# A G E N D A JAMES CITY COUNTY BOARD OF SUPERVISORS REGULAR MEETING

County Government Center Board Room 101 Mounts Bay Road, Williamsburg, VA 23185 May 12, 2020 5:00 PM

- A. CALL TO ORDER
- B. ROLL CALL
- C. MOMENT OF SILENCE
- D. PLEDGE OF ALLEGIANCE
- E. PRESENTATIONS
- F. PUBLIC COMMENT
- G. CONSENT CALENDAR
  - 1. Minutes Adoption
  - 2. Resolution of Chesapeake Bay Preservation Ordinance Violation at 2618 Chickahominy Road
  - 3. Resolution of Chesapeake Bay Preservation Ordinance Violation at 2640 Chickahominy Road

# H. PUBLIC HEARING(S)

- 1. Z-20-0001. Norge Center Proffer Amendment
- 2. Z-19-0003. Fords Colony Proffer Amendment

# I. BOARD CONSIDERATION(S)

- 1. Establishment of a Full-Time Building Security and Custodial Services Superintendent Position
- 2. Skimino Creek Watershed Management Plan Board Adoption
- 3. Revisions to Chapter 5 of the James City County Personnel Policies and Procedures Manual
- 4. Authorization and Appropriation for the Contribution to the Greater Williamsburg Small Business Relief Fund
- 5. COVID-19 Reopening Guidelines

## J. BOARD REQUESTS AND DIRECTIVES

#### K. REPORTS OF THE COUNTY ADMINISTRATOR

#### L. CLOSED SESSION

- 1. Appointments Parks and Recreation Advisory Committee
- 2. Appointments Historical Commission

#### M. ADJOURNMENT

1. Adjourn until 4 p.m. on May 26, 2020 for the Work Session

# **AGENDA ITEM NO. G.1.**

# ITEM SUMMARY

DATE: 5/12/2020

TO: The Board of Supervisors

FROM: Teresa J. Fellows, Deputy Clerk

SUBJECT: Minutes Adoption

# **ATTACHMENTS:**

	Description	Type
D	010220 Org Meeting	Minutes
D	012520 Retreat	Minutes
ם	041420 Regular Meeting	Minutes
ם	042120 Budget Work Session	Minutes

# **REVIEWERS:**

Department Reviewer Action Date

Board Secretary Fellows, Teresa Approved 5/4/2020 - 1:56 PM

# M I N U T E S JAMES CITY COUNTY BOARD OF SUPERVISORS ORGANIZATIONAL MEETING

County Government Center Board Room 101 Mounts Bay Road, Williamsburg, VA 23185 January 2, 2020 4:00 PM

#### A. CALL TO ORDER

#### B. ROLL CALL

Michael J. Hipple, Vice Chairman, Powhatan District Ruth M. Larson, Berkeley District P. Sue Sadler, Stonehouse District John J. McGlennon, Roberts District James O. Icenhour, Jr., Chairman, Jamestown District

Scott A. Stevens, County Administrator Adam R. Kinsman, County Attorney

#### C. ORGANIZATIONAL MEETING

Mr. Icenhour welcomed the Board.

## 1. Organizational Meeting

Mr. Icenhour asked for nominations for election of the Chairman.

Ms. Sadler nominated James Icenhour as Chairman.

Mr. McGlennon made the motion to close the nomination.

Mr. Icenhour closed the voting and asked if everyone was in favor of the nomination.

On a voice vote, the motion result was Passed unanimously.

Mr. Icenhour asked for nominations for election of the Vice Chairman.

Ms. Larson nominated Michael Hipple as Vice Chairman.

Mr. McGlennon made the motion to close the nomination.

Mr. Icenhour closed the voting and asked if everyone was in favor of the nomination.

On a voice vote, the motion result was Passed unanimously.

Mr. Icenhour addressed the next point, the Board's meeting calendar. He noted the addition of January 25 as the Board Retreat, 9 a.m.-12 noon.

Ms. Sadler asked the location.

Mr. Icenhour noted the finalization from Anheuser-Busch for the retreat location was still pending. Mr. Icenhour next addressed the color coding on the Board calendar for the Budget Work Sessions.

Mr. Stevens explained the distinction.

Discussion ensued around the calendar, particularly the Virginia Association of Counties (VACo) Annual Conference, November 8-10.

Ms. Larson noted the Board returned early from the VACo Conference for the November 10 Board meeting. She further noted missing some of the meetings and seminars at the Conference during that time. Ms. Larson added the November 10 meeting was difficult and requested a different date. She further noted moving the meeting earlier in the month conflicted with Election Day.

