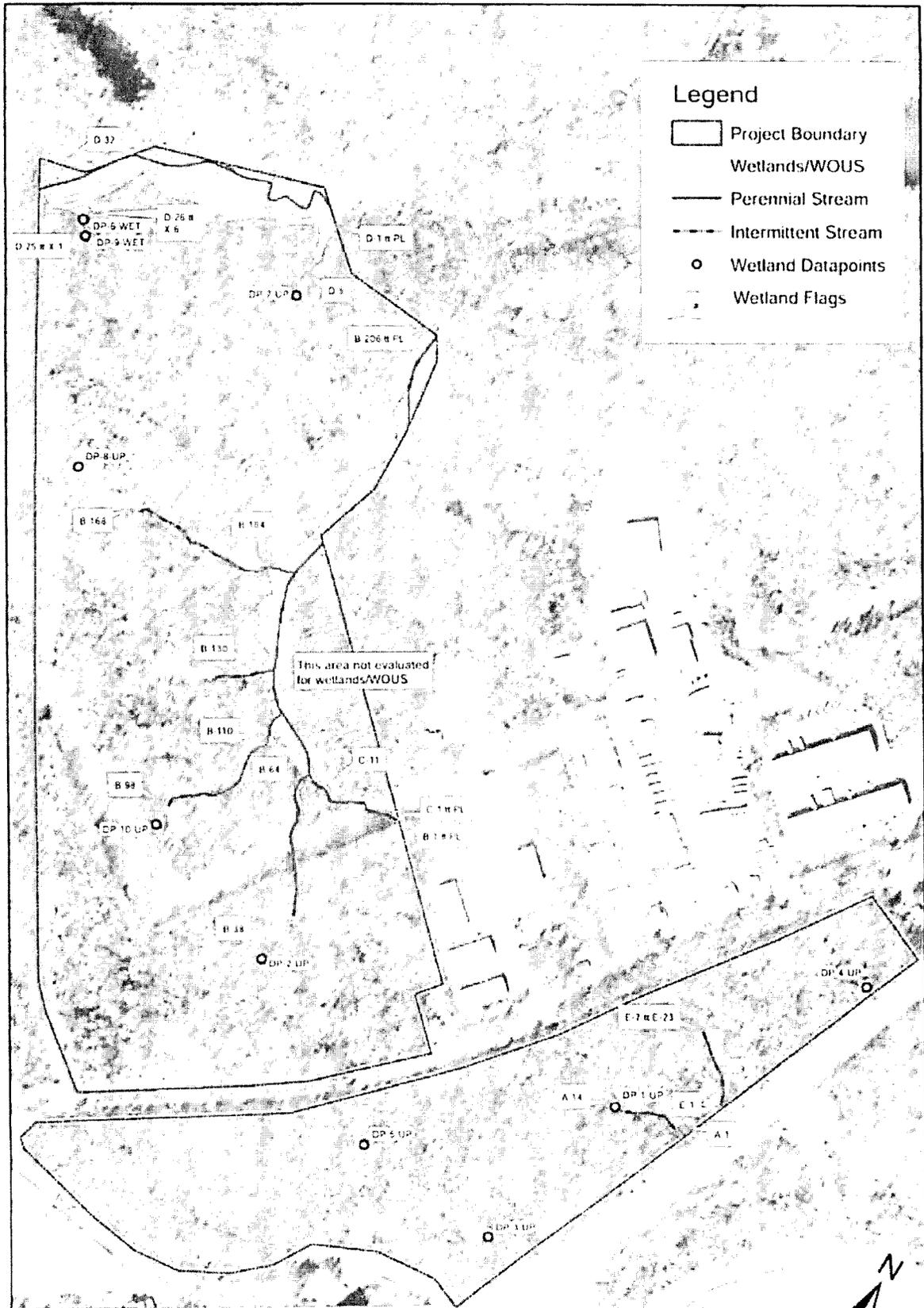
Enclosures:

- Figure 1 – Vicinity Map
- Figure 2 – Wetland/WOUS Delineation Map
- Figure 3 – RPA Map



**VICINITY MAP**  
**Whitakers Mill (77 + 32 acre Parcels)**  
 YORK COUNTY, VIRGINIA

 Feet 1 inch = 1,000 feet	
4/18/14	Figure 1



**Legend**

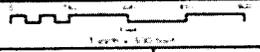
-  Project Boundary
-  Wetlands/WOUS
-  Perennial Stream
-  Intermittent Stream
-  Wetland Datapoints
-  Wetland Flags

This area not evaluated for wetlands/WOUS

NOTE: Wetlands shown hereon are approximate and subject to confirmation by the U.S. Army Corps of Engineers

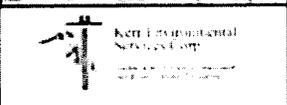
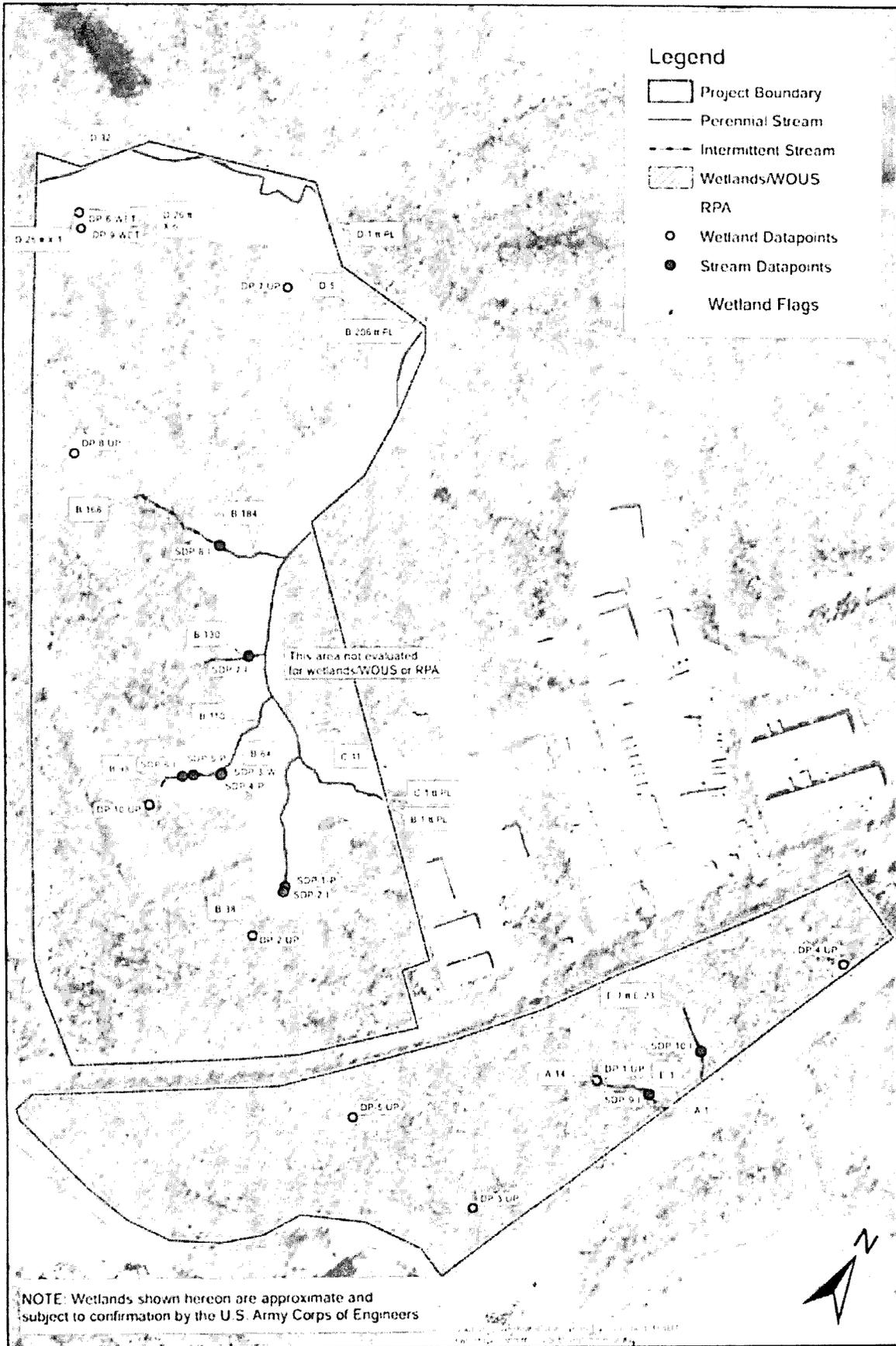


**DELINEATION MAP**  
Whitakers Mill (77 + 32 acre parcels)  
YORK COUNTY, VIRGINIA



6/27/14

Figure 2



**RESOURCE PROTECTION AREA MAP**  
 Whitakers Mill (77 + 32 acre parcels)  
 YORK COUNTY, VIRGINIA

6/27/14

Figure 3



5248 Olde Towne Road, Suite 1  
Williamsburg, Virginia 23188  
Phone (757) 253-0040  
Fax (757) 220-8994  
aesva.com

## **ANALYSIS OF IMPACTS TO PUBLIC FACILITIES AND SERVICES**

### **A. Public Water Facilities**

Public water shall be provided by the Newport News Waterworks (NNWW) system. The water shall be extended to the site from the existing 12-inch water main located along Penniman Road. Per coordination with NNWW, the closest fire hydrant assembly on the 12-inch main has approximately 3,700 gpm flow. A looped 8-inch system will be constructed on site which will easily provide the required demand for a single family development.

More detailed water analysis will be conducted prior to or with the final site plan. NNWW will then update their water model in order to examine volume and pressures throughout the immediate water system area.

### **B. Public Sewer Facilities**

Sanitary sewer service is provided to the site by a proposed on site gravity sewer collection system which will convey wastewater flows to a proposed on-site sewage pumping station (centrally located). This sewage pumping station shall convey the wastewater through a proposed force main to an existing 10-inch York County force main located near the intersection of Winchester Road and Penniman Road. The force main then directs flow to the existing Lodge Road Pump Station (HRSD PS #233).

Per coordination with HRSD, the existing pump station at Lodge Road is currently experiencing capacity issues in larger wet weather events and will have to operate against even higher pressures when the Williamsburg Temporary Pressure Reducing Station comes online in the next year. Lodge Road Pump Station will be upgraded for capacity for these reasons and will be done such that there is sufficient capacity to accept the additional flows from this development.

All system components shall be designed to York County standards for acceptance into the York County system. Please find below "Table 1" which shows the anticipated sewage flows for the project.

YORK COUNTY

JUL 1 2014

**Table 1 – Projected Wastewater Flows from Whittaker’s Mill**

Type of Development	No. of Units	Flow (GPD/Unit)	Average Daily Flow (GPD)	Duration (hrs)	Avg. Flow (GPM)	Peak Flow (GPM)
<b>RESIDENTIAL</b>						
Single-family and Townhome Units	222	310	68,820	24	47.8	119.5
Subtotal	222		68,820		47.8	119.5
<b>NON-RESIDENTIAL</b>						
Clubhouse	3,000 sf	0.2	600	16	0.6	1.6
Subtotal			600		0.6	1.6
<b>TOTAL</b>			<b>69,420</b>		<b>48.4</b>	<b>121.1</b>

**C. Fire Protection and Emergency Services**

There are currently six (6) fire stations providing fire protection and Emergency Medical Services (EMS) services to York County with support from James City County and the City of Williamsburg. Five (5) stations are located within a reasonable distance (less than 12 miles) to the project site from the three Jurisdictions. Two of the five stations are located in York County, two in James City County and one in the City of Williamsburg. The closest fire station to the subject site is the “Bruton” Station 3, located at 114 Hubbard Lane, just over 2.3 miles west of this project site. The second closest station is James City County’s Station 2 located at 8421 Pocahontas Trail approximately 3.8 miles away.

Response time to the site is within appropriate limits if an emergency event occurs which requires additional fire and life safety support. The mutual aid agreement between these municipalities affords the future residents of the project more than adequate response to potential emergencies.

**D. Solid Waste**

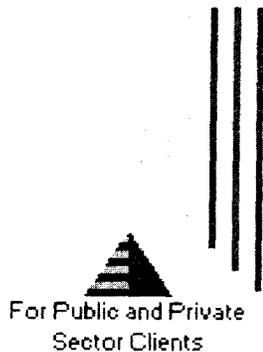
The proposed development on the subject property will generate solid wastes that will require collection and disposal to promote a safe and healthy environment. Collection of solid waste will be handled by County waste pick-up; however the Homeowner’s Association may choose to contract for pick-up directly. Both trash and recyclable material will be removed from this site to a solid waste transfer station.

**E. Utility Service Providers**

Virginia Natural Gas, Dominion Virginia Power, Cox Communications and Verizon Communications provide, respectively, natural gas, electricity, cable TV service, and telephone service to this area. The current policy of these utility service providers is to extend service to the development at no cost to the developer when positive revenue is identified; plus, with new land development, these utility service providers are required to place all new utility service underground.

## ***ANALYSIS OF STORMWATER MANAGEMENT***

This project is located in the York County Watershed Management and Protection Area Overlay District as well as the Jones Pond Watershed. Stormwater management (quantity and quality) for the site shall be met primarily through the installation of two wet ponds and three dry ponds as shown on the previously provided "Whittaker's Mill Stormwater Master Plan". These facilities will provide both flow attenuation and pollutant removal for the project as detailed in the previously provided "Water Quality Impact Study for Whittaker's Mill". York County now adheres to the Runoff Reduction Method of calculating pollutant removal and this plan achieves the required pollutant removal from the proposed ponds. A copy of the Runoff Reduction Method worksheet was provided with the submittal of the "Whittaker's Mill Stormwater Master Plan".



## Ted Figura Consulting

118 Logan Avenue – Asheville, NC 28806

Phone: 757-879-3124

Email: [tfigura@verizon.net](mailto:tfigura@verizon.net)

Fax: 828-575-2159

August 23, 2014

Mr. Timothy C. Cross  
Principal Planner  
County of York, Virginia  
P.O. Box 532  
Yorktown, VA 23690-0532

Dear Mr. Cross:

I wish to address the comments made to you on July 28, 2014 by Mr. Mark Tschirhart of the York County School System concerning the proposed Whitaker's Mill development and contained in the combined staff comments regarding Application No. PD-39-14, Busch Properties, Inc.

It is true that, based upon the information provided in Mark Tschirhart's letter, Magruder Elementary School will, technically, be over capacity due to the development of Whittaker's Mill. The latest data available to me from the York County School System indicated an enrollment for that school of 603 students. The new information that the actual current enrollment at Magruder Elementary is 613 and that 37 pre-K students are not included in this number increases the actual enrollment at Magruder by 47 students. As indicated in the Methodology section of my Report, adding the 42 students projected to be generated by Whittaker's Mill to those students projected to be added by the Marquis "South Pod" development left an excess capacity of 29 students (using the 603 student enrollment). Adjusting for the additional, previously unknown, enrollment, this excess is reduced to an overcapacity of 18 students.

However, while Whittaker's Mill pushes Magruder to be technically over capacity, this does not mean that any new classrooms will be required. This is because it will not be the case that all 18 over-capacity students will occupy a single classroom. Instead, these students will be distributed among the 6 grades and 30 classrooms at Magruder Elementary. Thus, each grade will, on average, be 3 students over capacity and, when distributed among classrooms, it is reasonable to expect that 60% of Magruder's classrooms (18 out of 30) will be 1 student over ideal capacity. Since it is reasonable to expect, and common practice, for there to be some tolerance for over-crowding before a new classroom is warranted, this degree of over-crowding certainly does not warrant the construction of new classroom space at Magruder Elementary School.

Mr. Timothy C. Cross  
August 23, 2014  
Page Two

With respect to school bus purchases, it is acknowledged in the Report that it is possible that the development of Whittaker's Mill could require the purchase of an additional school bus. This would depend on the current capacity of existing school bus routes serving Magruder Elementary School and the other schools. Due to staggered hours, buses are typically re-used for elementary, middle and high school routes. The cost of an additional school bus was estimated at approximately \$91,300 and was included as a cost in the fiscal impact analysis.

Sincerely,

A handwritten signature in black ink, appearing to read 'T. Figura, Jr.', written in a cursive style.

Theodore J. Figura, Jr.  
Principal



**Whittaker's Mill**  
**Residential and Commercial Impact Study**

York County, Virginia

**Prepared by**

Ted Figura Consulting

**For**  
**Busch Properties, Inc. and**  
**Mid-Atlantic Communities, LLC**

York County, Virginia

**June 27, 2014**

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## **Whittaker's Mill: Residential and Commercial Impact Analysis**

### **Executive Summary**

Busch Properties, Inc. (the "applicant") is seeking a rezoning of a parcel located at 1500 Penniman Road from Economic Opportunity (EO) to Planned Development Residential (PDR) and of a parcel located at 200 Water Country Parkway to incorporate certain proffered conditions on the existing EO zoning. The two parcels are owned by Busch Properties. Both the residential and commercial developments result in positive fiscal benefits for the County.

The development proposed by the applicant includes a high quality, mixed residential development and future construction of commercial space, as warranted by market demand. The proposed residential development would consist of 112 single-family units on a mixture of 60' wide lots and larger estate lots, plus up to 110 townhouse units. All units would be for sale. This would add nearby "rooftops" which would increase market demand at the nearby Marquis Center and support demand for commercial development at Whittaker's Mill in the future. The commercial development proposed by the applicant would consist of up to 300,000 square feet of retail, restaurant and consumer service space.

Single-family units are expected to sell within a range of \$300,000 to \$500,000. Townhouse units are expected to sell within a range of \$225,000 to \$295,000. Average household incomes are expected to range from almost \$71,425 to more than \$128,500, depending on product type. The average household income for all unit types is expected to be about at the average for York County. Using student generation multipliers supplied by County staff, the proposed residential development should add 97 new students to the York County public school system. This projected enrollment increase leaves all of the schools serving Whittaker's Mill below their capacities and still able to absorb future enrollment increases. This is true after taking into account anticipated enrollment increases from the planned residential development near the Marquis Center.

Revenues that will be received by the County t significantly exceed the costs expected to be incurred by the County from both the residential and commercial components. The proposed residential development is projected to add more than \$69 million to the City's tax base. It is estimated that, at buildout, Whittaker's Mill residents would spend more than \$2.3 million annually at stores, restaurants and personal service establishments within York County. Approximately \$1.3 million in spending can be expected to occur at Whittaker's Mill when the commercial space is fully developed. Whittaker's Mill households will, thus, add about \$1 million in demand annually that would translate into sales at other York County businesses, including those at the Marquis Center.

At full occupancy, the proposed commercial development at Whittaker's Mill is expected to generate more than \$68 million in sales. Of this amount, it is estimated that about \$60.9 million would be subject to local sales tax and \$18.4 million would be subject to the County's meals tax. All revenues would be subject to the County's business license fee (BPOL tax). Of course, not all of this revenue will be new to the County as some will be spending that is redirected from other York County businesses. Also, spending by Whittaker's Mill households is attributed to the fiscal impact of the residential development at Whittaker's Mill and should be deducted from an estimate of new revenues from the commercial development to avoid double counting. However, it is anticipated that, at buildout, the commercial development at Whittaker's Mill will increase retail sales in the County by more than \$20 million annually and add more than \$565,000 in local sales, meals and BPOL taxes to the County's general fund each year.

Altogether, more than \$31 million in new revenue would be received by the County from the proposed Whittaker's Mill development over a twenty-year period. Once both the residential and commercial components are fully developed, the County can expect to receive more than \$2.1 million annually in new revenue. Approximately 40% of these annual revenues and more than 50% of all revenues over twenty years would be generated by the residential development at Whittaker's Mill.

In contrast, less than \$8.5 million in costs are projected to be incurred by the County during the twenty-year analysis period as a result of the proposed development at Whittaker's Mill. Annually, at full development, costs to the County, including the cost of education, total a little more than \$540,000. The only capital costs expected to be incurred by the County as a result of Whittaker's Mill development is the possible purchase of an additional school bus and equipment for an additional Sheriff's patrol officer.

The table on the following page summarizes the revenues and costs from the proposed development annually for the stabilization year and for the twenty-year analysis period. An alternative by-right development was postulated for comparison purposes. While, under current and foreseeable market circumstances, it is unlikely that this property would be developed in any other economic opportunity use that the one proposed, development of the property as a suburban scale business park was selected as the perhaps the only possible alternative development. Even under an optimistic scenario, such a development would not be expected to be completed until after the year 2060 and, by the end of the fiscal impact analysis period in 2034, less than 25% of the property is projected to be developed in this use.

Nevertheless, a net fiscal impact for the proposed Whittaker's Mill development was performed by subtracting the fiscal impact of the alternative by-right development from the fiscal impact of the proposed development. This was done for both the residential development, alone, and for the combined residential and commercial developments. The net fiscal impact for both was positive for the twenty-year analysis period. The net fiscal impact performed with discounted (present value) revenues and costs was deemed the most appropriate vehicle for a comparison of the proposed and alternative developments. The net fiscal impact improves when revenues and costs are discounted, which reflects the earlier receipt of significant surplus revenues from the proposed development at Whittaker's Mill.

<b>Whittaker's Mill Center Residential and Commercial Development Summary of Revenues and Costs</b>		
	Annual in Stabilization Year	Twenty-Year Total
<b>Revenues</b>		
General Fund Revenues	\$1,879,300	\$26,004,875
Enterprise Funds	\$257,475	\$5,287,275
<b>Total Revenues</b>	<b>\$2,136,775</b>	<b>\$31,292,150</b>
<i>From Residential</i>	\$ 853,675	\$15,774,125
<i>From Commercial</i>	\$1,283,100	\$15,518,025
<b>Costs</b>		
General Government	\$236,500	\$3,542,225
Enterprise Funds	\$44,800	\$ 620,275
Schools, Operating	\$259,050	\$4,088,575
Schools, Capital		\$ 91,300
Other Capital		\$ 100,000
<b>Total Costs</b>	<b>\$540,350</b>	<b>\$8,442,375</b>
<i>From Residential</i>	\$503,300	\$8,041,975
<i>From Commercial</i>	\$ 37,050	\$ 400,400
<b>Fiscal Impact</b>		
Surplus Revenues	\$1,596,425	\$22,849,775
<i>To General Fund</i>	\$1,383,750	\$18,182,775
<i>To Enterprise Funds</i>	\$ 212,675	\$ 4,667,000
<i>From Residential</i>	\$ 350,375	\$ 7,732,150
<i>From Commercial</i>	\$1,246,050	\$15,117,625
<b>Benefit-to-Cost Ratio</b>	<b>3.95-to-1</b>	<b>3.71-to-1</b>
<i>General Fund</i>	<i>3.79-to-1</i>	<i>3.32-to-1</i>
<i>Enterprise Funds</i>	<i>5.75-to-1</i>	<i>8.52-to-1</i>
<i>Residential</i>	<i>1.7-to-1</i>	<i>1.96-to-1</i>
<i>Commercial</i>	<i>34.63-to-1</i>	<i>38.75-to-1</i>

The benefit-to-cost ratio measures the strength of the fiscal impact. A benefit-to-cost ratio greater than 1.0-to-1 indicates a positive fiscal impact. The benefit-to-cost ratio is similar to a return on investment measure. For instance, a benefit-to-cost ratio of 1.5-to-1 indicates that for every dollar cost to the County, the County would receive \$1.50 in revenues.

## Background

Busch Properties, Inc.(the “applicant”) is seeking a rezoning of parcels located at 200 Water Country Parkway and 1500 Penniman Road (tax map #s 011-16-4 and 011-16-2, respectively), the “properties.” The properties are owned by Busch Properties, Inc. The applicant is requesting a rezoning of parcel 011-16-2 from Economic Opportunity (EO) to Planned Development Residential (PDR) zoning and is seeking a rezoning of parcel 011-16-4 to incorporate certain proffered conditions on the existing EO zoning.

The development proposed by the applicant includes the construction of 222 residential units to add nearby “rooftops” for the purpose of supporting the future commercial development of the site. The residential development would also create additional market demand for retail located at the Marquis Center. It is assumed that, without the development of this number of adjoining residential units, little, if any, commercial development would take place at Whittaker’s Mill in the foreseeable future. The proposed residential mix at this time is composed of 112 single-family detached units, of which 27 will be on estate lots, and 110 townhouse units for sale. This mix may be adjusted by the applicant subject to additional market study. The residential development is proposed to occur on parcel 011-16-2, which is the more difficult to develop parcel, due to its topography.

If the applicant’s request for a rezoning is approved by the County, residential construction would begin in the fall of 2015, with the first single-family and townhouse units sold in early spring of 2016. Absorption of these units would take place over a five year period. Single-family units on 60’ wide lots are expected to sell within a range of \$300,000 to \$400,000, with an average sale price of \$350,000. Estate lot units are expected to sell within a range of \$400,000 to \$500,000, with an average price of \$450,000. Townhouse units are expected to sell within a range of \$225,000 to \$295,000, with an average sale price of \$250,000.

Consistent with the expected residential unit price points, the residential development is designed to appeal to a population with considerable spending power. Proposed amenities would include a clubhouse and pool, playground, passive park areas, community garden plots and a town square. Average household incomes are expected to range from almost \$71,425 to more than \$128,500, depending on product type. The average household income for all unit types (\$89,325) is expected to be roughly equivalent to the estimated average household income for the County in 2015 (\$91,725). The proximity of this buying power is deemed critical to attracting retail tenants to the future commercial development at Whittaker’s Mill.

Approximately 300,000 square feet of future commercial development is proposed by the applicant. This commercial development is likely to include a mix of anchor retail, in-line retail, restaurants, out-parcel development and consumer-oriented non-retail uses. The commercial space is likely to be developed in phases and the tenant mix will reflect future market demand. For analysis purposes, the development was assumed to have a mixture of various types of retail, restaurant and service establishments.

Commercial development is expected to begin once a critical mass of residential development is in place on both the Whittaker's Mill and the nearby Marquis properties (projected to occur by 2017). The first commercial building is expected to be completed in 2019 with FY 2019 being the first year of tenant occupancy. Assumptions made concerning the tenant mix, absorption rates and construction phasing are detailed in the attached Appendix presenting the study's methodology. Given those, assumptions, commercial buildout is expected to occur in FY 2028. The proposed commercial development would occur on parcel 011-16-4, the 32-acre parcel bounded by Route 199, Penniman Road and Water Country Parkway, which is the most amenable to commercial development.

The applicant acknowledges that the descriptions cited above are illustrative of the most likely development scenario for the site based on current market conditions. This description is not a binding proffer and the applicant reserves the right to make changes in product mix.

### Methodology

This study examines the revenues to be received by the County generated by the new development and all costs to the County attributable to this development over a twenty-year period. The analysis is divided into two components—1) a residential impact analysis, which calculates the revenues received by the County and the costs incurred by the County from the planned residential development on the site and 2) a commercial impact analysis, which calculates increased revenues to be received by the County from the planned additional retail development at Whittaker's Mill, as well as the minimal increase in costs the County will experience from the additional retail development.

Only variable revenues and costs are counted as impacting the County. This means that, rather than applying per capita/employee or per household/business total revenue and total County per capita/employee or per household/business expenditures to the development of Whittaker's Mill, only those incremental revenues and costs that the County will actually receive or incur due to the increase in households and the additional retail development are counted as having an impact. Fixed costs that do not rise as population or households increase incrementally are not counted as having a cost impact. With regard to revenues derived from sales from proposed retail development at Whittaker's Mill, only net new revenues to the County are counted.

This methodology produces a more accurate and valid estimate of future revenues and costs resulting from a development than does the average revenue/average cost approach. A more detailed description of the methodology used in this analysis is presented in the Appendix.

Revenues estimated for Whittaker's Mill development fall into three categories: one-time direct revenues, annual direct revenues and additional tax revenues generated by households. The methodology does not use multipliers to calculate revenues that could be generated through a development's secondary impacts, as such multipliers are considered to be unreliable for small geographic areas. The methodology does not include revenues generated from spending by construction workers at Whittaker's Mill, as such spending cannot reliably be said to occur within the County.

One-time direct revenues are revenues to the County derived from the construction of the residential units and commercial buildings at Whittaker's Mill. They include all building permit and associated fees (electrical, mechanical, plumbing, water, sewer and natural gas), various development fees, certificates of occupancy fees and recordation taxes.

Annual direct revenues include: real estate property taxes, personal property taxes and user fees (the local portion of the communication sales tax, miscellaneous fees and fines), as well as business personal property taxes, local sales taxes, meals taxes and business license fees paid by commercial establishments locating at Whittaker's Mill. Additional tax revenues generated by Whittaker's Mill residents are estimates of taxes paid by York County businesses due to purchases made by households occupying the residential development proposed for Whittaker's Mill.

Purchases by Whittaker's Mill residents are estimated based upon spending patterns according to household income. Spending patterns are derived from the most recent U.S. Bureau of Labor Statistics Consumer Expenditure Survey. An adjustment was made for purchases made outside the County. The methodology for estimating these revenues is presented in the Appendix. No generated taxes were estimated for employees of businesses located at Whittaker's Mill or in York County, as these employees were assumed either to be already living and spending in York County or living outside the County and, thus, spending most of their income outside the County.

Any new retail development can be expected to attract some sales from spending already occurring in the County in addition to providing new sales revenue from spending now occurring outside the County. The degree to which sales generated by stores, restaurants and service establishments at Whittaker's Mill are expected to be diverted from sales already occurring at York County establishments was estimated for anchor retail spending, restaurants and general retail (with non-retail spending patterns expected to mirror those of general retail). This retail diversion was subtracted from sales expected to be generated at Whittaker's Mill before tax revenue based on those sales was calculated. Thus, only net new tax revenue from sales at Whittaker's Mill was counted. Additionally, sales at Whittaker's Mill projected to be generated by Whittaker's Mill and Marquis property residents were subtracted from expected Whittaker's Mill sales and tax revenues in order to avoid double counting those revenues. The methodology for computing retail diversion is explained in detail in the Appendix.

It should be stressed that new retail development in this area will be largely dependent upon the presence of the increased purchasing power generated by new residences in this area. The addition of new residential units at Whittaker's Mill and at the Marquis will work together to dramatically change retailers' perception of the market viability of this Interchange

Costs were divided into four categories: education variable operating costs per student, other variable operating costs of government per household, County government capital costs and school capital costs. Cost data and assumptions were derived from the *York County FY 2014-15 Annual Budget* and the *York County School Division Proposed Annual Budget Fiscal Year 2015*. Certain adjustments, described in the Appendix, to the School's budget were made to account for decreased funding from the County.

County capital costs are currently assumed to be limited to equipping and training one additional Sheriff patrol officer. Fire and Life Safety capital costs, if any, are unknown at this point. School capital costs are expected to show a very limited increase (perhaps the purchase of one additional school bus), since the middle and high schools serving Whittaker's Mill residents have considerable excess enrollment capacity and Magruder Elementary school also remains below capacity. Variable costs associated with sewer utility billing and the solid waste enterprise fund are included separately in the impact analysis.

Per household costs were calculated for various budget line items. State and federal revenues supporting budget line items were deducted to leave only the County's operating cost. Certain government functions, such as the administration of public assistance and public health services, that would not serve the Whittaker's Mill population were not included in the calculations. Chief executive, legislative and administrative functions, which would be performed regardless of population size, were not included in the calculations. A percentage of certain administrative support services, which would be provided independent of population size, were not included in the calculations. A similar approach was used to determine variable costs attributable to the development of Whittaker's Mill within the School's budget. The methodology for estimating the cost of government is presented in more detail in the Appendix.

The County's student generation multipliers of 0.54 students per detached single-family household and 0.34 students per townhouse were used to calculate the number of students expected to reside at Whittaker's Mill. Based on the expected number of units to be developed, Whittaker's Mill can be expected to add 97 students to the York County school system. Based on the existing distribution of students among elementary, middle and high schools, 42 additional students can be expected to attend Magruder Elementary School, 23 additional students can be expected to attend Queens's Lake Middle School and 32 additional students can be expected to attend Bruton High School. None of these schools is expected to exceed their capacities due to the development of Whittaker's Mill, taking into consideration the expected student generation impact from the residential development that will occur at the Marquis.

Three measures of fiscal impact were used—cash flow, cumulative cash flow and the benefit-to-cost ratio. Cash flow shows the annual surplus or deficit of revenues less costs for each year through the stabilization year, which is FY 2022 for the residential component and FY 2030 for the commercial component. Because revenues and costs are reported in constant dollars, there is no change in the projected cash flow after the stabilization year.

Cumulative cash flow is the sum of annual cash flows over the analysis period. Another way of explaining cumulative cash flow is that it is derived by subtracting total costs to the County attributable to a project from total revenues to the County derived from a project over the analysis period, leaving the County's total net revenue from a project.

Finally, the benefit-to-cost ratio is the ratio of total project revenues to the County and total project costs to the County. A benefit-to-cost ratio greater than 1.0-to-1 shows a fiscal benefit. The magnitude of the benefit-to-cost ratio signals the strength of the fiscal impact on the County. For instance, a benefit-to-cost ratio of 1.50-to-1 indicates that for every additional dollar of spending a project costs the County, the County is expected to receive \$1.50 in additional revenue.

In addition to the fiscal impact of residential and commercial development proposed for Whittaker's Mill, the fiscal impact of an alternative by-right development was calculated. An analysis, which is detailed in the Appendix, determined that the most likely alternative development of the site was as an office park. However, even this most likely alternative development is not commercially feasible at this time. It is estimated that, optimistically, less than 25% of the property could be developed as an office park within the twenty-year horizon of the fiscal impact analysis. Impacts of the alternative use beyond the analysis period for the proposed Whittaker's Mill development were not calculated.

The estimated fiscal impact of the by-right alternative was subtracted from the fiscal impact estimated for the development of Whittaker's Mill to calculate the net fiscal impact of the proposed development. Existing tax revenue from property taxes paid on the vacant site were also deducted from both fiscal impacts. Recognizing that net revenues received by the County earlier are more valuable than those received later (the time value of money) and that the expected pace of development and, thus, revenue generation by the by-right alternative differs significantly from that of the proposed development, the cost and revenue streams of the two developments were discounted (present valued). The discounted net fiscal impact is presented in separate tables.

It is also recognized that differences of opinion exist regarding whether the costs and revenues associated with the County's enterprise funds should be included in a fiscal impact analysis. The consultant and the applicant believe that there are strong arguments for including the County's enterprise funds in the fiscal impact analysis. This rationale is presented in the Appendix. Out of deference to County staff, fiscal impact results are presented both including and excluding the County's enterprise funds.

### Residential Impact

Development of up to 222 residential units on the Whittaker's Mill property (parcel 011-16-2) is a condition for the development of future commercial space on parcel 011-16-4 and will also benefit the Marquis Center by increasing nearby "captive" market demand. Therefore, the commercial impact described in the next section of this report will not occur unless the proposed residential development goes forward. **Nevertheless, the revenues generated by the Whittaker's Mill residential development alone are expected to exceed the costs projected to be incurred by the County due to this development.**

As shown in table 1, below, the Whittaker's Mill residential development is expected to generate more than \$853,000 in revenue for the County in its stabilization year (FY 2022). Of this amount, more than \$107,900 will be received by the County's solid waste management and sewer utility enterprise funds. Over the twenty-year analysis period, almost \$15.8 million in new revenue is expected to be generated for the County by the proposed residential development. Of this amount, more than \$2.4 million is from one-time revenues, with more than \$1.1 million of these one-time revenues received by the County's sewer and water utility enterprise funds. In addition to these one-time revenues, the County's enterprise funds are expected to receive almost \$1.7 million during the twenty-year analysis period.

<b>Table 1</b>		
<b>Whittaker's Mill Residential Development</b>		
<b>Projected Net New Revenues</b>		
Revenue Type	Annual Revenues, Stabilization Year	Twenty-Year Total
Real Estate Property Tax <sup>1</sup>	\$519,600	\$ 8,103,425
Personal Property Tax, Decal Fees, Rental Car Tax	\$155,475	\$ 2,446,075
Communication Sales Tax and other fees	\$ 11,975	\$ 188,650
Additional Revenue from Household Spending	\$ 58,750	\$ 924,850
Building Permits & Street Sign Fees		\$ 183,800
CO		\$ 16,650
Erosion and Sediment Control		\$ 6,000
Recordation Tax		\$ 578,325
Subdivision Fees		\$ 5,725
Value of On/Off-Site Improvements		\$ 500,000
<b><i>Subtotal Revenues</i></b>	<b><i>\$745,800</i></b>	<b><i>\$12,953,500</i></b>
<b><i>Subtotal One-time Revenues</i></b>		<b><i>\$ 1,290,500</i></b>
<i>Enterprise Funds</i>		
Sewer Fees	\$ 58,600	\$ 923,200
Solid Waste Fees	\$ 49,275	\$ 776,325
Sewer Connection Fee		\$ 710,400
Water Connection Fee		\$ 410,700
<b><i>Subtotal Enterprise Fund Revenues</i></b>	<b><i>\$107,875</i></b>	<b><i>\$ 2,820,625</i></b>
<b><i>Subtotal One-time Enterprise Fund Revenues</i></b>		<b><i>\$ 1,121,100</i></b>
<b>Total Revenues</b>	<b>\$853,675</b>	<b>\$15,774,125</b>
<b>Total One-time Revenues</b>		<b>\$ 2,411,600</b>

<sup>1</sup>Less taxes currently being paid on land  
All revenues rounded to the nearest \$25

The proposed residential development at Whittaker’s Mill would add more than \$69 million to the City’s tax base. It is estimated that, at buildout, Whittaker’s Mill residents would spend more than \$2.3 million annually at stores, restaurants and personal service establishments within York County. Approximately \$1.3 million in spending can be expected to occur at the Whittaker’s Mill when the commercial space is fully developed. Whittaker’s Mill households will, thus, add about \$1 million in sales demand annually for other York County businesses, including those at the Marquis Center, even after development of the commercial space is completed.

Costs that would be incurred by the County due to the proposed residential development at Whittaker’s Mill fall into four categories—the cost of providing general public services to Whittaker’s Mill households, the cost of educating children of Whittaker’s Mill households, capital costs incurred by the County due to the increase in households and capital costs incurred by the County’s schools due to increased school population resulting from the development of Whittaker’s Mill residential units. Two of the four costs depend on the number of children at Whittaker’s Mill attending public schools. The County’s per household school generation rates were used to calculate the number of students attending York County public schools due to the development of Whittaker’s Mill.

Table 2, below, displays the number of public school attendees forecasted for each school for which Whittaker’s Mill is zoned, the excess capacity at each school after the residential development at the Marquis Center is completed and the remaining excess capacity at each school after full development of Whittaker’s Mill residential.

<b>Table 2</b>			
<b>Projected Public School Attendance from Whittaker’s Mill Residential Development</b>			
<b>School</b>	<b>Number of Whittaker’s Mill Students</b>	<b>Existing Excess Capacity</b>	<b>Remaining Excess Capacity</b>
Magruder Elementary	42	71	29
Queen’s Lake Middle	22	194	172
Bruton High	33	401	368
<b>Total</b>	<b>97</b>		

As shown in the above table the increase calculated using the County’s standard multipliers would not trigger school overcrowding at any of the schools that serve Whittaker’s Mill. Furthermore, recent historic trends and the County’s projections of student population do not warrant concern that these schools will reach their capacity in the future. Between 2004 and 2013, overall County school enrollment fell by 137 students, according to data in the *York County School Division Approved Annual Budget Fiscal Year 2014*. During this time period, enrollment only fluctuated by 434 students from enrollment in 2004. Furthermore, projections to the 2017 school year show only an 87 student increase over 2004 enrollment for the entire school system—less than a 0.7% increase during a 13 year period. Future demographic trends will continue to push down average household sizes and ease enrollment pressures on school systems.

Table 3, below, shows projected costs expected to be incurred by the County due to the proposed residential development at Whittaker's Mill. Education capital costs represent the purchase of one school bus. Other capital costs represent the equipping and training of one additional Sheriff's patrol officer.

<b>Table 3</b> <b>Whittaker's Mill Residential Development</b> <b>Projected Costs</b>		
Cost Type	Annual Costs, Stabilization Year	Twenty-Year Total
Education Operating Costs	\$259,050	\$4,088,575
Other Public Service Costs	\$199,475	\$3,142,375
Education Capital Costs		\$ 91,300
Other Capital Costs		\$ 100,000
<i>Subtotal Costs</i>	<i>\$458,525</i>	<i>\$7,422,250</i>
Enterprise Funds	\$ 44,750	\$ 619,725
<b>Total Costs</b>	<b>\$503,575</b>	<b>\$8,041,975</b>

Figures rounded to the nearest \$25.

As can easily be seen, revenues to be received by the County from the proposed residential development at Whittaker's Mill far exceed its costs. Table 4, on the following page, shows projected cash flow for selected years for the County's general fund and for its general fund and enterprise funds combined.

Significant surpluses are received by both the County's general fund and its enterprise funds during the Whittaker's Mill residential development's ramp up period. In its stabilization year and annually thereafter, residential development at Whittaker's Mill is projected to deliver a surplus of more than \$275,000 to the County's general fund and more than \$90,000 annually in surplus revenues to the County's enterprise funds, for a total annual surplus of more than \$365,000.

Tables 5 and 6, on the following page, show positive fiscal impacts projected for the County's general fund and for the combined general and enterprise funds. Over the twenty-year analysis period, residential development at Whittaker's Mill is projected to add more than \$5.6 million to the County's general fund and more than \$2.2 million to its enterprise funds, over and above the costs that this development will add to the County's budget.