Mr. Stevens noted November 11 was the Veterans Day holiday.

Mr. Icenhour asked about November 12.

Mr. Hipple asked about November 17 and 24, which kept the meetings on Tuesdays. He noted those were the days the general public was accustomed to Board meetings.

General discussion ensued.

Mr. Icenhour noted the schedule change in November. He further noted the meeting on the 10th would move to the 17th.

Mr. Stevens inquired about the August Board meeting.

Mr. Icenhour noted discussion on canceling the August meeting.

Mr. Hipple added if a meeting was needed, it could be added.

Mr. Icenhour asked if there was a consensus on the change to the August schedule.

Mr. McGlennon noted he felt it was a long time between meetings. He further noted if others were in agreement, he would go with the schedule change.

General discussion ensued scheduling if a meeting was needed.

Mr. Stevens asked if this applied to the James City Service Authority (JCSA).

Mr. Kinsman confirmed yes to the JCSA schedule.

Mr. Icenhour asked if there were any additional questions on the calendar.

As there were none, he asked for a motion on the calendar approval.

Mr. Kinsman noted the motion could be made on the resolution in the Agenda Packet. He further noted the resolution covered Roberts Rules of Order and procedures and suggested moving the resolution with the amended calendar.

A motion to Adopt the Resolution with the Amended Calendar was made by

Michael Hipple, the motion result was Passed. AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0

Ayes: Hipple, Icenhour Jr., Larson, McGlennon, Sadler

#### 2. Supervisor Seats for Boards and Commissions

A motion to Approve was made by Michael Hipple, the motion result was Passed.

AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0

Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

Mr. Icenhour noted one correction. He further noted the Board did not have representation on the Greater Williamsburg Area Chamber and Tourism Alliance, but added it did have representation on the Business Council and requested a title change.

Discussion ensued on a name change to the Community Action Agency.

Mr. McGlennon noted the agency would be known as the new name, but officially still working as the Community Action Agency.

Mr. Kinsman confirmed yes.

Mr. Icenhour noted he and Mr. Hipple would split the Hampton Roads committees and made the changes below. He continued through the list and noted at the January 14, 2020 Board meeting, the reappointment of Ms. Barbara Watson to the Community Services Coalition Board of Directors would be on the Agenda. He asked Mr. McGlennon if the two Workforce groups were combining.

Mr. McGlennon noted yes, but he could remain the representative if the schedule stayed as it had been. He further noted if the merge changed the schedule, he would have a conflict with his teaching schedule.

Mr. Icenhour asked about representation for the Williamsburg Area Medical Assistance Corporation.

Mr. McGlennon noted he had spoken with Ms. Sadler on that committee.

Ms. Sadler noted she would take that committee as the 2020 representative.

Mr. Icenhour asked if there were additional comments.

Mr. McGlennon noted he had referenced the memorandum on the name change for Community Action Agency. He confirmed the Williamsburg-James City County Community Action Agency, Inc. would still be the legal name of the organization, but would do business as Advancing Community Excellence.

#### **Board/Commission Committee Board Member 2020**

- Community Action Agency Board of Directors: Charvalla West appointed to serve in lieu of BOS Member - expires 9/25/2022
- Hampton Roads Military and Federal Facilities Alliance (HRMFFA): Jim Icenhour
- Hampton Roads Planning District Commission (HRPDC): Jim Icenhour
- Hampton Roads Transportation Planning Organization (HRTPO): Michael

- Hipple
- Hampton Roads Transportation Accountability Commission (HRTAC): Michael Hipple
- School Liaison: Ruth Larson and Jim Icenhour
- Historic Triangle Collaborative: Jim Icenhour
- Agricultural and Forestal District (AFD) Advisory Committee: Sue Sadler
- Economic Development Authority: Sue Sadler
- Williamsburg Tourism Council: Ruth Larson
- Community Services Coalition Board of Directors Appointment to be made at Jan. 14th meeting
- Greater Peninsula Workforce Development Consortium: John McGlennon
- Peninsula Council for Workforce Development: John McGlennon
- Virginia Peninsula Regional Jail Authority: Ruth Larson
- Historic Virginia Land Conservancy: John McGlennon
- Greater Williamsburg Business Council: Jim Icenhour
- High Growth Coalition: John McGlennon
- Williamsburg Area Medical Assistance Corp (WAMAC): Sue Sadler

## 3. Seating Assignments

Each Board member randomly drew for his/her respective spot.