<b>Table 4 Whittaker's Mill Residential Development Projected Cash Flow</b>						
	FY 2015	FY 2016	FY 2017	FY 2018	FY 2020	Stabilization Year FY 2022
<i>General Fund</i>						
Total Revenues	\$504,600	\$ 82,850	\$241,625	\$402,950	\$ 699,050	\$753,075
Total Costs	\$ 0	\$ 8,025	\$ 70,600	\$163,550	\$ 344,125	\$477,025
Total Cash Flow	\$504,600	\$ 74,825	\$171,025	\$239,400	\$ 354,925	\$276,050
<i>All Funds</i>						
Total Revenues	\$504,600	\$256,000	\$480,325	\$663,050	\$1,001,925	\$860,975
Total Costs	\$ 0	\$ 8,500	\$ 75,800	\$175,425	\$ 369,375	\$492,300
Total Cash Flow	\$504,600	\$247,500	\$404,525	\$489,625	\$ 632,550	\$368,675

Figures rounded to the nearest \$25

<b>Table 5 Whittaker's Mill Residential Development Fiscal Impact Measures (General Fund Only)</b>	
Total Revenues	\$13,068,075
Total Cost	\$ 7,422,250
Cumulative Cash Flow	\$ 5,645,825
Benefit-to-Cost Ratio	1.76-to-1

Figures rounded to the nearest \$25

<b>Table 6 Whittaker's Mill Residential Development Fiscal Impact Measures (All Funds)</b>	
Total Revenues	\$15,888,700
Total Cost	\$8,041,975
Cumulative Cash Flow	\$7,846,725
Benefit-to-Cost Ratio	1.98-to-1

Figures rounded to the nearest \$25

## Commercial Impact

The proposed development of Whittaker's Mill will add up to 300,000 square feet of retail, restaurant and consumer service space within the lower Route 199 corridor of York County. At full occupancy, Whittaker's Mill is expected to generate more than \$68 million in sales. Of this amount, about \$60.9 million would be subject to local sales tax and \$18.4 million would be subject to the County's meals tax.

Sales that were shifted from retail sales occurring elsewhere in the County were subtracted from the gross sales increases to obtain an estimate of the net new tax revenue that would be experienced by the County due to the new development at Whittaker's Mill. After subtracting those sales, it was estimated that almost 40% of Whittaker's Mill commercial development sales would generate new local sales taxes and business license fees for the County. More than 45% of restaurant sales would generate new meals tax revenue for the County. Additionally, however, households at the Marquis residential development would spend more in York County than if commercial space at Whittaker's Mill were not developed. The sales, meals and business license taxes that this spending would bring to the County are reported as a separate revenue source. Both spending by Marquis households and spending by Whittaker's Mill households that would occur at Whittaker's Mill are subtracted from Whittaker's Mill sales prior to calculating new York County tax revenues to avoid double counting.

Other new tax revenue to be received by the County due to the development of Whittaker's Mill commercial space includes real estate property taxes, business personal property taxes and miscellaneous taxes and fees. The County's sewer utility enterprise fund would receive sewer usage fees and its solid waste enterprise fund would receive tipping fees from commercial waste haulers serving the Whittaker's Mill commercial development. The County's general fund and its sewer and water utility enterprise funds would also receive one-time revenues from fees charged during the construction of the new commercial space. The net increase in the County's real estate tax base due to the construction of the Whittaker's Mill commercial space is expected to be more than \$44 million. The increase in the County's business personal property tax base due to commercial development at Whittaker's Mill is expected to be almost \$4.5 million (on an assessed basis at 25% of original cost).

Altogether, the County can expect to receive more than \$1,283,000 annually in increased revenue from the commercial development at Whittaker's Mill at full occupancy once revenues are stabilized. Of this, almost \$150,000 is expected to be received by the County's enterprise funds. Revenue stabilization is expected to occur in FY 2030. Altogether, over the twenty-year analysis period, the County can expect to receive more than \$15.5 million in net new revenue from commercial development at Whittaker's Mill. Of that amount, almost \$2.7 million will be received by the County's enterprise funds. About \$974,000 will be one-time revenues to the County with most of that amount (more than \$890,000) entering into the County's sewer and water utility enterprise funds. Table 7, on the following page, details these net new revenue projections for commercial development at Whittaker's Mill.

The increased direct costs to the County associated with the Whittaker's Mill commercial development are minimal (a little over \$37,000 annually at buildout and about \$400,000 over the twenty-year analysis period. The County will incur no capital costs as a result of Whittaker's Mill commercial development (any capital costs are assumed to result from the residential development). The applicant will pay for all water and sewer extensions needed to serve the commercial development. The existing transportation infrastructure is adequate to handle additional shopping trips.

<b>Table 7</b>		
<b>Whittaker's Mill Commercial Development</b>		
<b>Projected Net New Revenues</b>		
Revenue Type	Annual Revenues <sup>1</sup>	Twenty-Year Total
Real Estate Property Tax <sup>2</sup>	\$ 359,700	\$ 4,313,575
Business Personal Property Tax	\$ 178,375	\$ 1,962,100
Local Sales Tax	\$ 206,600	\$ 2,517,550
Meals Tax	\$ 307,025	\$ 3,209,800
Business License Fee	\$ 54,025	\$ 638,300
Communication Sales Tax and other fees	\$ 11,050	\$ 119,375
Additional Revenue from Marquis Household Spending	\$ 16,675	\$ 207,525
Building Permits		\$ 69,725
Sign Permits		\$ 1,775
Site Plan Fees		\$ 1,600
Erosion and Sediment Control		\$ 6,000
CO		\$ 4,050
<b>Subtotal Revenues</b>	<b>\$1,133,450</b>	<b>\$13,051,375</b>
<b>Subtotal One-time Revenues</b>		<b>\$ 83,150</b>
<i>Enterprise Funds</i>		
Sewer Fees	\$ 94,125	\$ 1,116,925
Solid Waste Fees	\$ 55,475	\$ 658,625
Sewer Connection Fee		\$ 565,500
Water Connection Fee		\$ 325,600
<b>Subtotal Revenues</b>	<b>\$ 149,600</b>	<b>\$ 2,666,650</b>
<b>Subtotal One-time Revenues</b>		<b>\$ 891,000</b>
<b>Total Revenues</b>	<b>\$1,283,050</b>	<b>\$15,518,025</b>
<b>Total One-time Revenues</b>		<b>\$ 974,150</b>

<sup>1</sup>Full occupancy after sales stabilization

<sup>2</sup>Less taxes currently being paid on land

All revenues rounded to the nearest \$25

Tables 8 and 9, below, show positive fiscal impacts projected for the County’s general fund and for the combined general and enterprise funds.

<b>Table 8</b> <b>Whittaker’s Mill Commercial Development</b> <b>Fiscal Impact Measures</b> <b>(General Fund Only)</b>	
Total Revenues	\$13,051,375
Total Cost	<u>\$ 399,850</u>
Cumulative Cash Flow	\$12,651,575
Benefit-to-Cost Ratio	32.64-to-1

Figures rounded to the nearest \$25

<b>Table 9</b> <b>Whittaker’s Mill Commercial Development</b> <b>Fiscal Impact Measures (All Funds)</b>	
Total Revenues	\$15,718,025
Total Cost	<u>\$ 400,400</u>
Cumulative Cash Flow	\$15,317,625
Benefit-to-Cost Ratio	39.25-to-1

Figures rounded to the nearest \$25

Combined Residential and Commercial Fiscal Impact

Tables 10, 11 and 12 on the following page present fiscal impact metrics for the combined residential and commercial development at Whittaker’s Mill. The cash flow analysis begins with the first year in which commercial tenants are expected to operate at Whittaker’s Mill. Combined, over the twenty-year analysis period, the residential and commercial development at Whittaker’s Mill is projected to bring more than \$18 million in new surplus revenue to the County’s general fund and more than \$4.6 million in new surplus revenue to the County’s enterprise funds. Annually, beginning with the development’s stabilization year, development of Whittaker’s Mill is expected to bring almost \$1.4 million into the County’s general fund and more than \$210,000 into the County’s enterprise funds.

<b>Table 10</b>						
<b>Whittaker's Mill Combined Residential and Commercial Development</b>						
<b>Projected Cash Flow</b>						
	FY 2019	FY 2022	FY 2024	FY 2026	FY 2028	Stabilization Year FY 2030
<i>General Fund</i>						
Total Revenues	\$ 700,725	\$1,246,500	\$1,388,500	\$1,618,850	\$1,852,750	\$1,879,300
Total Costs	\$ 254,900	\$ 469,650	\$ 476,300	\$ 484,450	\$ 495,525	\$ 495,525
Total Cash Flow	\$ 445,825	\$ 776,850	\$ 912,200	\$1,134,400	\$1,357,225	\$1,383,775
<i>All Funds</i>						
Total Revenues	\$1,123,400	\$1,423,900	\$1,584,150	\$2,059,525	\$2,107,500	\$2,136,775
Total Costs	\$ 273,450	\$ 503,425	\$ 510,075	\$ 518,225	\$ 540,325	\$ 540,325
Total Cash Flow	\$ 849,950	\$ 920,475	\$1,074,075	\$1,541,300	\$1,567,175	\$1,596,450

Figures rounded to the nearest \$25

<b>Table 11</b>	
<b>Whittaker's Mill Residential &amp; Commercial Development</b>	
<b>Fiscal Impact Measures</b>	
<b>(General Fund Only)</b>	
Total Revenues	\$26,004,875
Total Cost	\$ 7,822,100
Cumulative Cash Flow	\$18,182,775
Benefit-to-Cost Ratio	3.32-to-1

Figures rounded to the nearest \$25

<b>Table 12</b>	
<b>Whittaker's Mill Residential &amp; Commercial Development</b>	
<b>Fiscal Impact Measures (All Funds)</b>	
Total Revenues	\$31,292,150
Total Cost	\$ 8,442,375
Cumulative Cash Flow	\$22,849,775
Benefit-to-Cost Ratio	3.71-to-1

Figures rounded to the nearest \$25

### Fiscal Impact: Alternative By-Right Development

The most, and in fact perhaps only, likely alternative by-right development of the site is as an office park. The rationale for this selection is contained in the Appendix. However, there is little current demand for office space at this location and future demand is expected to build slowly. Existing office vacancy rates are high and most new office development occurs in areas of existing concentration. Although the site is capable of accommodating 750,000 square feet of office space, it is projected that only 24% of this space would be built within the twenty-year fiscal impact analysis period. Hypothetically, planning and site work for an office park at the site could take place over the next two years, with the first building constructed in FY 2017. Realistically, such a development is not commercially feasible and so this assumption is only hypothetical.

Nevertheless, even if it can be assumed that an office park could be developed in this location, it would be expected to be developed at suburban scale, with a mixture of one and two-story office buildings and one-story flex-space buildings. Building is projected to occur in 20,000 square foot increments, as demand warrants, with nine buildings constructed and an admittedly optimistic assumption that eight buildings could be occupied during the analysis period. The average tenant was projected to occupy 5,000 square feet, resulting in four tenants per building. Assumptions regarding demand, property assessments and business revenues are presented in the Appendix.

Table 13 on the following page presents expected revenues from the hypothetical alternative by-right development. Since the development will not have reached its stabilization year, revenues are presented for the final year of the analysis period and for the total, twenty-year analysis period.

The incremental cost of the alternative by-right development to the County is relatively small. In the final year of the analysis period, total annual costs to the County are estimated to be \$23,075, with only \$25 being costs incurred by the County's enterprises. The County's total cost over the twenty-year analysis period is estimated to be \$172,775, with only \$225 incurred by the County's enterprises. In the final year of the analysis period, the projected surplus revenue from the alternative by-right development is estimated at \$403,350, of which \$39,200 will be paid to its enterprise funds. These net revenues include one-time revenues, however, and the alternative development would generate \$382,150 in operating revenues for its general fund and \$13,475 in operating revenues for its enterprise funds. Over the twenty-year period, including one-time revenues, the County is projected to add \$2,973,700 to its general fund and \$332,525 to its enterprise funds.

Table 14, on page 22 shows the alternative by-right development's cash flow for selected years. Table 15, which follows, shows the fiscal impact of the alternative by-right development. Table 16 shows the fiscal impact excluding enterprise funds.

**Table 13  
Alternative By-Right Development  
Projected Revenues**

Revenue Type	Annual Revenues <sup>1</sup>	Twenty-Year Total
Real Estate Property Tax <sup>2</sup>	\$161,125	\$1,364,575
Business Personal Property Tax	\$ 72,000	\$ 616,000
Business License Fee	\$142,175	\$1,066,350
Communication Sales Tax and other fees	\$ 6,850	\$ 51,300
Building Permits		\$ 37,025
Sign Permits		\$ 1,250
Site Plan Fees <sup>3</sup>		\$ 3,125
Erosion and Sediment Control CO		\$ 3,925 \$ 2,700
<b><i>Subtotal Revenues</i></b>	<b><i>\$382,150</i></b>	<b><i>\$3,146,250</i></b>
<b><i>Subtotal One-time Revenues</i></b>		<b><i>\$ 48,025</i></b>
<i>Sewer/Water Utility Enterprise Funds</i>		
Sewer Fees	\$ 5,400	\$ 40,575
Sewer Connection Fee		\$ 148,500
Solid Waste Fees	\$ 8,050	\$ 60,450
Water Connection Fee		\$ 83,250
<b><i>Subtotal Revenues</i></b>	<b><i>\$ 13,450</i></b>	<b><i>\$ 332,775</i></b>
<b><i>Subtotal One-time Revenues</i></b>		<b><i>\$ 231,750</i></b>
<b>Total Revenues</b>	<b>\$395,600</b>	<b>\$3,479,025</b>
<b>Total One-time Revenues</b>		<b>\$ 277,275</b>

<sup>1</sup>In the final year of the analysis period

<sup>2</sup>Less taxes currently being paid on land

<sup>3</sup>Includes inspection fees

All revenues rounded to the nearest \$25

<b>Table 14</b>						
<b>Alternative By-Right Development</b>						
<b>Projected Cash Flow (All Funds)</b>						
	FY 2017	FY 2020	FY 2023	FY 2026	FY 2029	FY 2034
Total Revenues	\$60,675	\$71,625	\$144,225	\$165,700	\$280,075	\$426,425
Total Costs	\$ 750	\$ 3,000	\$ 5,225	\$ 8,925	\$ 13,400	\$ 23,075
Total Cash Flow	\$59,925	\$68,625	\$139,000	\$156,775	\$266,675	\$403,350

Figures rounded to the nearest \$25.

<b>Table 15</b>	
<b>Alternative By-Right Development</b>	
<b>Fiscal Impact Measures</b>	
<b>(General Fund Only)</b>	
Total Revenues	\$3,146,250
Total Cost	\$ 172,550
Cumulative Cash Flow	\$2,973,700
Benefit-to-Cost Ratio	18.23-to-1

Figures rounded to the nearest \$25.

<b>Table 16</b>	
<b>Alternative By-Right Development</b>	
<b>Fiscal Impact Measures (All Funds)</b>	
Total Revenues	\$3,479,025
Total Cost	\$ 172,775
Cumulative Cash Flow	\$3,306,250
Benefit-to-Cost Ratio	20.14-to-1

Figures rounded to the nearest \$25.

Net Fiscal Impact of Residential and Commercial Development at Whittaker's Mill

Net revenues from the alternative by-right development were then subtracted from the net revenues calculated for the proposed development to calculate the net fiscal impact. Although development of parcel 011-16-2 (the site of the proposed residential development) would not be expected to occur before 2040, the alternative by-right development could occur on parcel 011-16-4 in the absence of residential development on parcel 011-16-2. Therefore, the net fiscal impact for the proposed residential development was calculated in addition to the net fiscal impact of the entire proposed development. Net cash flows for the residential (residential fiscal impact less the by-right fiscal impact) and the combined residential-commercial development (total fiscal impact less the by-right fiscal impact) are presented in tables 17 and 18, below and on the following page, respectively.

<b>Table 17</b> <b>Whittaker's Mill Residential Development</b> <b>Projected Net Cash Flow</b>						
	FY 2017	FY 2020	FY 2023	FY 2026	FY 2029	FY 2034
<i>General Fund</i>						
Total Revenues	\$205,725	\$622,625	\$628,550	\$582,225	\$494,625	\$350,550
Total Costs	\$ 69,850	\$341,125	\$453,300	\$449,625	\$445,150	\$435,475
Total Cash Flow	\$135,875	\$281,500	\$175,250	\$132,600	\$ 49,475	\$(84,925)
<i>All Funds</i>						
Total Revenues	\$418,525	\$924,825	\$709,475	\$688,000	\$573,625	\$427,275
Total Costs	\$ 75,025	\$366,375	\$487,050	\$483,350	\$479,300	\$469,200
Total Cash Flow	\$343,500	\$558,450	\$222,425	\$204,650	\$ 94,325	\$(41,925)

Figures rounded to the nearest \$25

**Table 18**  
**Whittaker's Mill Combined Residential and Commercial Development**  
**Projected Net Cash Flow**

	FY 2017	FY 2020	FY 2023	FY 2026	FY 2029	FY 2034
<i>General Fund</i>						
Total Revenues	\$207,325	\$ 907,450	\$1,168,975	\$1,453,150	\$1,627,475	\$1,484,025
Total Costs	\$ 69,875	\$ 347,800	\$ 465,925	\$ 475,525	\$ 482,150	\$ 472,500
Total Cash Flow	\$137,450	\$ 559,650	\$ 703,050	\$ 977,625	\$1,145,325	\$1,011,525
<i>All Funds</i>						
Total Revenues	\$420,125	\$1,258,225	\$1,517,750	\$1,893,825	\$1,856,075	\$1,710,350
Total Costs	\$ 75,050	\$ 373,050	\$ 499,975	\$ 509,300	\$ 526,925	\$ 517,275
Total Cash Flow	\$345,075	\$ 885,175	\$1,018,075	\$1,384,525	\$1,329,150	\$1,192,075

Figures rounded to the nearest \$25

It can be seen in the last year of the net cash flow analysis for the residential development that, by the last year of the analysis period, net cash flows turn negative. This indicates that, with 180,000 square feet of office space developed and 155,000 square feet occupied, surplus revenues from office development would exceed surplus revenues from the proposed residential development. Indeed net revenues from residential development begin to decline shortly after residential development reaches its stabilization year as revenues from the proposed residential development no longer increase while revenues from the alternative by-right development continue to grow. We see that for the combined residential and commercial development, net revenues also begin to decline after the stabilization year for the proposed development is reached, though the net fiscal impact of the combined development remains significantly positive.

Too much should not be made of the surplus revenue generation advantage that office development has over residential development. The alternative by-right projection is based on an optimistic scenario. It is entirely possible, even likely, that this scenario will not occur and that office development would underperform these projections, if office development ever would occur on the site to begin with. If the alternative by-right development projections were risk adjusted, surplus revenues would be considerably smaller and the net cash flow of the proposed residential development would remain significantly positive well beyond the analysis period.

In fact, it is more likely that no prudent developer would invest in the necessary infrastructure to build an office park in a location where the development costs are so high and the projected absorption is so low. The interest carry on the land and improvements would doom the financial feasibility of the project, as evidenced by the fact that this property has been on the market for this use for 25 years with no prospective purchasers.

More significant than the cash flow comparison is the calculation of net fiscal impact using total revenues and costs during the analysis period. These net fiscal impact metrics are presented in tables 19 and 20, below. Both the general fund and the combined general fund and enterprise funds show positive net fiscal impacts.

<b>Table 19</b>	
<b>Whittaker's Mill</b>	
<b>Net Fiscal Impact Measures (General Fund Only)</b>	
<b>Residential Development</b>	
Total Revenues	\$9,474,550
Total Cost	<u>\$7,249,175</u>
Cumulative Cash Flow	\$2,225,375
Benefit-to-Cost Ratio	1.31-to-1
<b>Combined Development</b>	
Total Revenues	\$22,525,950
Total Cost	<u>\$ 7,649,475</u>
Cumulative Cash Flow	\$14,876,475
Benefit-to-Cost Ratio	2.94-to-1

Figures rounded to the nearest \$25.

<b>Table 20</b>	
<b>Whittaker's Mill</b>	
<b>Net Fiscal Impact Measures (All Funds Only)</b>	
<b>Residential Development</b>	
Total Revenues	\$12,295,175
Total Cost	<u>\$ 7,869,750</u>
Cumulative Cash Flow	\$ 4,425,425
Benefit-to-Cost Ratio	1.56-to-1
<b>Combined Development</b>	
Total Revenues	\$28,013,225
Total Cost	<u>\$ 8,269,600</u>
Cumulative Cash Flow	\$19,743,625
Benefit-to-Cost Ratio	3.39-to-1

Figures rounded to the nearest \$25.

Even more illustrative of the true net fiscal impact of the proposed development is the discounted net fiscal impact. This takes into consideration the time value of money (revenue received sooner is more valuable than revenue received later). A discount rate of 5% annually was used to compute the discounted net fiscal impact. These metrics are presented in tables 21 and 22 on the following page.

<b>Table 21</b>	
<b>Whittaker's Mill</b>	
<b>Discounted Net Fiscal Impact Measures (General Fund Only)</b>	
<b>Residential Development</b>	
Total Revenues	\$ 5,819,150
Total Cost	\$ 4,058,575
Cumulative Cash Flow	\$ 1,760,575
Benefit-to-Cost Ratio	1.43-to-1
<b>Combined Development</b>	
Total Revenues	\$12,433,550
Total Cost	\$ 4,256,775
Cumulative Cash Flow	\$ 8,176,775
Benefit-to-Cost Ratio	2.92-to-1

Figures rounded to the nearest \$25.

<b>Table 22</b>	
<b>Whittaker's Mill</b>	
<b>Net Fiscal Impact Measures (All Funds Only)</b>	
<b>Residential Development</b>	
Total Revenues	\$ 7,527,075
Total Cost	\$ 4,393,875
Cumulative Cash Flow	\$ 3,133,200
Benefit-to-Cost Ratio	1.71-to-1
<b>Combined Development</b>	
Total Revenues	\$15,646,700
Total Cost	\$ 4,592,350
Cumulative Cash Flow	\$11,054,350
Benefit-to-Cost Ratio	3.41-to-1

Figures rounded to the nearest \$25.

When the present value of money is considered, net fiscal impact measures for the residential development alone become even more positive. Not only does the benefit-to-cost measure (the most valid fiscal impact metric when comparing current and present value) improve, but the net cumulative cash flow, once discounted, also improves. This indicates a significant weighting of revenues for the residential development toward an earlier pay-back when compared to the alternative by-right development.

PLANNING  
York County

JUL 1 2014

Planning Division

# Whittaker's Mill Traffic Impact Analysis

## York County, Virginia

*Prepared on*

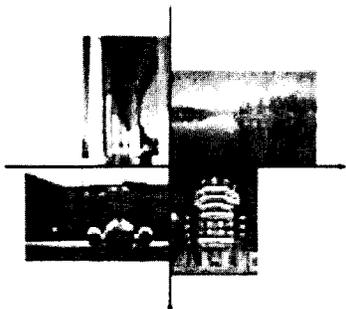
June 25, 2014

*Prepared for*

Mid-Atlantic Communities, LLC

Yorktown, Virginia

*Prepared by*



**URS**

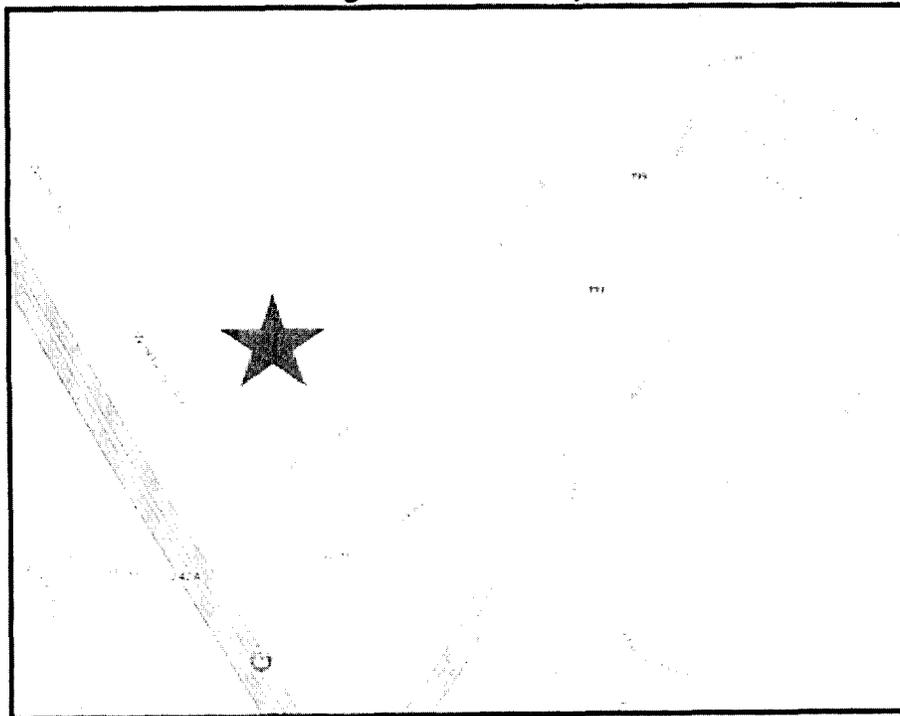
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## I. Introduction

Mid-Atlantic Communities, LLC has engaged URS Corporation (URS) to perform a traffic impact analysis for a proposed 222 unit residential community located in York County, Virginia. The community is situated on the north side of Penniman Road (Route 641), east of Interstate 64, and along Winchester Road – see **Figure 1: Site Map**. There are two proposed points of access to the development on Penniman Road: access along Winchester Road and a proposed entrance located approximately 890 feet north of Winchester Road. Ultimately, a new road connection being proposed from Humelsine Parkway (Route 199) to Penniman Road will provide a more direct route from the site to Humelsine Parkway. The study will also consider a 32 acre tract of adjacent land (between Penniman Road and Humelsine Parkway) that is zoned commercial that will be developed in the future by others.

The purpose of this report is to document a study of the traffic impacts of the proposed residential community. After this introduction, Existing Conditions will be documented. Next, No-Build Conditions will be developed and analyzed. Then, Interim Build Conditions will be developed and analyzed. Next, Full Build Conditions will be developed and analyzed. All Build Conditions analysis will include determining any necessary improvements to maintain adequate traffic conditions. Finally, a summary of the entire analysis and necessary improvements will be discussed.

**Figure 1: Site Map**



## II. Existing Conditions

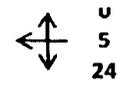
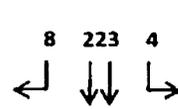
The proposed site is situated on the north side of Penniman Road (Route 641), east of Interstate 64, and along Winchester Road. The existing site is vacant.

Adjacent to and south of the site, Penniman Road (Route 641) is a two-lane undivided urban collector with a posted speed limit of 35 MPH. VDOT estimates the average annual daily traffic (AADT) volume on Penniman Road is 2,600 south of Humelsine Parkway (Route 199) and 5,300 north of Humelsine Parkway (2012 volumes). Located approximately ¼ mile from the site, Humelsine Parkway (Route 199) is a four-lane divided urban minor arterial with a posted speed limit of 55 MPH. VDOT estimates the AADT volume on Humelsine Parkway is 15,000 between I-64 and Water Country Parkway and 7,800 between Water Country Parkway and Penniman Road (2012 volumes).

This study will focus on access to the proposed residential development as well as turn lane warrant analysis to determine the need for turn lanes and the impact of the increased volume.

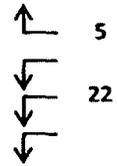
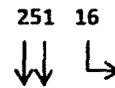
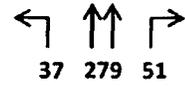
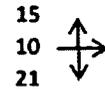
Turning movement traffic counts at the intersection of Marquis Parkway with Humelsine Parkway, Penniman Road with Humelsine Parkway, and Penniman Road with Water Country Parkway were conducted between June 17, 2014 and June 23, 2014; all counts were conducted by URS. The results of the traffic counts are documented in the Technical Appendix. The Existing Conditions lane geometry and peak hour volumes can be found in **Figures 2** and **3**. Traffic signal timing was provided by VDOT.

Using the peak hour traffic volumes found in **Figures 2** and **3**, Existing Conditions capacity analysis was conducted. Synchro 8 software was used for the analysis using *2010 Highway Capacity Manual* procedures. **Tables 1** and **2** summarize the results of the Existing Conditions capacity analysis. The signalized intersection of Marquis Parkway with Humelsine Parkway operates with good (Level of Service B or better) overall intersection service level conditions with LOS A and B conditions in the AM and PM peak hours, respectively. The unsignalized intersections of Humelsine Parkway with Water Country Parkway, Penniman Road with Humelsine Parkway, and Penniman Road with Water Country Parkway all operate with LOS C or better service levels in both peak hours.

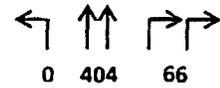


Penniman Road  
Route 641

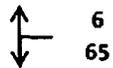
Tranquility Drive



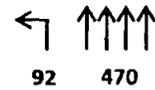
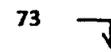
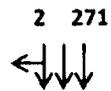
Marquis Parkway



Proposed  
Site

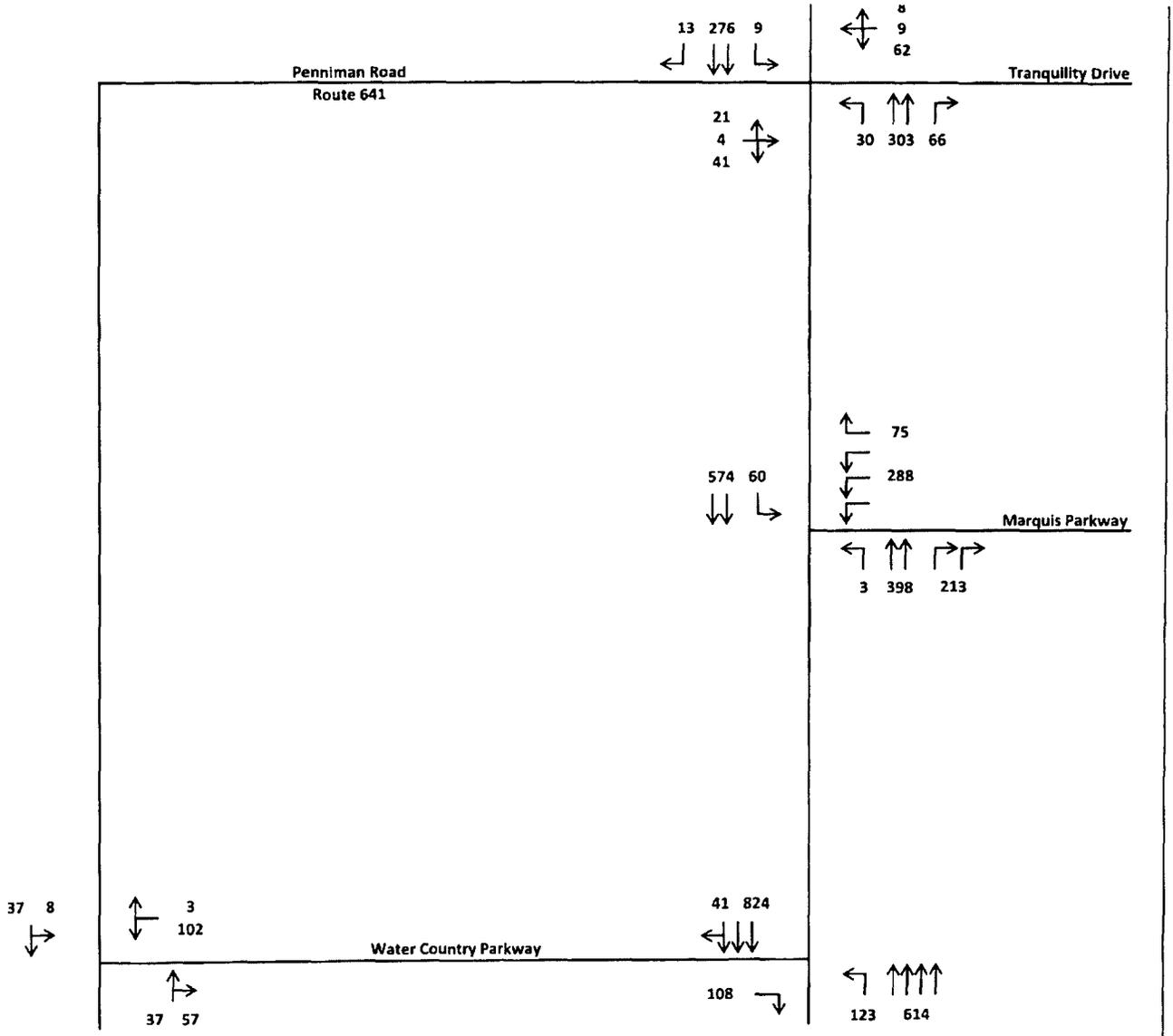


Water Country Parkway





Proposed Site



<b>Table 1</b>				
<b>Existing Conditions</b>				
<b>Average Signalized Vehicle Delay and Service Levels</b>				
<b>Movement</b>	<b>AM Peak Hour</b>		<b>PM Peak Hour</b>	
	<b>Delay (sec.)</b>	<b>LOS</b>	<b>Delay (sec.)</b>	<b>LOS</b>
<b>Marquis Parkway @ Humelsine Parkway</b>				
WB Left	18.1	B	21.3	C
WB Right	18.1	B	20.8	C
NB Left (U-Turn*)	-	-	-	-
NB Through	9.3	A	12.1	B
NB Right	0.0	A	0.0	A
SB Left	7.9	A	9.5	A
SB Through	3.7	A	5.8	A
<b>Overall Intersection</b>	<b>7.7</b>	<b>A</b>	<b>12.4</b>	<b>B</b>

\*HCM 2010 does not analyze U-turns

<b>Table 2</b>				
<b>Existing Conditions</b>				
<b>Average Unsignalized Vehicle Delay and Service Levels</b>				
<b>Movement</b>	<b>AM Peak Hour</b>		<b>PM Peak Hour</b>	
	<b>Delay (sec.)</b>	<b>LOS</b>	<b>Delay (sec.)</b>	<b>LOS</b>
<b>Humelsine Parkway @ Water Country Parkway</b>				
EB Right	10.4	B	15.4	C
NB Left	9.9	A	17.6	C
NB Through	0.0	A	0.0	A
SB Through/Right	0.0	A	0.0	A
<b>Penniman Road @ Humelsine Parkway</b>				
EB Left/Through/Right	12.1	B	12.0	B
WB Left/Through/Right	14.7	B	16.8	C
NB Left	7.8	A	7.9	A
NB Through	0.0	A	0.0	A
NB Right	0.0	A	0.0	A
SB Left	7.9	A	8.0	A
SB Through	0.0	A	0.0	A
SB Right	0.0	A	0.0	A
<b>Penniman Road &amp; Water Country Parkway</b>				
WB Left/Right	9.4	A	9.8	A
NB Through/Right	0.0	A	0.0	A
SB Left/Through	2.6	A	1.3	A

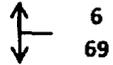
### III. No-Build Conditions

According to the Virginia Department of Transportation project website, the Average Annual Daily Traffic on Humelsine Parkway is currently 7,800 vehicles. The recently constructed Marquis Center has played a large influence on daily traffic volumes over the last 7 years. Construction of this shopping center began in 2007 and by 2009 all of the stores that are presently constructed were open for business. Reviewing historical counts on Humelsine Parkway displays a jump in traffic volumes during the years of construction. Because of the large influence of the Marquis Center, historical VDOT traffic volumes from 2010 to 2012 were used to determine future growth rates. Over these years traffic growth was flat. To err on the conservative side a 1% annual growth rate has been applied to account for background traffic volumes. For the No-Build Conditions, a timeframe of 6 years was utilized to allow the project site to be constructed and attain full occupancy. This equates to a 6.2% compounded growth in traffic in the study area. No-Build Conditions volumes were developed by applying the 6.2% growth to the existing conditions volumes in the study area. The No-Build Conditions lane geometry and peak hour volumes can be found in **Figures 4 and 5**.

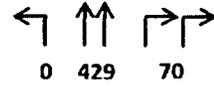
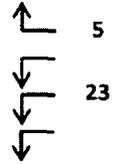
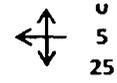
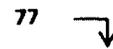
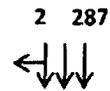
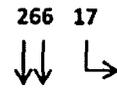
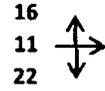
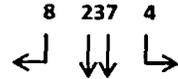
Using the peak hour traffic volumes found in **Figures 4 and 5**, No-Build Conditions capacity analysis was conducted. Synchro 8 software was used for the analysis using *2010 Highway Capacity Manual* procedures. **Tables 3 and 4** summarizes the results of the No-Build Conditions capacity analysis. The signalized intersection of Marquis Parkway and Humelsine Parkway operates with good (Level of Service B or better) overall intersection service levels conditions with LOS A and B conditions in the AM and PM peak hours, respectively. The unsignalized intersections of Humelsine Parkway with Water Country Parkway, Penniman Road with Humelsine Parkway, and Penniman Road with Water Country Parkway all operate with LOS C or better service levels in both peak hours. The No-Build Conditions are nearly identical to the existing conditions service levels.



Proposed Site



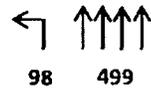
Penniman Road  
Route 641



Tranquility Drive

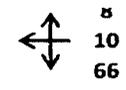
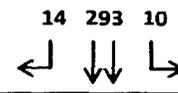
Marquis Parkway

Water Country Parkway

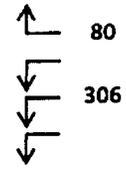
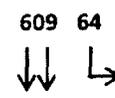
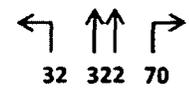
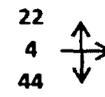




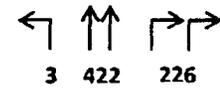
Penniman Road  
Route 641



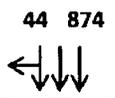
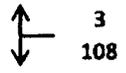
Tranquility Drive



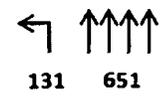
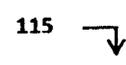
Marquis Parkway



Proposed Site



Water Country Parkway



<b>Table 3 No-Build Conditions Average Signalized Vehicle Delay and Service Levels</b>				
<b>Movement</b>	<b>AM Peak Hour</b>		<b>PM Peak Hour</b>	
	<b>Delay (sec.)</b>	<b>LOS</b>	<b>Delay (sec.)</b>	<b>LOS</b>
<b>Marquis Parkway @ Humelsine Parkway</b>				
WB Left	18.1	B	22.0	C
WB Right	18.1	B	21.4	C
NB Left (U-Turn*)	-	-	-	-
NB Through	9.5	A	12.3	B
NB Right	0.0	A	0.0	A
SB Left	7.8	A	10.0	A
SB Through	3.7	A	5.9	A
<b>Overall Intersection</b>	<b>7.8</b>	<b>A</b>	<b>12.7</b>	<b>B</b>

\*HCM 2010 does not analyze U-turns

<b>Table 4</b>				
<b>No-Build Conditions</b>				
<b>Average Unsignalized Vehicle Delay and Service Levels</b>				
<b>Movement</b>	<b>AM Peak Hour</b>		<b>PM Peak Hour</b>	
	<b>Delay (sec.)</b>	<b>LOS</b>	<b>Delay (sec.)</b>	<b>LOS</b>
<b>Humelsine Parkway @ Water Country Parkway</b>				
EB Right	10.6	B	11.2	B
NB Left	10.0	A	10.6	B
NB Through	0.0	A	0.0	A
SB Through/Right	0.0	A	0.0	A
<b>Penniman Road @ Humelsine Parkway</b>				
EB Left/Through/Right	12.6	B	12.4	B
WB Left/Through/Right	15.3	C	18.1	C
NB Left	7.9	A	8.0	A
NB Through	0.0	A	0.0	A
NB Right	0.0	A	0.0	A
SB Left	7.9	A	8.0	A
SB Through	0.0	A	0.0	A
SB Right	0.0	A	0.0	A
<b>Penniman Road &amp; Water Country Parkway</b>				
WB Left/Right	9.5	A	9.9	A
NB Through/Right	0.0	A	0.0	A
SB Left/Through	2.5	A	1.3	A

## IV. Trip Generation and Distribution

In the Interim Build Conditions, the proposed residential complex will provide a total of 112 single family homes and 110 townhomes. *Trip Generation 9th Edition* (the industry standard published by the Institute of Transportation Engineers) offers estimated trip generation rates. Trip generation values for the proposed residential complex are summarized in **Table 5**.

<b>Table 5 Interim Build (Site Trips) Trip Generation</b>						
<b>Land Use</b>	<b>Size</b>	<b>Daily Trips</b>	<b>AM Peak Hour</b>		<b>PM Peak Hour</b>	
			<b>Enter</b>	<b>Exit</b>	<b>Enter</b>	<b>Exit</b>
Single Family	112 D.U.	1,066	21	63	71	41
Townhomes	110 D.U.	639	8	40	38	19
<b>Site Total</b>	<b>222 D.U.</b>	<b>1,705</b>	<b>29</b>	<b>103</b>	<b>109</b>	<b>60</b>

In the Full Build Conditions, an adjacent 32-acre commercial lot will be developed to provide 300,000 square feet of retail space. The adjacent commercial lot is owned by others. Trip generation values for the proposed commercial parcel are summarized in **Table 6**.

<b>Table 6 Full Build (Adjacent Development) Trip Generation</b>						
<b>Land Use</b>	<b>Size</b>	<b>Daily Trips</b>	<b>AM Peak Hour</b>		<b>PM Peak Hour</b>	
			<b>Enter</b>	<b>Exit</b>	<b>Enter</b>	<b>Exit</b>
Shopping Center	300k sq.ft.	13,870	189	116	600	651

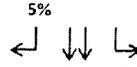
### *SITE ACCESS*

In the Interim Build Conditions, the proposed residential complex conceptual site plan proposes a several access points along Winchester Road, off of Penniman Road. An additional full-access site driveway will be installed approximately 890 feet north of the intersection of Winchester Road with Penniman Road. Trip distribution for the Interim Build Conditions is displayed in **Figures 6 and 7**. Trip distribution is based on the existing traffic patterns and surrounding land uses. The existing pattern is heavily weighted to and from I-64 along Humelsine Parkway. In the Interim Build Conditions, the vast majority of the site traffic will enter via Winchester Road, based on the layout of the site.