The seating assignments were:

- 1. Icenhour
- 2. Hipple
- 3. Larson
- 4. McGlennon
- 5. Sadler

## D. BOARD CONSIDERATION(S)

None

## E. CLOSED SESSION

None

## F. BOARD REQUESTS AND DIRECTIVES

Mr. McGlennon noted the passing of Mr. John Banach, long-time member of the Historical Commission and his legacy to the County's history.

## G. ADJOURNMENT

1. Adjourn until January 6, 2020, to attend the Virginia Association of Counties Finance Forum in Richmond

A motion to Adjourn was made by Michael Hipple, the motion result was Passed. AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0 Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

Mr. Stevens confirmed three members would be in attendance at the VACo meeting.

At approximately 4:23 p.m., Mr. Icenhour adjourned the Board of Supervisors.

# M I N U T E S JAMES CITY COUNTY BOARD OF SUPERVISORS RETREAT

Visitor Meeting Room, Anheuser-Busch, Inc. 7801 Pocahontas Trail, Williamsburg, VA 23185 January 25, 2020 9:00 AM

#### A. CALL TO ORDER

#### B. ROLL CALL

#### **Board of Supervisors**

Michael J. Hipple, Vice Chairman, Powhatan District Ruth M. Larson, Berkeley District P. Sue Sadler, Stonehouse District John J. McGlennon, Roberts District James O. Icenhour, Jr., Chairman, Jamestown District

#### **James City Service Authority Board of Directors**

Michael J. Hipple, Powhatan District Ruth M. Larson, Vice Chairman, Berkeley District John J. McGlennon, Roberts District James O. Icenhour, Jr., Jamestown District P. Sue Sadler, Chairman, Stonehouse District

Scott A. Stevens, County Administrator Adam R. Kinsman, County Attorney M. Douglas Powell, General Manager Jason Purse, Assistant County Administrator

Mr. Jack Green represented the press at the meeting.

Mr. Icenhour called the Board of Supervisors meeting to order.

Ms. Sadler called to order a special meeting of the James City Service Authority (JCSA) Board of Directors.

A motion to Enter a Closed Session for the Board of Supervisors was made by Michael Hipple, the motion result was Passed.

AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0

Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

A motion to Enter a Closed Session for the James City Service Authority Board of Directors was made by Ruth Larson, the motion result was Passed.

AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0

Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

1. Discussion of the investment of public funds related to James City Service Authority's long-term water supply, including an agreement with the City of Newport News pursuant to Section 2.2-3711(A)(6) of the Code of Virginia

At approximately 9:10 a.m., the Board of Directors and the Board of Supervisors entered Closed Session.

At approximately 9:48 a.m., the Board of Directors and the Board of Supervisors re-entered Open Session.

A motion to Certify the Board of Supervisors spoke only about those items indicated that it would speak about in Closed Session was made by John McGlennon, the motion result was Passed.

AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0

Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

A motion to Certify the Board of Directors spoke only about those items indicated that it would speak about in Closed Session was made by John McGlennon, the motion result was Passed. AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0

Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

A motion to Adjourn the Board of Directors meeting was made by Michael Hipple, the motion result was Passed.

AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0

Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

At approximately 9:48 a.m., Ms. Sadler adjourned the Board of Directors.

#### C. PRESENTATIONS

#### 1. Service Awards Video

Mr. Stevens noted the recent Employee Service Awards ceremony. He further noted the County's Video Department had compiled a presentation from the event.

Board members expressed their appreciation of the video with applause.

# 2. Strategic Plan Reporting and Update

Mr. Purse addressed the Board regarding three main topics. He noted he and Mr. Stevens had discussed these items with updates to the Board regarding the Strategic Plan and its accomplishments over the past year. He noted the Board's review of how the overall Strategic Plan was going since it was started three years earlier. Mr. Purse further noted reviewing goals and strategies and the effectiveness of the current goals including several upcoming community meetings. Mr. Purse noted speaking with Mr. Kinsman and Community Development on the possibility of reinstituting some proffer discussions on new applications and the methodology involved in the process. He further noted the third item would be a Board-driven discussion of transportation projects and other 'big ticket items' and priorities. Mr. Purse noted a review of last year's Capital Improvements Program projects. Mr. Purse asked Mr. Stevens if he had any comments on the Service Awards.

Mr. Stevens noted employee pictures, names, and years of service would be displayed in posters throughout the various County departments.