In the Full Build Conditions, the adjacent 32-acre commercial site is assumed to have been fully developed with 300k sq. ft. of retail (shopping center), necessitating several geometric changes to the local roadway network. A new road connection is assumed between the proposed northern residential site driveway and the intersection of Marquis Parkway with Humelsine Parkway. The initial proposal to make a connection from Humelsine Parkway to Penniman Road was pursued by York County prior to the initiation of the proposed Whittaker's Mill development. The proposed road connection would provide a fourth leg to the signalized intersection of Marquis Parkway and Humelsine Parkway. The new road connection may require the removal of the intersection of Water Country Parkway with Humelsine Parkway because of access management issues. This report has assumed that Water Country Parkway intersection with Humelsine Parkway has been eliminated and that Water Country Parkway was realigned to intersect with the new road connection. Trip distribution for the Full Build Conditions is displayed in **Figures 8** through **11**. Trip distribution is based on the existing traffic patterns and surrounding land uses. Again, the existing pattern is heavily weighted to and from I-64 along Humelsine Parkway. The proposed residential site plan is displayed in **Figure 12**.



Penniman Road  
Route 641

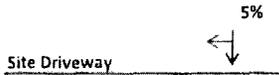


Tranquility Drive

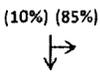
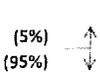


**Trip Distribution**

XX%	Entering Traffic
(XX%)	Exiting Traffic



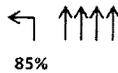
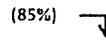
Proposed Site



Water Country Parkway

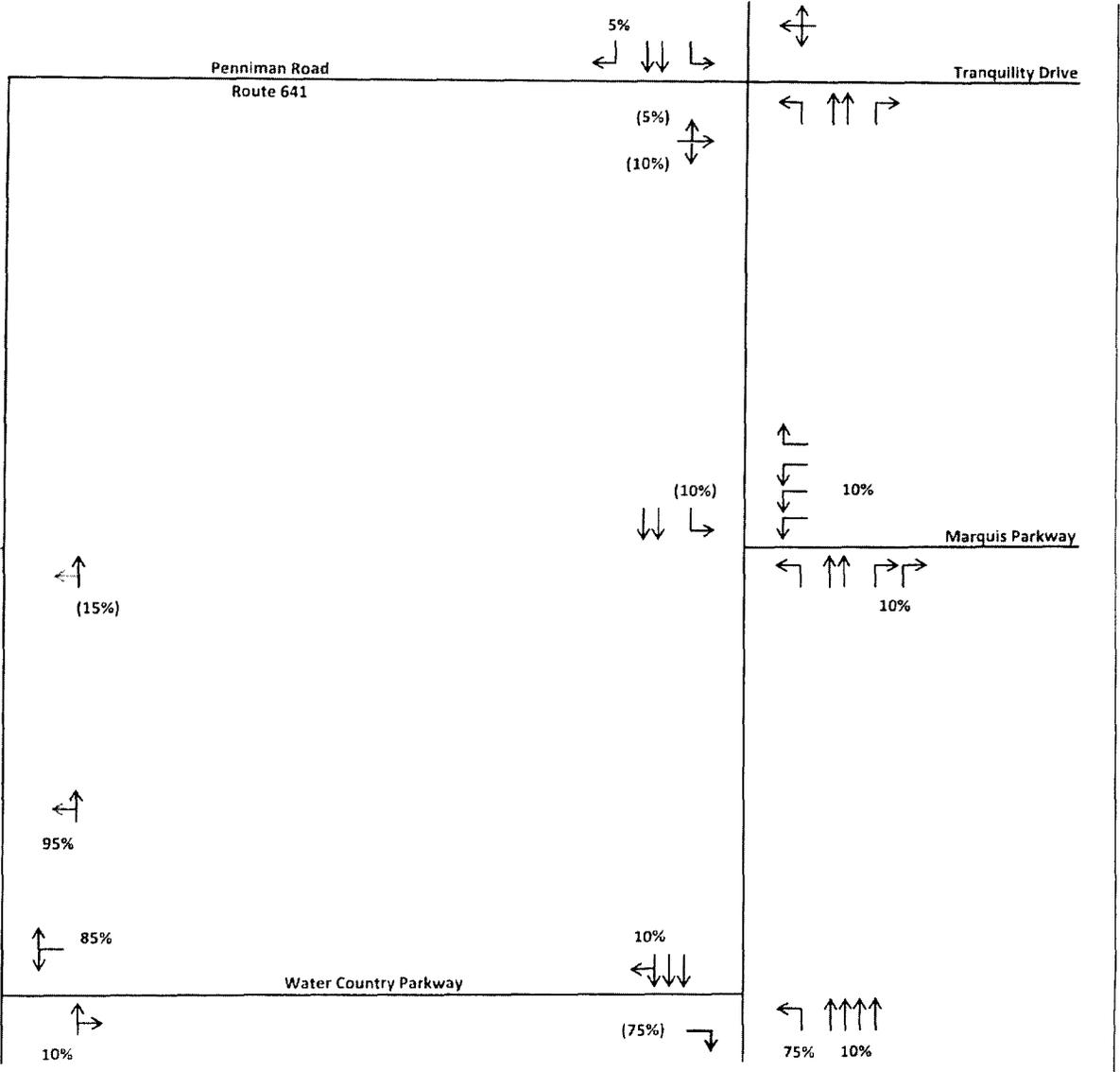


Marquis Parkway



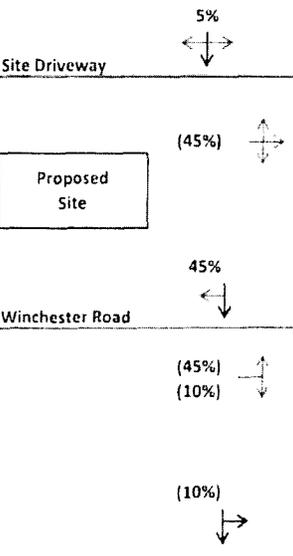
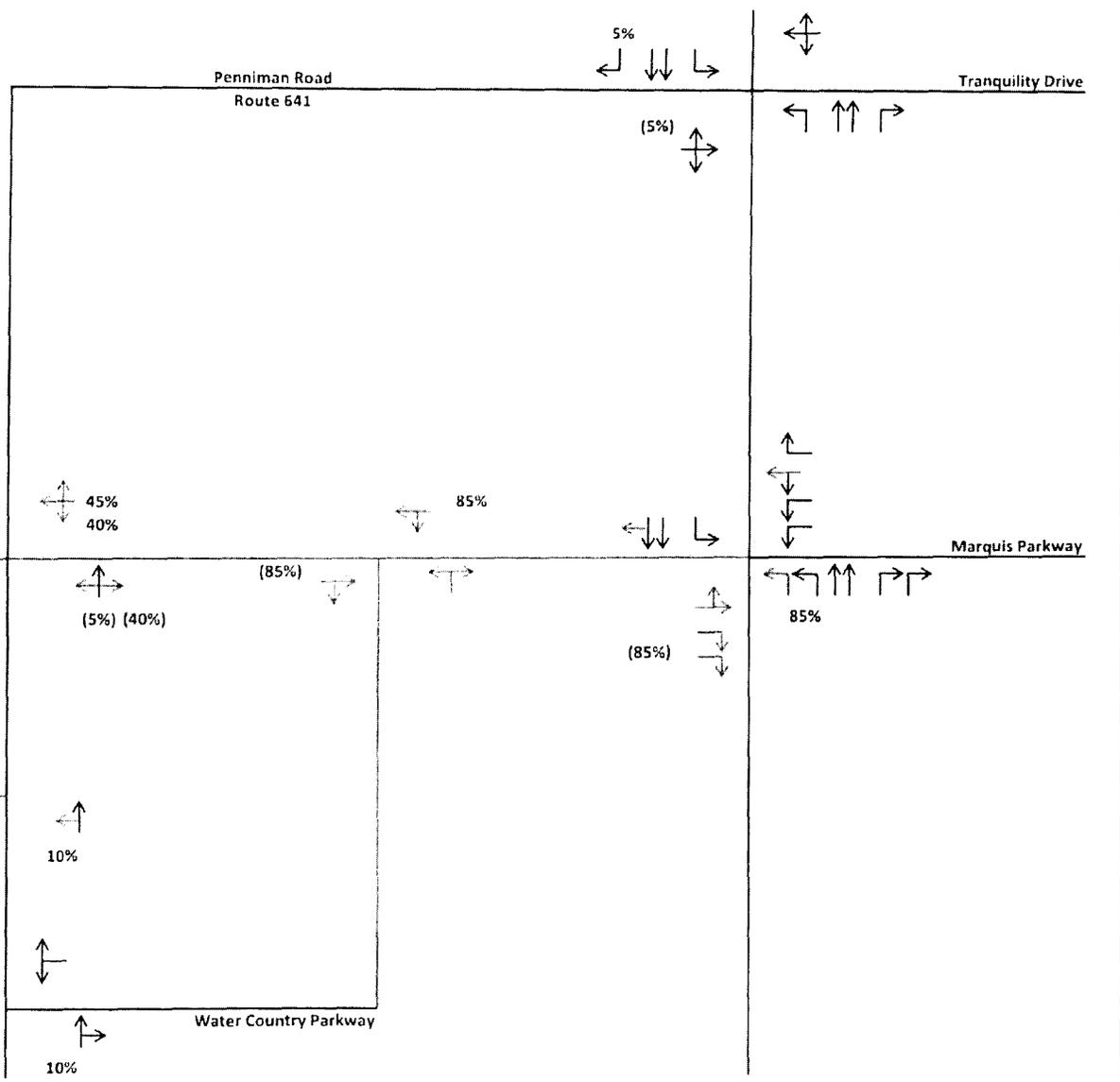