Mr. Purse noted various projects included debt service, technologies and software upgrades, stormwater as well as community development. He further noted some Human Resources (HR) initiative programs and engaging staff and citizens.

Ms. Larson asked if Mr. Purse would be addressing each item.

Mr. Purse replied yes and noted if the Board wanted additional items to be included that would also be part of this process. He addressed technology with software replacement in Parks and Recreation with online class signups, space needs assessment, and timelines.

Ms. Larson asked about the Courthouse work.

Mr. Purse noted that was part of today's discussion and space needs. He highlighted the focus on security and safe areas for County facilities with enhanced security features on doors, restricted areas, and other implementations. Mr. Purse continued discussion with stormwater projects and economic development projects with state endorsement of James City County as a strong site for development.

Discussion ensued on economic development and future plans for attracting businesses, the LaunchPad program, funding, and the Greater Williamsburg Partnership (GWP).

Mr. Stevens noted Ms. Von Gilbreath's involvement with GWP and its impact on the County. He further noted branding for the region.

Discussion ensued regarding benchmarks, return on investments, and economic development expectations in relation to each locality involved in the GWP.

Mr. Stevens noted the GWP commitment for York County, the City of Williamsburg, and James City County totaled \$150,000 annually. He further noted a future evaluation on commitment, funding, and criteria.

Discussion ensued on establishment of criteria and priorities for the County.

Ms. Sadler noted she wanted a chart of GWP, the Greater Williamsburg Chamber and Tourism Alliance, and who reported to whom and each group's responsibilities. She further noted confusion around the groups.

Mr. Purse noted updates on the Shaping Our Shores program and grants to stabilize the shorelines. He further noted bids on the Marina and the timeline. Mr. Purse continued noting the Amblers House Phase 1 restoration project.

Discussion ensued on the cost and location of utilities for Amblers House as well as the Shaping Our Shores program.

Ms. Larson questioned the Amblers House design and layout in terms of appeal as an event or wedding venue. She noted its layout was choppy and less open as renovation concerns. Ms. Larson further noted without interior renovations for a larger working kitchen and other modifications, despite the beauty of the home, this would not be worth it.

Mr. Stevens concurred with that point. He noted exterior preservation with interior modification was the plan. Mr. Stevens further noted a bid had been received for both exterior and interior modifications, but the question of availability of water and sewer for a contractor was still being evaluated. He noted the sharing of risk between the County and a potential contractor on the project.

Discussion ensued on those points, possible design restrictions, and the Board's vision on the Amblers House.

Mr. Icenhour noted it was encouraging a contractor was interested.

Mr. Stevens agreed noting any proposal would be presented to the Board for its approval including an exit plan.

Mr. Purse noted the two stormwater projects and efficient government. He further noted the Virginia Department of Transportation (VDOT) and projects in Grove and Toano which were slated to begin in the fall. Mr. Purse noted those projects would be in the Fiscal Year (FY) 2021 budget. He further noted the completion of the design but the project would not be completed until the fall.

Discussion ensued on the Toano project.

Mr. Purse updated the Board with the recycling program statistics including citizen calls, cart removals, and other factors.

Ms. Larson requested statistics based on if people were still including non-recyclable materials in carts. She noted she wanted information on how James City County was doing with recycling.

Mr. Stevens noted it was a five-year contract with Virginia Peninsulas Public Service Authority (VPPSA). He further noted a monthly report was available, but was not sure about contaminated trash. Mr. Stevens noted he would inquire on that point.

Discussion ensued on these points as well as citizen concerns over items being truly recycled, where those items went, market trends, the VPPSA contract, and attitudes toward recycling.

Ms. Larson inquired if there were bills before the General Assembly this year addressing recycling.

Mr. Kinsman noted there were a few bills regarding plastic bags and some localities' abilities to tax on them.

Ms. Larson asked Mr. Kinsman if he could check on that point. She noted sending correspondence to legislators regarding recycling.

Discussion ensued on recycling and solid waste options, monitoring market changes, suitable recyclable materials, vendors, and other factors.

Mr. Kinsman noted a resolution requesting the Department of Environmental Quality (DEQ) to establish a task force to address open burning in assistance for localities.

Mr. Purse continued his presentation discussing scattered site project funding.

Ms. Larson noted some frustration from the Housing Task Force and receiving updates on projects.

Discussion ensued on these points and work done by the Social Services Department.

Mr. Purse noted HR had launched an Employee Engagement Survey earlier in the year. He further noted it aided in the areas of staff retention, qualified employee candidates, competitive salaries and benefits, and other factors. Mr. Purse continued with additional staff programs such as the Emerging Leaders Academy, a one-year joint program between James City County, York County, and Virginia Tech.

Mr. Stevens noted 12 employees from James City County were involved in the program. He further noted the potential of these individuals within the County organization as representatives in the program.

Ms. Larson inquired about diversity in relation to hiring.

Mr. Stevens noted the awareness was always there.

Mr. Kinsman added that HR was aware of the diversity breakdown within the County, and Mr. Patrick Teague, Director of Human Resources, would have that information.

Mr. Purse noted staff had received mandatory safety training, as well as Stop the Bleed training. He further noted an increase of police presence within 10, not six County zones and response time. Mr. Purse noted Colonial Community Corrections (CCC) had been spearheading efforts regarding people being released from the Virginia Peninsula Regional Jail. He further noted CCC had done a great job providing resources and information to those individuals during the transition.

At approximately 10:37 a.m., the Board recessed for a short break.

At approximately 10:43 a.m., the Board reconvened.

Mr. Purse noted the fiber-optic network improvement and expansion that looped all the County facilities had been completed and was part of this year's CIP projects. He further noted the expansion of communication opportunities and cited work with the School Board Liasion Committee, the Long-Range Planning Committee, and the Strategic Planning Committee. He noted potential school sites, the financial software upgrade and launch in the fall, as well as work between Mr. Kinsman's office and the Stormwater & Resource Protection staff on bond liability. Mr. Purse noted a review of these items and getting them off the books.

Discussion ensued on these points.

Mr. Purse noted Asset Management allowed for a better review of the upkeep of buildings. He further noted the various transportation projects. Mr. Purse detailed the five-year secured funding and communication with VDOT on those projects.

Discussion ensued regarding traffic lights in the Stonehouse District and Greensprings area, financial responsibility for projects, safety concerns regarding signs and lights as a result of the traffic studies, and VDOT response to these requests.

Ms. Larson and Ms. Sadler expressed concern over the growing traffic pressure in the Stonehouse and Greensprings areas.

Discussion ensued on traffic issues and legislative input.

Mr. McGlennon asked about convenience fees and electronic fund transfers, noting JCSA was moving to monthly billing.

Mr. Purse noted he would check with Ms. Jenni Tomes, County Treasurer.

Discussion ensued on this point regarding Bill Pay and various charges.

Ms. Larson asked about the redo of the web page and if the work would be handled in-house or externally.

Discussion ensued on the design, accessibility, and transparency of the website.

#### D. BOARD DISCUSSIONS / GUIDANCE

#### 1. Residential Proffer Impact Mitigation

Mr. Purse continued his presentation noting CIP projects would be addressed after this next point. He addressed the proffer impact.

Mr. McGlennon asked about the consultants working on the Strategic Plan and if part of the Comprehensive Plan was being incorporated into the Strategic Plan update.

Mr. Purse noted the Board could discuss that point with the consultants at the upcoming January 28, 2020 work session.

Discussion ensued on these points.

Mr. Purse noted Virginia Code specifically tied any proffer project to the CIP plan. He further noted the County had a five-year plan. He noted continual updates and changes to developers and per unit cost, which was variable. Mr. Purse detailed the breakdown of costs per unit and to whom. He noted the Board's input on the methodology to apply if the courts should challenge the County's system.

Mr. Kinsman noted the Board did not need to make a decision today, but asked that this be something it considers going forward. He further noted finding the proper number as well as adherence and compliance to Virginia Code and addressed the breakdown in the PowerPoint presentation.

Discussion ensued on application of impact fees, proffer laws, and the cost of expansion to infrastructure due to new construction.

Mr. Purse noted staff would work with different numbers to present to the Board for consideration.

Discussion ensued on legislative zoning bills and other factors.

#### 2. Budgeting Priorities

Mr. Purse noted \$140 million to be spent on CIP projects over the next five years. He further noted the 1% sales tax, the annual breakdown, and other factors. Mr. Purse noted these numbers reflected what was in the budget already.

Discussion ensued on the school project and its projected date.

Mr. Purse noted if money was moved around, specific funds needed to be considered. He continued his presentation with upcoming projects and adding the redline indicated potential projects that could be incorporated into the CIP.

Discussion ensued on the financial breakdown over the years.

Mr. Purse noted costs associated with the CAD system upgrade, the Marina, Amblers House, and other projects. He asked the Board to list projects and priorities so he and Mr. Stevens

could review them before the budget meetings.