Trip Distribution	
XX%	Entering Traffic
(XX%)	Exiting Traffic



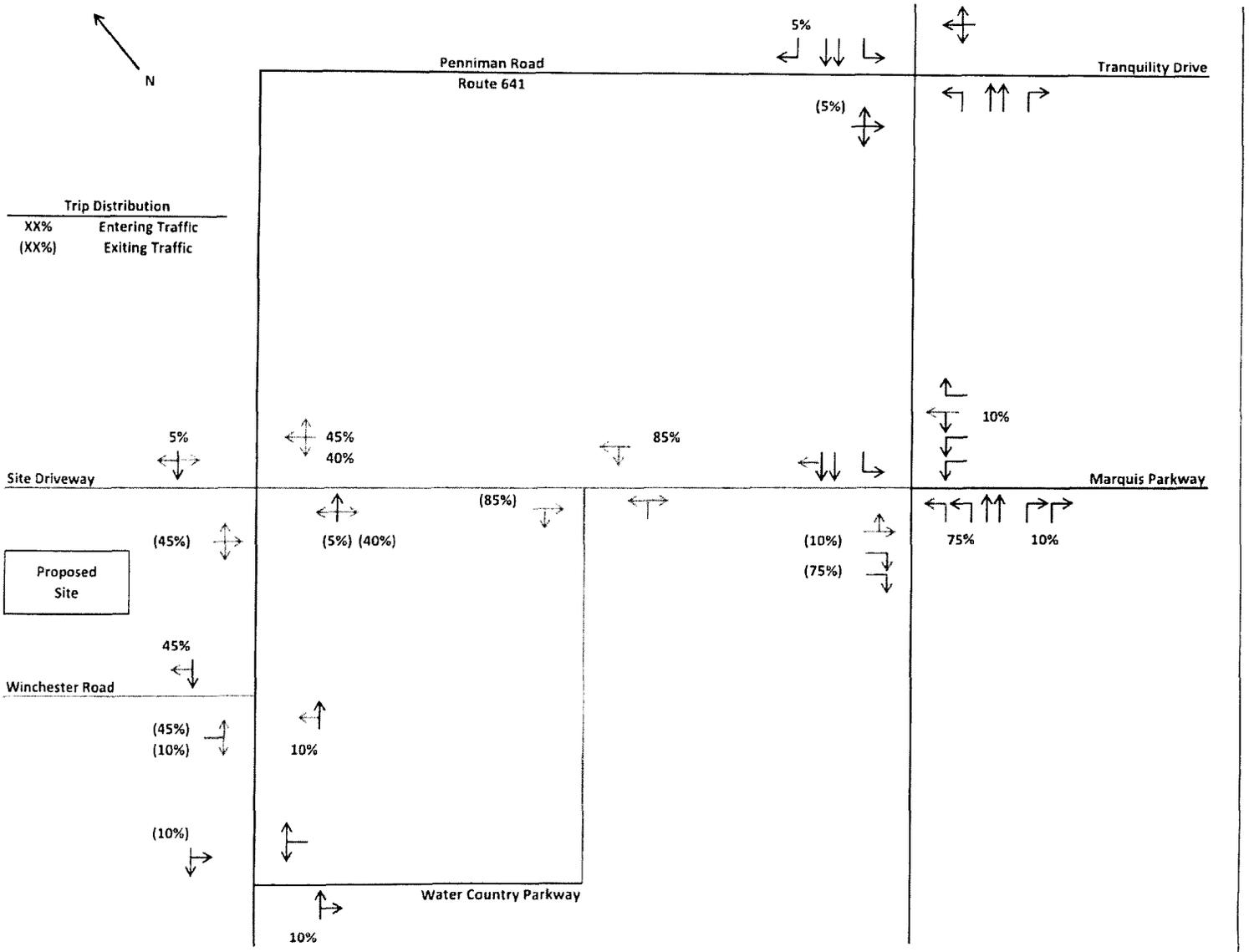


Trip Distribution	
XX%	Entering Traffic
(XX%)	Exiting Traffic



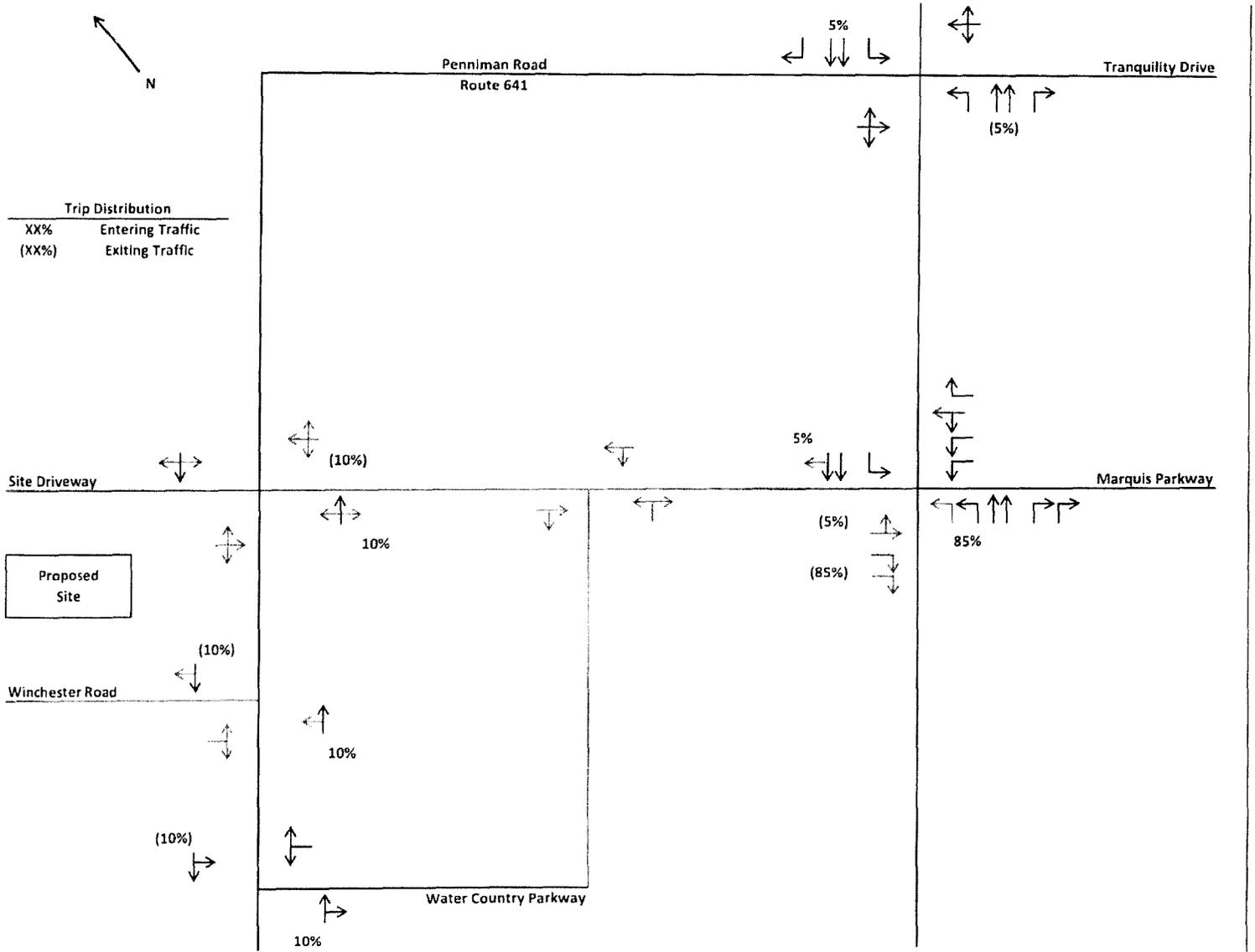


Trip Distribution	
XX%	Entering Traffic
(XX%)	Exiting Traffic



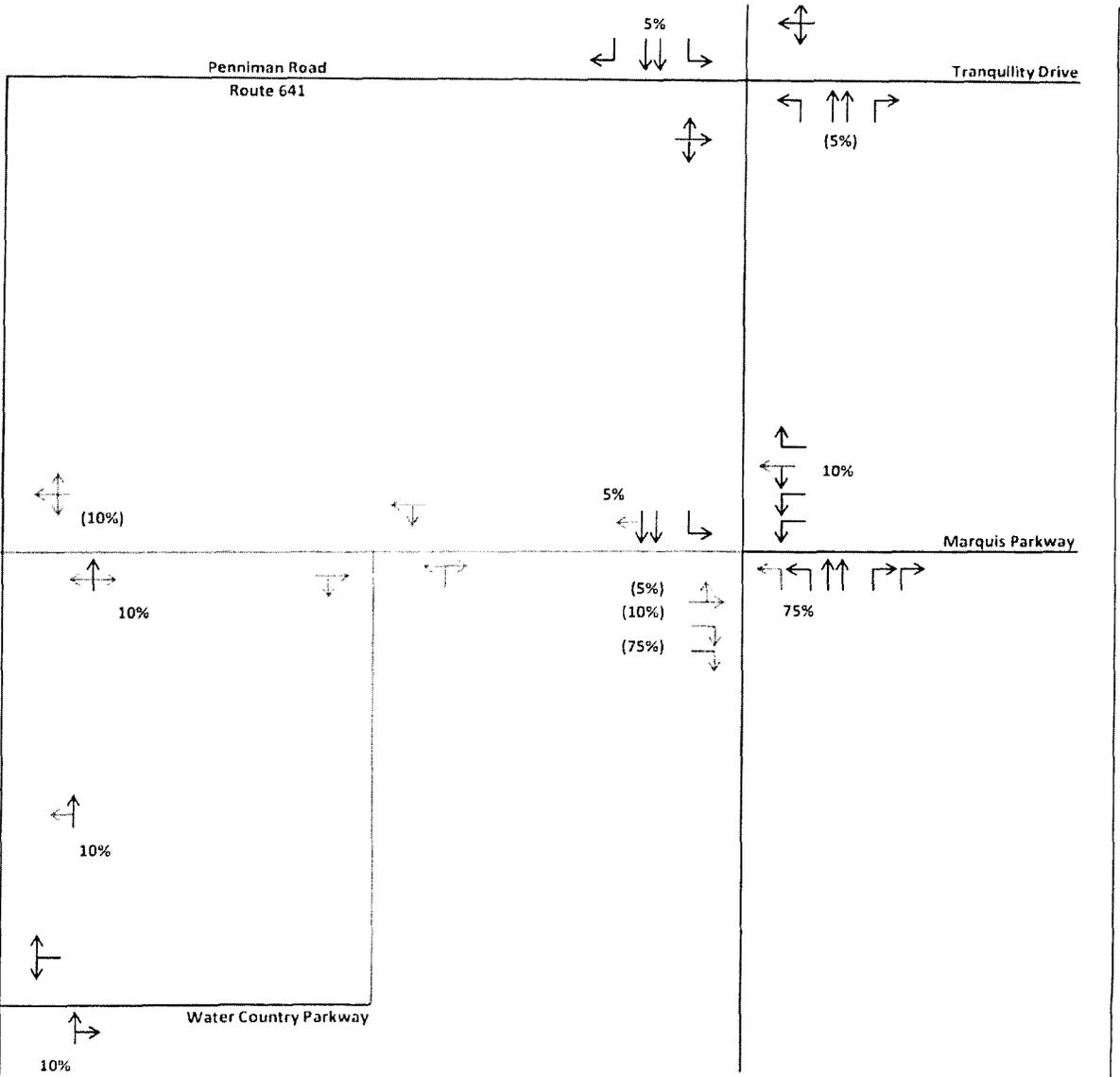


Trip Distribution	
XX%	Entering Traffic
(XX%)	Exiting Traffic





Trip Distribution	
XX%	Entering Traffic
(XX%)	Exiting Traffic

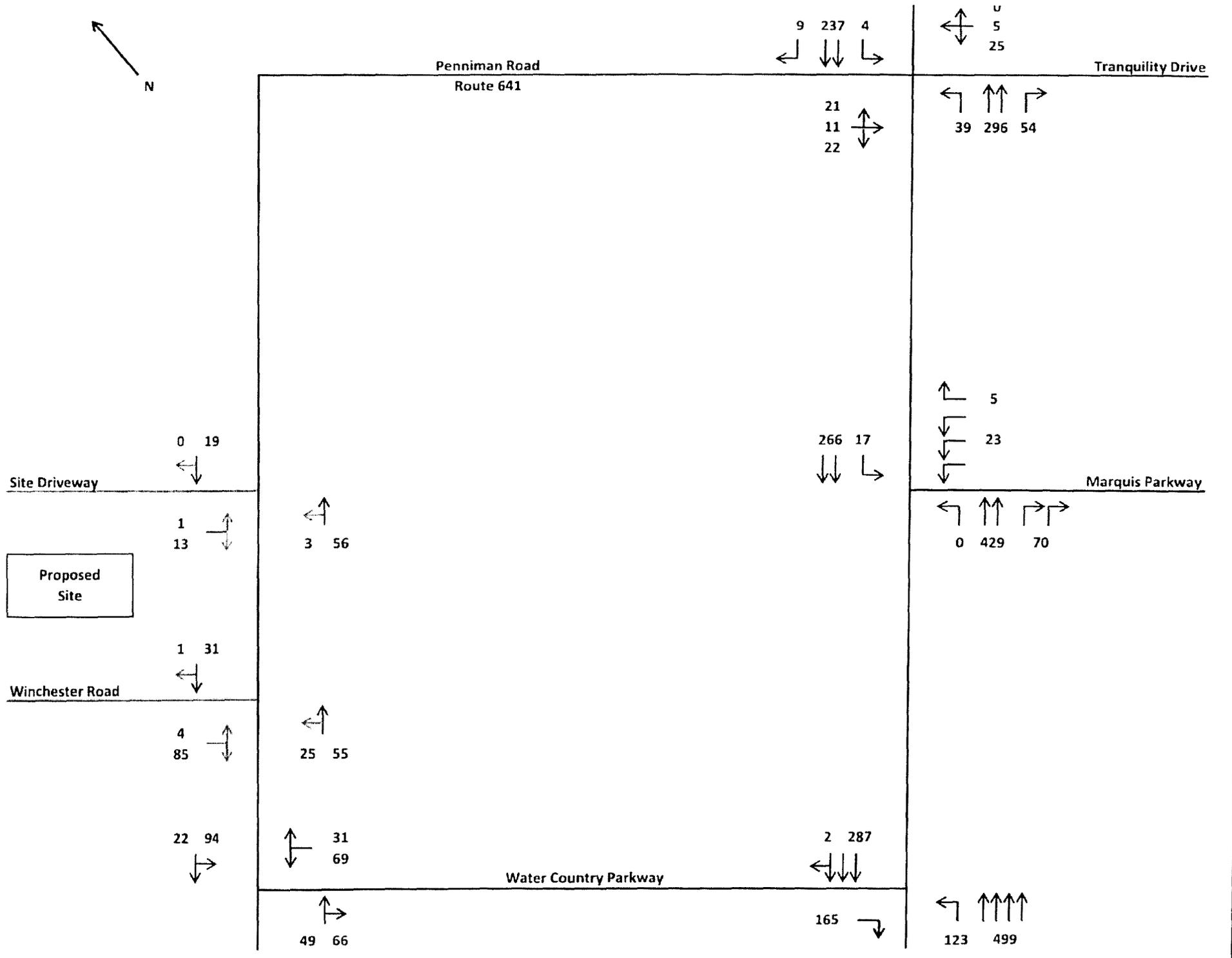


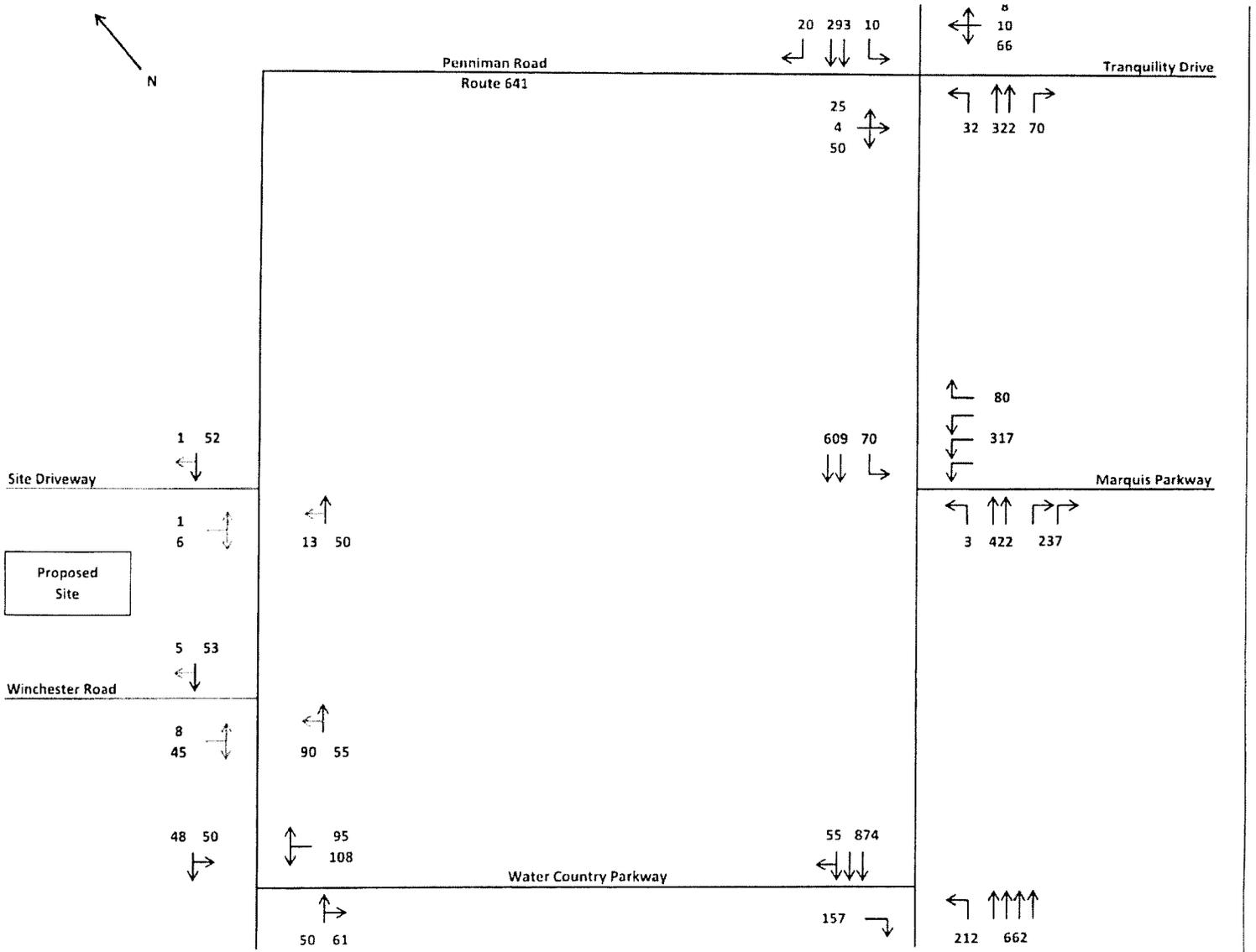


## V. Interim Build Conditions

The forecasted Build Conditions traffic volumes are the sum of the No-Build Conditions, plus the forecasted peak hour trips that will be generated by the proposed residential complex (previously shown in **Table 5**) that are applied according to the trip distribution diagrams found in **Figures 6** and **7**. The forecasted Interim Build Conditions traffic volumes can be found in **Figures 13** and **14**.

**Tables 7** and **8** summarize the results of the analysis of capacity of the Interim Build Conditions. In general, the proposed site development of a residential complex will impose nominal impacts on traffic. All movements varied by no more than a few seconds, and all existing intersections retain adequate levels of service.





<b>Table 7 Interim Build Conditions Average Signalized Vehicle Delay and Service Levels</b>				
<b>Movement</b>	<b>AM Peak Hour</b>		<b>PM Peak Hour</b>	
	<b>Delay (sec.)</b>	<b>LOS</b>	<b>Delay (sec.)</b>	<b>LOS</b>
<b>Marquis Parkway @ Humelsine Parkway</b>				
WB Left	18.1	B	22.1	C
WB Right	18.1	B	21.4	C
NB Left (U-Turn*)	-	-	-	-
NB Through	9.5	A	12.6	B
NB Right	0.0	A	0.0	A
SB Left	7.8	A	10.0	B
SB Through	3.7	A	6.0	A
<b>Overall Intersection</b>	<b>7.8</b>	<b>A</b>	<b>12.9</b>	<b>B</b>

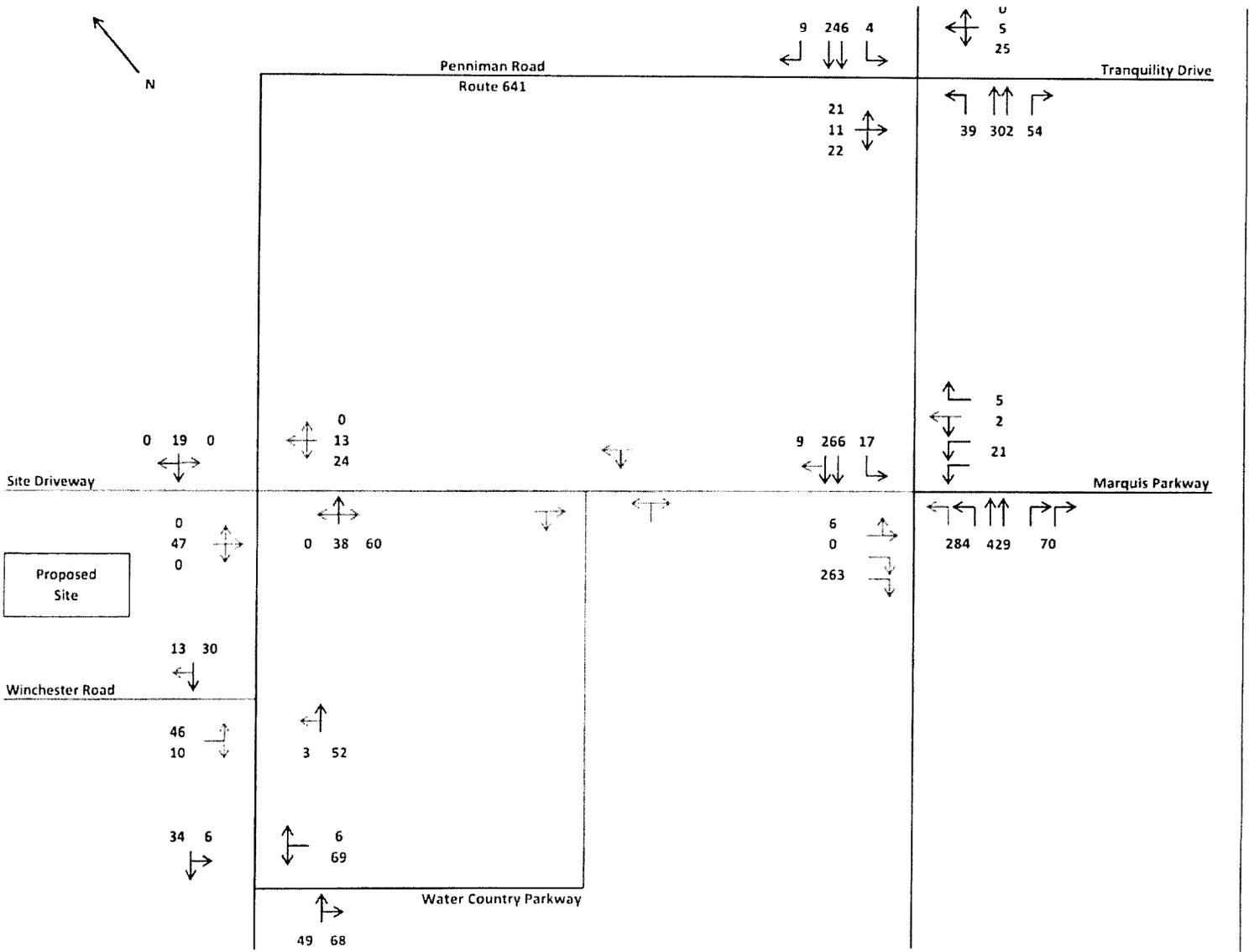
\*HCM 2010 does not analyze U-turns

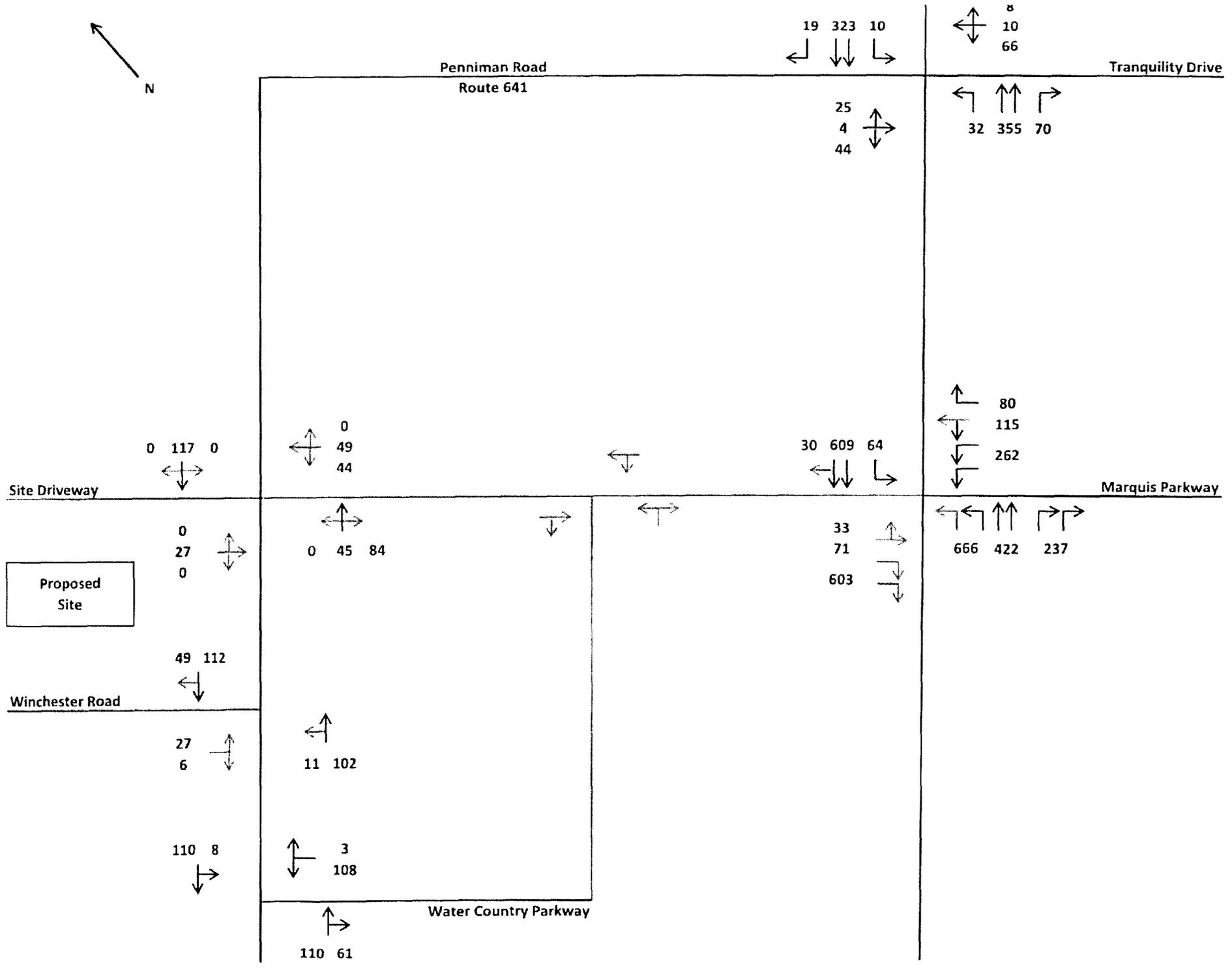
<b>Table 8</b>				
<b>Interim Build Conditions</b>				
<b>Average Unsignalized Vehicle Delay and Service Levels</b>				
<b>Movement</b>	<b>AM Peak Hour</b>		<b>PM Peak Hour</b>	
	<b>Delay (sec.)</b>	<b>LOS</b>	<b>Delay (sec.)</b>	<b>LOS</b>
<b>Humelsine Parkway @ Water Country Parkway</b>				
EB Right	11.5	B	11.8	B
NB Left	10.2	B	11.6	B
NB Through	0.0	A	0.0	A
SB Through/Right	0.0	A	0.0	A
<b>Penniman Road @ Humelsine Parkway</b>				
EB Left/Through/Right	12.8	B	12.5	B
WB Left/Through/Right	15.3	C	18.3	C
NB Left	7.9	A	8.0	A
NB Through	0.0	A	0.0	A
NB Right	0.0	A	0.0	A
SB Left	7.9	A	8.0	A
SB Through	0.0	A	0.0	A
SB Right	0.0	A	0.0	A
<b>Penniman Road &amp; Water Country Parkway</b>				
WB Left/Right	11.0	B	11.1	B
NB Through/Right	0.0	A	0.0	A
SB Left/Through	6.2	A	3.9	A
<b>Penniman Road &amp; Winchester Road</b>				
EB Left/Right	8.9	A	9.2	A
NB Left/Through	2.3	A	4.7	A
SB Through/Right	0.0	A	0.0	A
<b>Penniman Road &amp; Site Driveway</b>				
EB Left/Right	8.5	A	8.7	A
NB Left/Through	0.4	A	1.5	A
SB Through/Right	0.0	A	0.0	A

## **VI. Full Build Conditions**

The forecasted Full Build Conditions traffic volumes are the sum of the No-Build Conditions, plus the forecasted peak hour trips that will be generated by the residential complex as well as the adjacent commercial lot (previously shown in **Tables 5** and **6**) that are applied according to the trip distribution diagrams found in **Figures 8** through **11**. The forecasted Full Build Conditions traffic volumes can be found in **Figures 15** and **16**. The Full Build Conditions assume the proposed road connection between Humelsine Parkway and Penniman Road has been constructed and that the necessary changes have been made to the signalized intersection of Marquis Parkway and Humelsine Parkway. Proposed improvements to the signalized intersection include dual northbound left turn lanes, dual eastbound right turn lanes, and a shared through/left eastbound lane. Additionally, the outermost southbound through lane will be converted to a through/right lane, and the westbound right turn lane will be changed to a through/right lane. Improvements can be found in **Figures 15** and **16**.

**Tables 9** and **10** summarize the results of the analysis of capacity of the Full Build Conditions. In general, the addition of the commercial parcel to the proposed residential complex will impose nominal impacts on traffic over the Interim Build Conditions, with the exception of the signalized intersection of Marquis Parkway with Humelsine Parkway. Here, the overall intersection level of service goes from LOS A and B in the AM and PM hours, respectively, to LOS C and D. The removal of the intersection of Water Country Parkway with Humelsine Parkway necessitates all currently existing northbound left and eastbound right movements to shift to the signalized intersection; these volumes, coupled with the volumes associated with the residential complex and commercial parcel, necessitate dual northbound left turn lanes and dual eastbound right turn lanes. Even so, in the PM peak hour, the overall intersection delay is 38.4 seconds. This is an increase of nearly 26 seconds, but is still considered an adequate level of service for an urban area. The unsignalized intersections all retain adequate levels of service.





<b>Table 9</b>				
<b>Full Build Conditions</b>				
<b>Average Signalized Vehicle Delay and Service Levels</b>				
<b>Movement</b>	<b>AM Peak Hour</b>		<b>PM Peak Hour</b>	
	<b>Delay (sec.)</b>	<b>LOS</b>	<b>Delay (sec.)</b>	<b>LOS</b>
<b>Marquis Parkway @ Humelsine Parkway</b>				
EB Left/Through	25.4	C	53.7	D
EB Right	20.8	C	33.0	C
WB Left	29.6	C	48.1	D
WB Through	-	-	48.8	D
WB Right	29.7	C	46.6	D
NB Left	29.0	C	47.2	D
NB Through	16.8	B	17.4	B
NB Right	0.0	A	0.0	A
SB Left	18.4	B	26.0	C
SB Through	22.2	C	40.2	D
SB Right	22.1	C	40.0	D
<b>Overall Intersection</b>	<b>21.8</b>	<b>C</b>	<b>38.4</b>	<b>D</b>

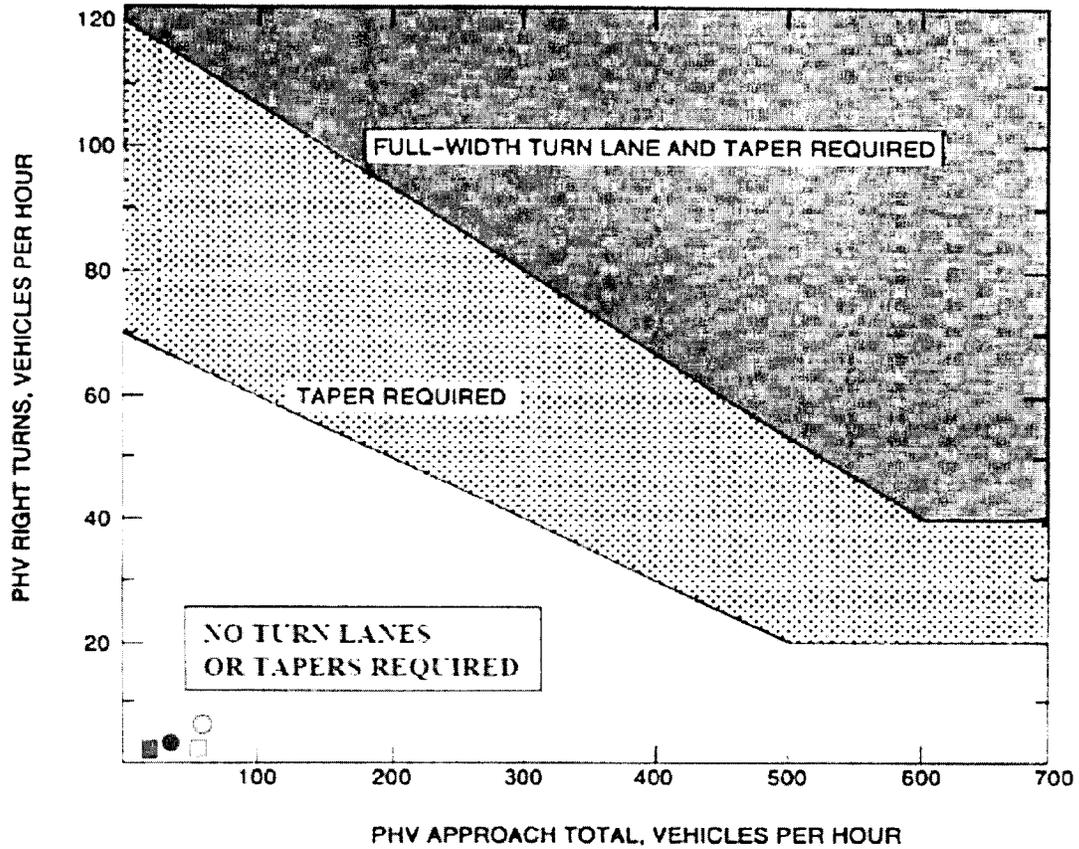
<b>Table 10</b>				
<b>Full Build Conditions</b>				
<b>Average Unsignalized Vehicle Delay and Service Levels</b>				
<b>Movement</b>	<b>AM Peak Hour</b>		<b>PM Peak Hour</b>	
	<b>Delay (sec.)</b>	<b>LOS</b>	<b>Delay (sec.)</b>	<b>LOS</b>
<b>Penniman Road @ Humelsine Parkway</b>				
EB Left/Through/Right	13.0	B	13.2	B
WB Left/Through/Right	15.5	C	19.7	C
NB Left	7.9	A	8.1	A
NB Through	0.0	A	0.0	A
NB Right	0.0	A	0.0	A
SB Left	7.9	A	8.1	A
SB Through	0.0	A	0.0	A
SB Right	0.0	A	0.0	A
<b>Penniman Road &amp; Water Country Parkway</b>				
WB Left/Right	9.6	A	11.2	B
NB Through/Right	0.0	A	0.0	A
SB Left/Through	1.1	A	0.5	A
<b>Penniman Road &amp; Winchester Road</b>				
EB Left/Right	9.2	A	10.2	B
NB Left/Through	0.4	A	0.7	A
SB Through/Right	0.0	A	0.0	A
<b>Penniman Road &amp; Site Driveway</b>				
EB Left/Through/Right	10.1	B	10.9	B
WB Left/Through/Right	9.7	A	11.2	B
NB Left/Through/Right	0.0	A	0.0	A
SB Left/Through/Right	0.0	A	0.0	A

## VII. Turn Lane Warrant Analysis

The residential complex proposes utilization of Winchester Road for the majority of its site entrances, as well as the construction of one new site driveway. In the Interim Build Conditions, the proposed new driveway will be a full-access driveway approximately 890 feet north of the intersection of Winchester Road with Penniman Road; in the Full Build Conditions, the new connection between Penniman Road and Humelsine Parkway will extend across from this driveway.

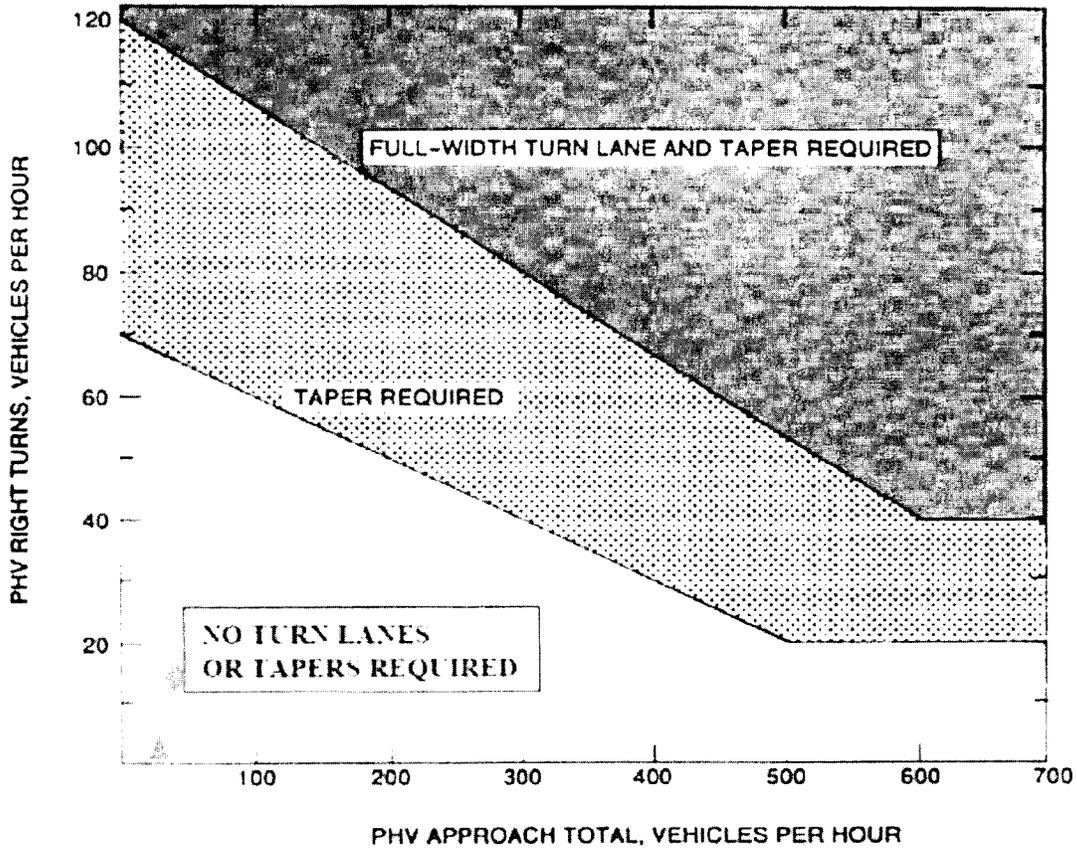
Using the forecasted Interim Build and Full Build Conditions volumes found in **Figures 13** through **16**, turn lane warrant analyses were conducted for the following turning movements: northbound Penniman Road left turn into Westchester Road; southbound Penniman Road right turn into Westchester Road; northbound Penniman Road left turn into the new site driveway; southbound Penniman Road right turn into the new site Driveway. **Figures 17** and **18** display the warrants for right turn treatments on two-lane roads for both Build Conditions for the AM and PM peak hours for Penniman Road. Based on the Build Conditions volumes, a right turn radius is warranted for the site driveway on Penniman Road in either the Interim Build or Full Build. **Figures 19** through **26** display the warrants for left turn treatments on two-lane roads for both Build Conditions for the AM and PM peak hours for Penniman Road. Based on the Build Conditions volumes, a left turn lane is not warranted for the site driveway on Penniman Road or the intersection of Winchester Road with Penniman Road; the current geometries do not provide for left turns.

**Figure 17: Warrant For Right Turn Treatment (2-Lane Highway) – Southbound Penniman Road Approaches to Site Driveway and Winchester Road  
Interim Build Conditions**



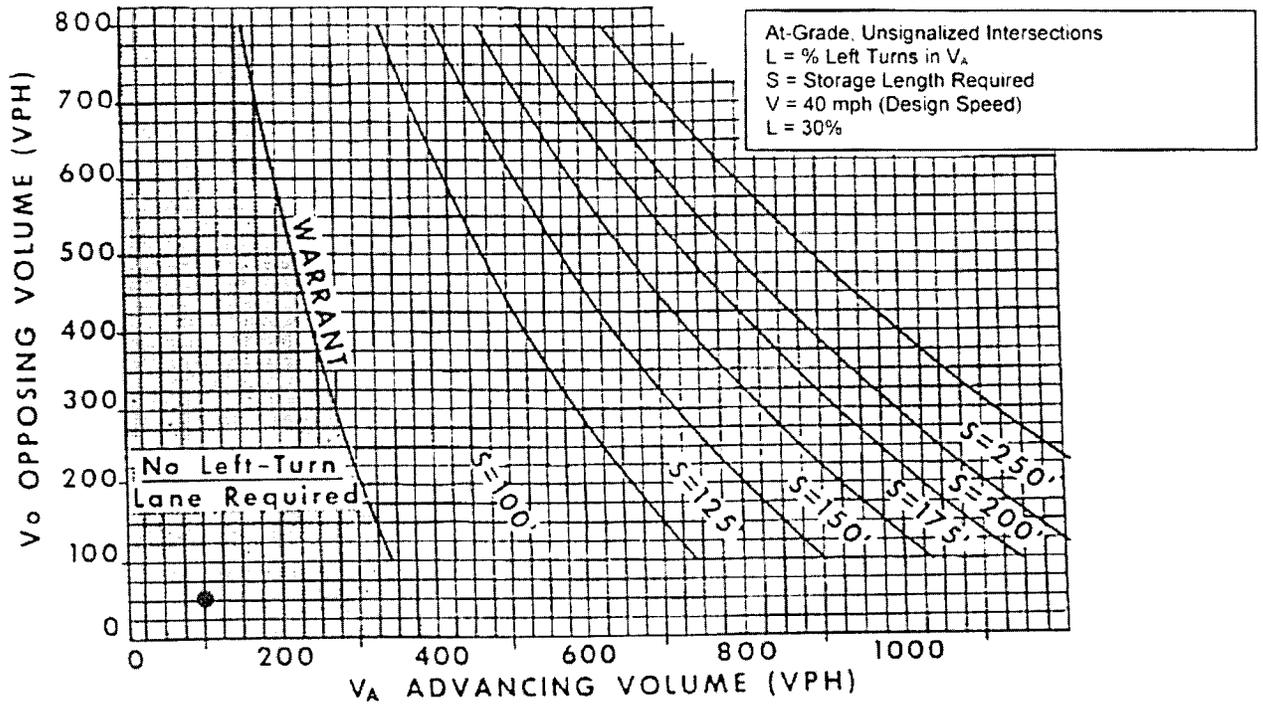
	Interim Build	
	AM	PM
Winchester Road	●	○
Site Driveway	■	□

**Figure 18: Warrant For Right Turn Treatment (2-Lane Highway) – Southbound Penniman Road Approaches to Site Driveway and Winchester Road  
Full Build Conditions**

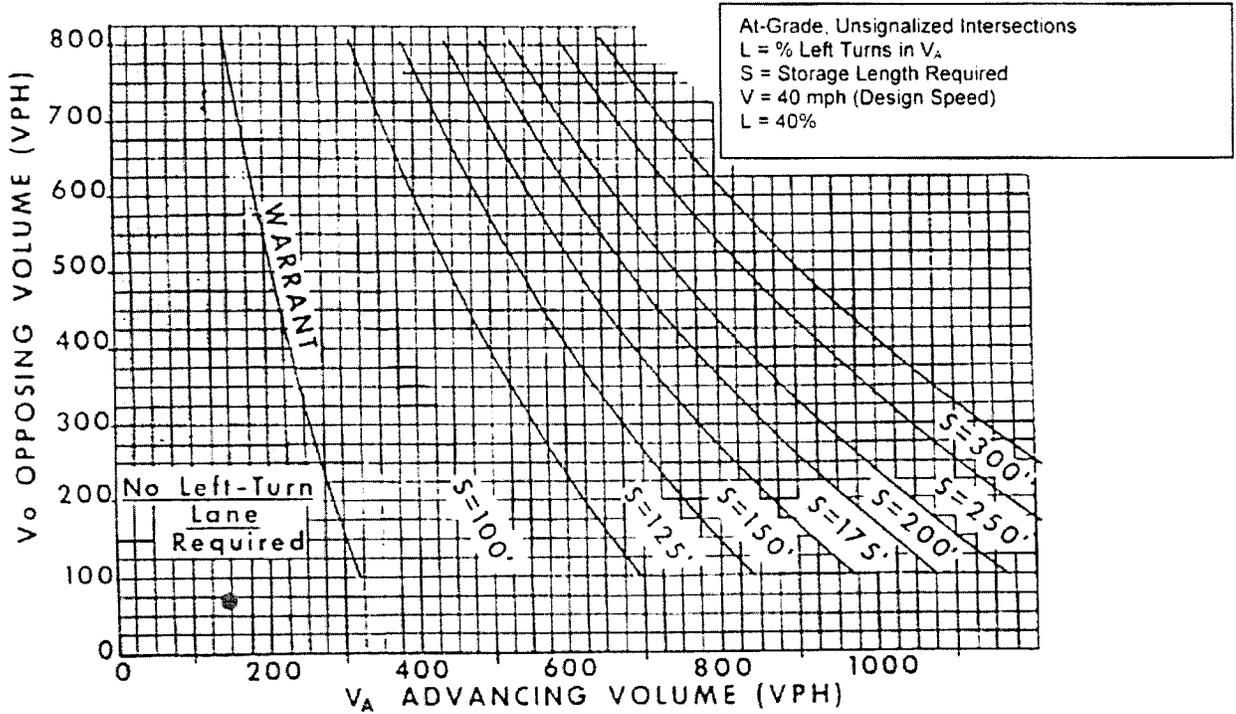


	Full Build	
	AM	PM
Winchester Road	↓	
Site Driveway	▲	

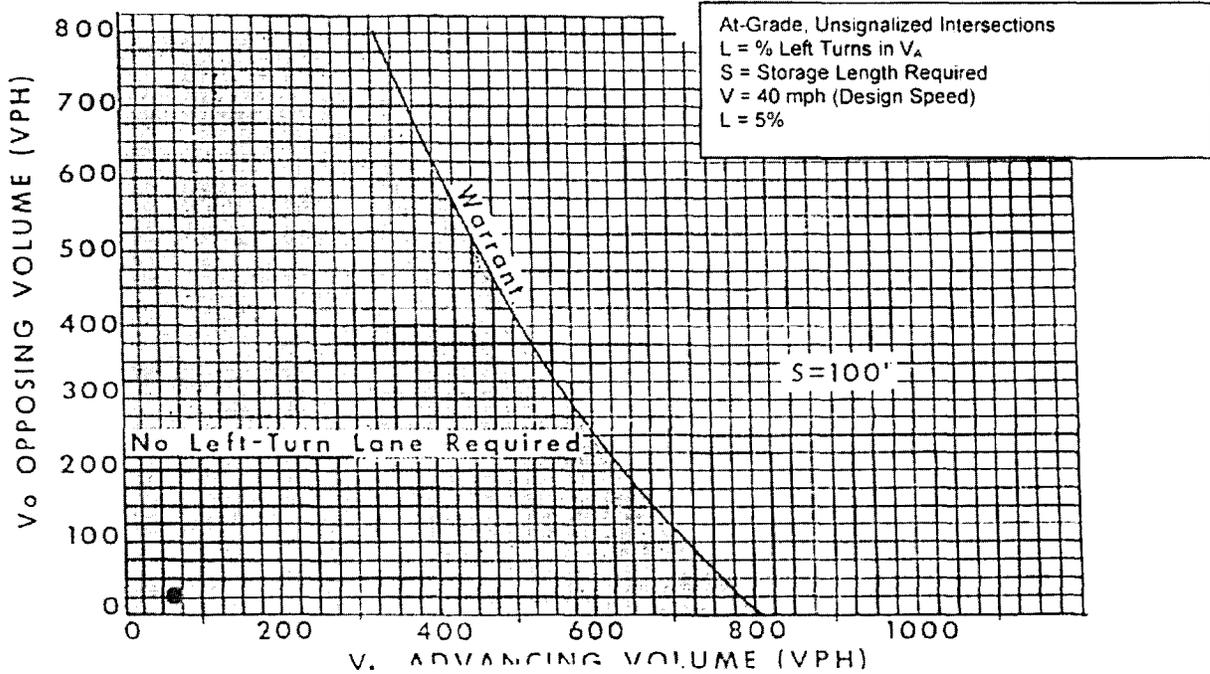
**Figure 19: Warrant For Left Turn Treatment (2-Lane Highway) – Northbound Penniman Road Approach to Winchester Road Interim Build Conditions AM Peak Hour**



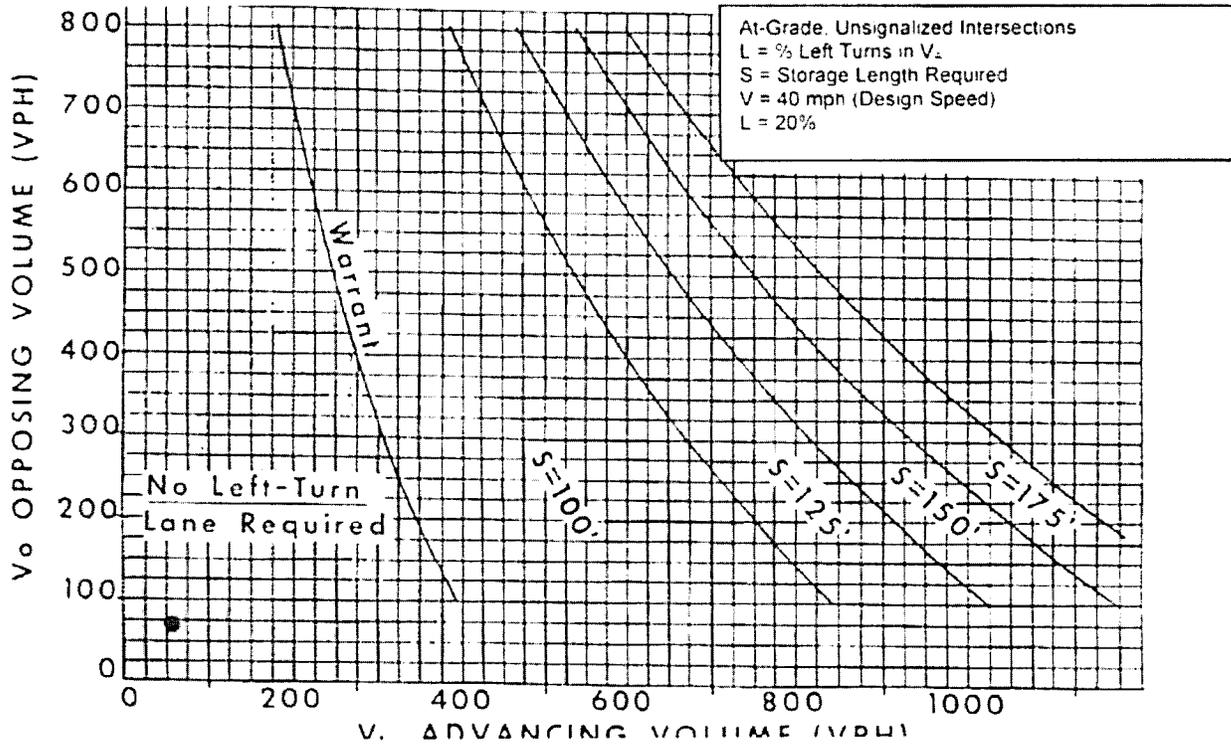
**Figure 20: Warrant For Left Turn Treatment (2-Lane Highway) –  
Northbound Penniman Road Approach to Winchester Road  
Interim Build Conditions PM Peak Hour**