Discussion ensued on different projects, which included transportation issues regarding traffic lights/road improvements, pre-Kindergarten (pre-K), solid waste and recycling, a centralized County complex, Purchase of Development Rights (PDR) program, land banking, water needs, bus shelters/benches, funding for community organizations, EDA shell building, fiber optics for Economic Development, and affordable housing.

Mr. Purse noted prioritizing the discussion items into short-term and long-term projects.

Discussion ensued on the priorities, land preservation and staff resources, and the "tool box".

Ms. Larson noted citizens had asked her about the County purchasing land around Monticello Avenue to avoid similar situations.

Discussion ensued around potential partnership with Habitat for Humanity and land usage.

Ms. Sadler noted the County was not a real estate developer.

Discussion ensued on the County's role in land preservation, its fit into the CIP project, the Primary Service Area, as well as greenspace.

Mr. Icenhour noted establishing staff resources and guidelines to get a foot in the door so that future plans for land preservation would be in place. He further noted preparation was needed so development could be controlled responsibly.

Mr. Hipple noted the timeline need and funding.

Mr. Kinsman noted a bond issuance normally took six to eight months. He further noted bond options with conditions.

Discussion ensued on these points, availability of property, long-term bonds, and borrowing.

Mr. Stevens discussed operational costs, school projects, and several long-term General Service and JCSA site projects.

Ms. Larson asked about a third library.

Mr. Stevens noted a third library would be a space need. He further noted this was the recommendation from Ms. Betsy Fowler, Director of the Williamsburg Regional Library.

Discussion ensued on these points.

Mr. Purse noted Ms. Fowler had requested funding from the County and the City of Williamsburg for the expansion or a third library. He further noted Ms. Fowler was developing plans to meet citizens' needs.

Mr. Icenhour inquired if the Board members were to make lists to present to Mr. Stevens and Mr. Purse.

Mr. Stevens confirmed yes and that would be reviewed at the January 28, 2020 meeting.

Mr. Kinsman noted a tour of the brewery would begin at noon for the Board members.

# E. ADJOURNMENT

1. Adjourn until 4 p.m. on January 28, 2020, for the Work Session

A motion to Adjourn was made by Sue Sadler, the motion result was Passed.

AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0 Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

At approximately 11:45 a.m., Mr. Icenhour adjourned the Board of Supervisors.

# M I N U T E S JAMES CITY COUNTY BOARD OF SUPERVISORS REGULAR MEETING

County Government Center Board Room 101 Mounts Bay Road, Williamsburg, VA 23185 April 14, 2020 5:00 PM

#### A. CALL TO ORDER

#### B. ROLL CALL

P. Sue Sadler, Stonehouse District - via phone John J. McGlennon, Roberts District Ruth M. Larson, Berkeley District Michael J. Hipple, Vice Chairman, Powhatan District James O. Icenhour, Jr., Chairman, Jamestown District

Scott A. Stevens, County Administrator Adam R. Kinsman, County Attorney

Mr. Icenhour asked for a motion to allow Ms. Sadler to participate in the meeting remotely, due to a medical condition that prevented her attendance.

A motion to allow Ms. Sadler to participate remotely was made by John McGlennon, the motion result was Passed.

AYES: 4 NAYS: 0 ABSTAIN: 0 ABSENT: 1 Ayes: Hipple, Icenhour Jr, Larson, McGlennon

Absent: Sadler

Mr. Icenhour welcomed Ms. Sadler to the meeting.

Ms. Sadler acknowledged her presence on the call.

Mr. Icenhour noted on Monday morning that staff became aware of an error in the public notice for Agenda Item I. 2 Authorization to Request Establishment of a No Wake Zone on Diascund Creek. He further noted no action would be taken this evening on this item. Mr. Icenhour noted staff would readvertise the item and it would be brought before the Board at the May 12, 2020 meeting.

#### C. MOMENT OF SILENCE

#### D. PLEDGE OF ALLEGIANCE

1. Pledge Leader - Mr. Icenhour noted he had the pleasure of leading the Board and citizens in the Pledge of Allegiance

#### E. PRESENTATIONS

None.

## F. PUBLIC COMMENT

Mr. Icenhour noted there was one recorded comment.