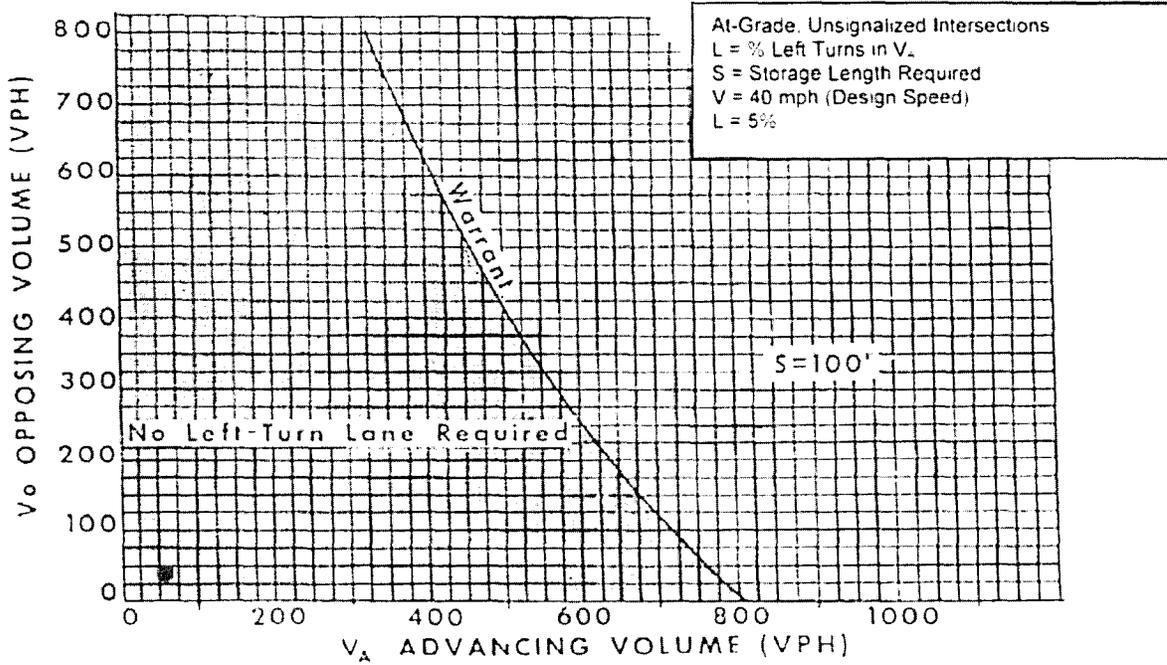
**Figure 21: Warrant For Left Turn Treatment (2-Lane Highway) –  
Northbound Penniman Road Approach to Site Driveway  
Interim Build Conditions AM Peak Hour**



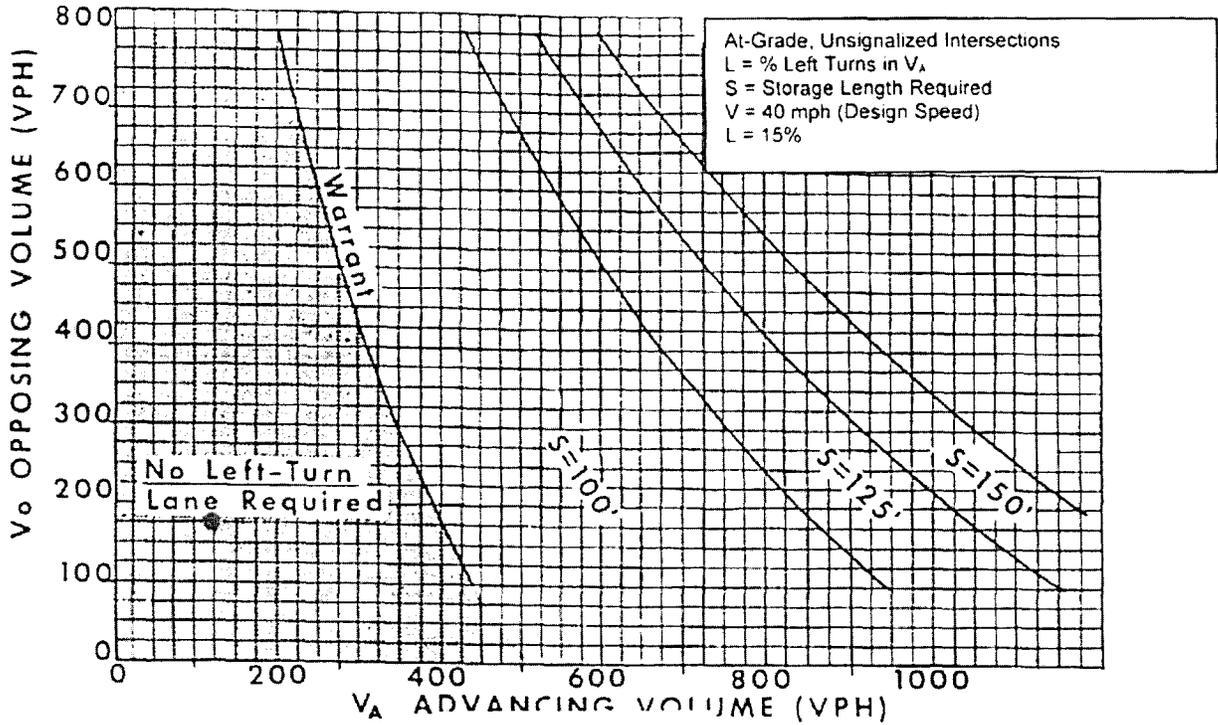
**Figure 22: Warrant For Left Turn Treatment (2-Lane Highway) –  
Northbound Penniman Road Approach to Site Driveway  
Interim Build Conditions PM Peak Hour**



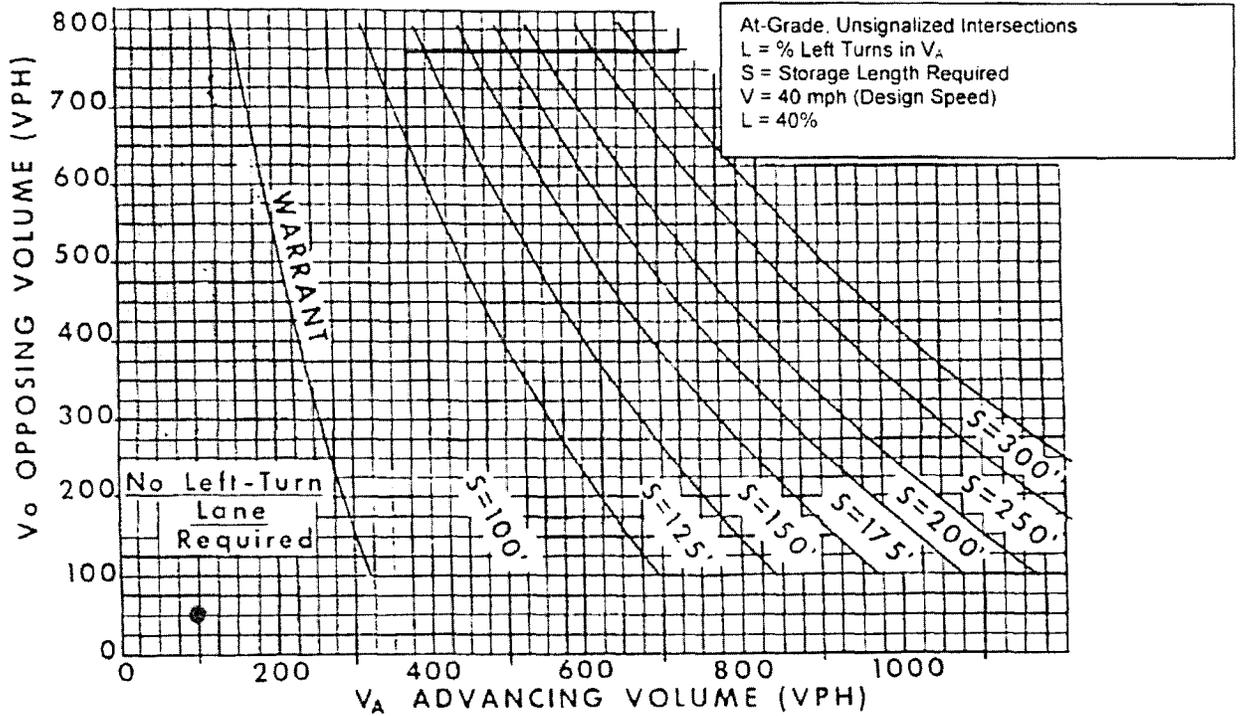
**Figure 23: Warrant For Left Turn Treatment (2-Lane Highway) –  
Northbound Penniman Road Approach to Winchester Road  
Full Build Conditions AM Peak Hour**



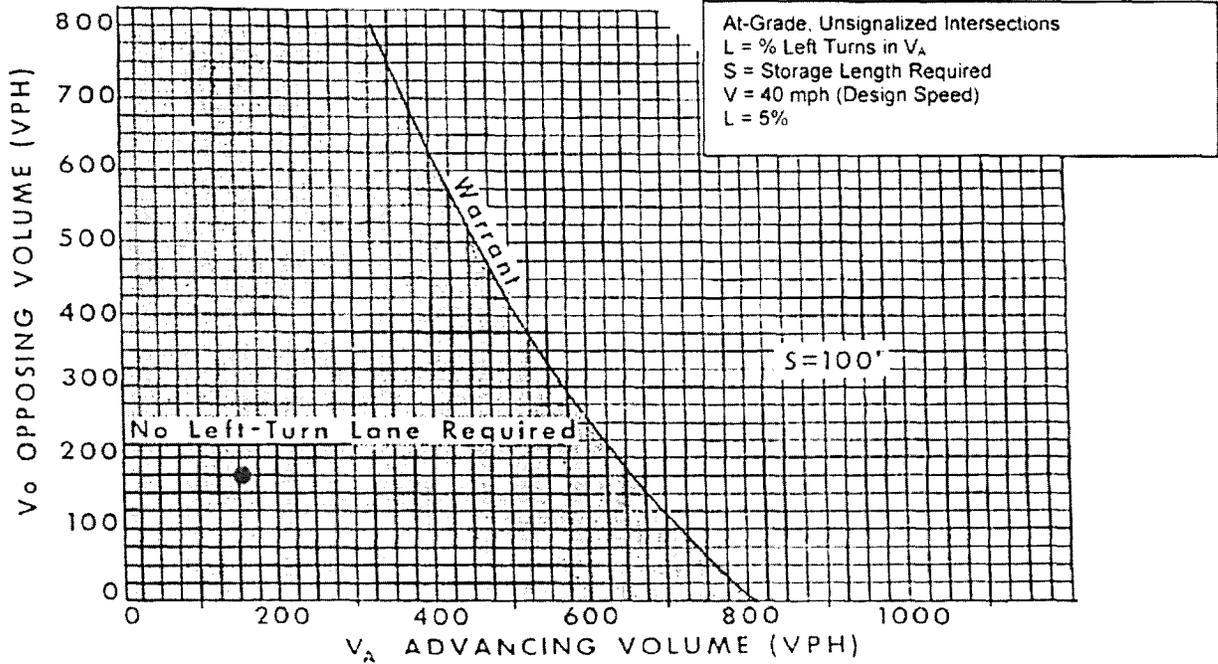
**Figure 24: Warrant For Left Turn Treatment (2-Lane Highway) –  
Northbound Penniman Road Approach to Winchester Road  
Full Build Conditions PM Peak Hour**



**Figure 25: Warrant For Left Turn Treatment (2-Lane Highway) –  
Northbound Penniman Road Approach to Site Driveway  
Full Build Conditions AM Peak Hour**



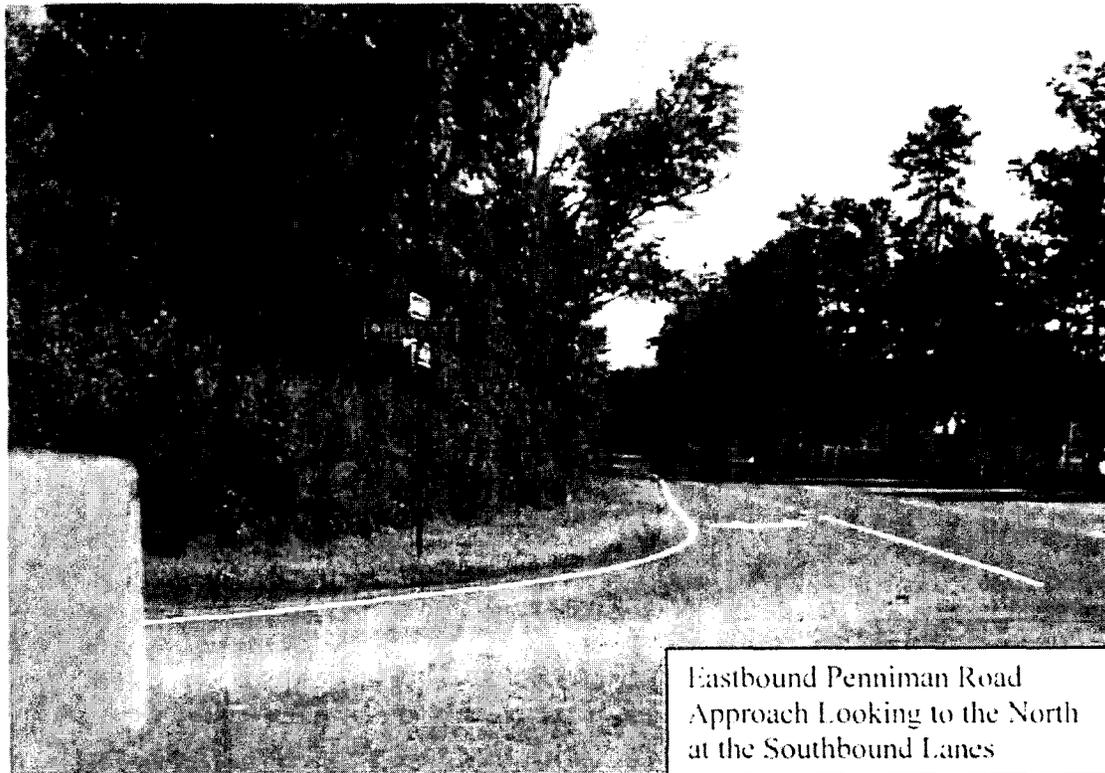
**Figure 26: Warrant For Left Turn Treatment (2-Lane Highway) –  
Northbound Penniman Road Approach to Site Driveway  
Full Build Conditions PM Peak Hour**



## VIII. Sight Distance

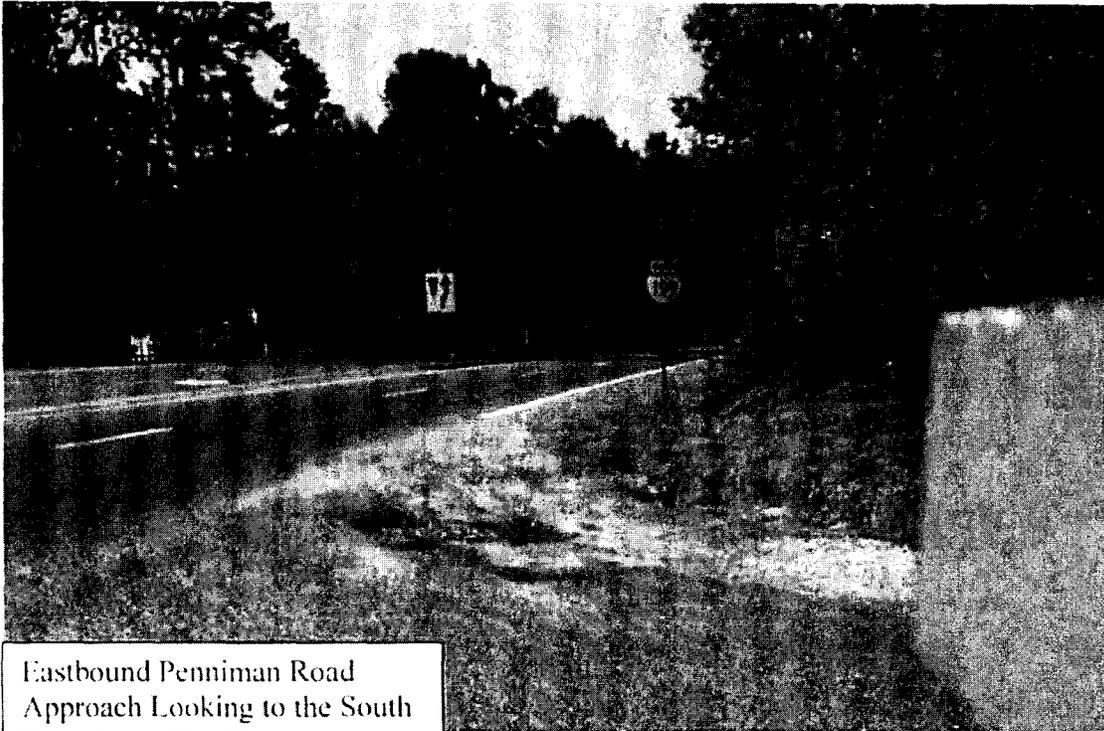
Potential sight distance issues at the intersection of Penniman Road and Humelsine Parkway were brought to the attention of URS by York County. URS field checked the intersection sight distance for the eastbound Penniman Road approach to Humelsine Parkway for both right and left turn movements. Both movements had deficient sight distance lines.

Based on the posted speed limit of 55 MPH and an assumed design speed of 60 MPH the minimum required intersection sight distance for a right turn movement is 575 feet. The field measured sight distance looking to the north at southbound traffic was approximately 415 feet. This sight distance was blocked by trees immediately adjacent to the roadway (see photo below).



Based on the same road attributes the minimum intersection sight distance for a left turn movement, crossing three lanes, is 750 feet. The field measure intersection sight distance looking to the south at northbound traffic was approximately 300 feet. The intersection sight distance was blocked by 4 to 5 feet high shrubs in the median. The limited sight distance was further exacerbated by the vertical curvature of the roadway.

Additionally, the more distant intersection sight distance may be blocked by trees on southbound Humelsine Parkway in close proximity to the intersection (see photo below).



Based on the limited sight distance available, VDOT should consider trimming trees and shrubs that limit the sight distance within the right-of-way. If this maintenance does not provide the minimum sight distance then reduced speed limits should be considered. It should be noted that these intersection sight distance issues are existing conditions and that the proposed development is not exacerbating the issues. The proposed development will contribute less than 2% of the total trips through this intersection in the build-out year.

## IX. Conclusion

URS Corporation conducted a traffic study to determine the impacts from developing a proposed residential complex located on the north side of Penniman Road in York County, Virginia. The proposed development will offer 112 single family homes and 110 townhomes.

Traffic counts were done by URS at the intersections of Marquis Parkway with Humelsine Parkway, Penniman Road with Humelsine Parkway, and Penniman Road with Water Country Parkway. Existing conditions analysis on these intersections showed that all the intersections operate well with no lower than LOS C conditions.

No-Build Conditions analysis included the growth of background traffic, which was developed from historical VDOT traffic volumes; growth from 2007-2012 was used as the basis to determine future growth. It is anticipated that it will take 6 years for the proposed development to be constructed and fully occupied. Over the course of 6 years traffic volumes are projected to grow 6.2% in the area (1% annual growth rate). No-Build Conditions analysis showed that all the intersections functioned with no lower than LOS C conditions.

Trip generation was estimated from the *JTE Trip Generation* manual (9<sup>th</sup> Edition). Trip generation from the proposed residential complex was then added to the No-Build Conditions volumes to develop the forecasted Interim Build Conditions traffic volumes. Interim Build Conditions traffic analysis showed very small increases (generally less than a second) in delay over the No-Build Conditions at the signalized intersection. The signalized intersection is forecast to operate with no lower than LOS B conditions for the overall intersection. The unsignalized intersections continued to operate with LOS C or better service levels.

A second build alternative was considered in which an adjacent 32-acre commercially-zoned lot (between Penniman Road and Humelsine Parkway) would be developed by others, creating a new road connection between Penniman Road and Humelsine Parkway. Trip generation from the proposed commercial was then added to the Interim Build Conditions volumes, and traffic was redistributed to develop the forecasted Full Build Conditions traffic volumes. Full Build Conditions traffic analysis showed increases in delay over the Interim Build Conditions at the signalized intersection. With improvements to the northbound left and eastbound right turn lanes, the signalized intersection is forecast to operate with LOS C and D conditions for the overall intersection in the AM and PM peak hours, respectively.

There are several proposed site entrances: the majority of site driveways will be established on Winchester Road, which intersects Penniman Road; additionally, a full-access driveway will be added approximately 890 feet north of the intersection of Winchester Road with Penniman Road. Warrants for right and left turn lanes were evaluated at the intersections of Winchester Road with Penniman Road, and the site driveway with Penniman Road; a right turn radius is warranted for the southbound Penniman Road approach to the site driveway; no left turn lanes on northbound Penniman Road are warranted.

Intersection sight distance deficiencies at the intersection of Penniman Road and Humelsine Parkway were field checked and found to be deficient for the eastbound Penniman Road approach to the intersection. Intersection sight distances for both right and left turn movements were found to be deficient. It is recommended that VDOT trims or cuts the trees and shrubs blocking the intersection sight distance within the right-of-way. If this maintenance does not result in minimum intersection sight distance requirements then a reduction in the posted speed limit should be considered. It is important to note that the intersection site distance issues are existing conditions and that the proposed development is not exacerbating the issues. The proposed development will contribute less than 2% of the total trips through this intersection in the build-out year.

At such a time in the future when the proposed connection road from Penniman Road to Humelsine Parkway is constructed, improvements to the signalized intersection of Marquis Parkway and Humelsine should be included. Traffic signal improvements should be similar to those included in this study - dual northbound left turn lanes and dual eastbound right turn lanes in order to support the potential development of the 32 acre commercial site. It appears there is enough room in the median to install dual northbound left turn lanes on Humelsine Parkway without impacting any of the other approaches to the intersection. Additional improvements that will likely be necessary include remarking the outermost southbound through lane and the outermost westbound left turn lane to convert them to through/right or through/left turn lanes as appropriate.

**Based on the analysis, a right turn radius on southbound Penniman Road at the new site driveway is warranted. No left turn lanes on northbound Penniman Road are warranted.**