1. Mr. John Delellis, 6732 Westbrook Drive, Colonial Heritage, addressed the Board and thanked everyone's efforts for keeping the County running. He noted several concerns. Mr. Delellis further noted his street, which had been paved for over a year, was still not in Global Positioning System (GPS) and this posed problems with deliveries such as InstaCart. He requested assistance from the County's mapping division. He noted this had been a minor concern prior to the virus situation, but now that he and his wife were not going out, it would be helpful for people to find their location, Mr. Delellis noted his second concern was the reporting of the COVID-19 data for James City County. He further noted he had looked at the Virginia Department of Health (VDH) map and press site. Mr. Delellis further noted the site listed the number of cases, but did not provide a breakdown for the number of cases in James City County for hospitalizations or deaths. He noted the information was available for medical districts, but added it would be very useful to have a better idea of what was going on in the County. Mr. Delellis noted it 'would be nice not to be in a vacuum as far as that goes'. He further noted his third point addressed adequate staffing capacity and preparedness of area hospitals for handling the peak volume in terms of personal protection equipment (PPE), ventilators, and other necessary equipment. He thanked the Board.

Ms. Larson noted she could hear the last concern, but asked about the second concern. She asked if that was the VDH.

Mr. Icenhour confirmed it referenced the VDH and the COVID data.

Mr. McGlennon noted Mr. Delellis wanted the information broken down by jurisdiction for hospitalizations and deaths as well as cases.

Ms. Larson thanked her fellow Board members. She noted she could not hear the name, just the address, but she knew the information was recorded.

Mr. Stevens noted that information was available and he would share it.

Ms. Larson thanked Mr. Stevens.

Mr. Stevens noted most of the information requested from the speaker was state information and that the County had been pushing to get that as well. He further noted those data points were continually requested by the County.

Ms. Larson thanked Mr. Stevens.

Mr. McGlennon asked Mr. Stevens if that information was given to him.

Mr. Stevens noted they received the case count and the number of deaths for James City County, but further noted names of hospitalized persons, recovered persons, or such information was not available to the administration.

Ms. Larson asked if a County citizen traveled elsewhere, was hospitalized, or passed away, would that information be available through a national network, if there was such a thing, to the different health departments. She asked this in reference to someone who may have traveled out of the local community for only three days.

Mr. Stevens noted he would ask as he did not have the answer to that question. He further noted a case in the County initially had involved testing elsewhere, but added the County was credited with the case. Mr. Stevens noted in the beginning that information seemed to be available, but was unsure if someone passed away in another community if the information

stayed in the case count for that particular location.

Mr. Icenhour asked if the deaths were based on people who were hospitalized as opposed to someone who self-quarantined, became ill, and died at home. He noted if there was no testing or confirmation, how would the County know the death count.

Mr. Stevens noted he had heard different reports to that point. He further noted some testing had been done after the deaths, some had not, and the variables involving different jurisdictions, testing availability, and other medical factors. Mr. Stevens noted he would inquire and get more clarity as some things may have changed as there was a lot of information.

Mr. Icenhour noted there would be further discussion on these points at the end of the meeting.

#### G. CONSENT CALENDAR

A motion to Approve was made by Ruth Larson, the motion result was Passed.

AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0

Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

1. Minutes Adoption

The Minutes Approved for Adoption included the following meetings:

- March 10, 2020 Regular Meeting
- March 17, 2020 Special Meeting
- March 24, 2020 Work Session
- Memorandum The Department of Housing and Urban Development Housing Choice Voucher Program
- 3. Grant Award Virginia Housing Development Authority Community Impact Grant \$42,900
- Award Virginia Homeless Solutions Program COVID-19 Emergency Shelter Operations Funds - \$37,373

#### H. PUBLIC HEARING(S)

1. Proposed Real Property Tax Increase

Ms. Sharon Day, Director of Financial Management and Services (FMS), addressed the Board stating the purpose of the public hearing was to invite public comment on the increase and property tax levies based on the recent real estate reassessments. She further noted the value based on real property, excluding additional assessments due to new construction or property improvements, exceeded last year's total assessed value of real property by approximately 1.81%. Ms. Day noted the tax rate, which would levy the same amount as last year, when multiplied by the new total assessed value of real estate with the exceptions noted above, would be .8248 per \$100 of assessed value. She further noted this rate would be known as the lowered tax rate. Ms. Day noted James City County proposed to adopt a tax rate of \$.84 per \$100 of assessed value with the difference between the lowered tax rate and the proposed tax rate equal to \$.0152 per \$100 or 1.81%. She further noted this difference would be known as the effective tax rate. Ms. Day noted individual property taxes may increase at a percentage rate greater or less than the above percentage. She noted no action

was required of the Board at this meeting. Ms. Day further noted the budget work sessions were scheduled for Tuesday, April 21, 2020, at 4 p.m. and Tuesday, April 28, 2020, at 4 p.m. She noted the Board was scheduled to adopt the budget as amended at its May 12, 2020 meeting.

Mr. Icenhour opened the Public Hearing.

As there were no speakers, Mr. Icenhour closed the Public Hearing.

Mr. Icenhour noted the James County Service Authority (JCSA) Board of Directors meeting would begin with both meetings opening simultaneously.

At approximately 5:11 p.m., Ms. Larson opened the Board of Directors meeting.

## 2. Fiscal Year 2021-2022 County Biennial Budget

Mr. Icenhour noted Ms. Day would begin the presentation followed by Mr. Doug Powell, General Manager of the JCSA.

Ms. Day addressed the Board noting the evening's presentation would highlight the County Administrator's Fiscal Year (FY) 2021 proposed budget and the FY 2022 plan. She noted, prior to the budget details, she wanted to discuss how the County had responded to the COVID-19 pandemic from a fiscal standpoint. Ms. Day further noted on the revenue side that the County anticipated a negative impact on revenue collection and cash flow. She noted in her PowerPoint presentation revenue collection was a challenge to accurately predict at this time in addition to the time lags which varied from one to two months and possibly over a quarter for collections depending on the revenue source. Ms. Day highlighted some of the actions the County was taking during this time rather than focusing only on the numbers. She noted, after closing to the public, the immediate absorption of the credit card transaction fees which allowed residents to pay more conveniently, safely, and timely. She further noted that real estate and personal property taxes were the largest revenue sources. Ms. Day noted there were no current plans to change the June 5 due date. She added that if the Board approved an extension of that date, penalties and interest would apply. Ms. Day noted the most likely revenue source to have an immediate impact would be the meals and occupancy tax revenue which collectively comprised around \$10.5 million. She further noted those taxes were paid in arrears so March would be collected later this month. Ms. Day noted a significant increase in non-filers and expected lower meal tax revenue due to the no-inside dining restriction. She further noted on the tourism side there was an estimated 78% drop in travel spending in the state for March. Ms. Day noted these factors as well as the \$2 Historical Triangle additional lodging tax to be significantly impacted. She continued her presentation noting sales tax lagged by two months. Ms. Day noted March sales tax would not be received until late May so it would a while before the impact was known, but she felt it would be significant due to store closings. She further noted the 1% Historic Triangle tax and the sales tax for Education will also be impacted. Ms. Day noted good news regarding the collection of sales tax on internet sales. She further noted most of the Parks and Recreation programs had been canceled until further notice, which saved on the expenditure side, but it also meant that revenue would not come in. Ms. Day noted in Community Development, as a safeguard to citizens and staff, inspections were limited. She further noted the overall significant decrease in charges for service as County facilities remained closed and the stay-at-home order remained in place Ms. Day noted the quick and immediate response on the expenditure side based on the efforts of Emergency Management's experience with natural disasters and FMS staying current on FEMA guidance. She further noted due to these factors, federal guidelines were able to be launched to departments almost immediately with the awareness of this issue. She noted this allowed the tracking of emergency response costs from the beginning, which started on March

13. Ms. Day noted this would ultimately help the County recover costs through the various state and federal relief programs. She further noted significant reduction in departmental spending limits. Ms. Day noted additional layers for spending approval were in place with purchases greater than \$5,000 and \$10,000 and included the Purchasing Director, the Finance Director, and the County Administrator. She further noted local government was comprised of people and infrastructure with the focus on personnel and Capital Projects. Ms. Day noted on the personnel side that a hiring freeze was in place, furlough of part-time employees, as well as monitoring the efficiency, effectiveness, and productivity of staff's time under alternate means of working. Ms. Day noted the suspension of several discretionary programs. She further noted the focus was on preserving cash flow and providing essential services. Ms. Day noted solicitation from departments to help delay or eliminate entirely non-essential, non-personnel items as well as Capital Projects. She further noted closely working with partners, including the school division as it comprised 52% of the County budget, and to ensure everyone was doing their part. Ms. Day continued her presentation noting the proposed budget was prepared prior to COVID-19. She noted \$500,000 originally intended for employee compensation had been moved to a contingency account. She further noted the change in effective date to mid-year for several items. Ms. Day noted the move to January 1, 2021, would allow sufficient time for reassessment of the County's financial position and priorities. She further noted more adjustments were expected as additional information became available. Ms. Day noted in the presentation overview that the County had a two-year budget cycle, which allowed the Board to adopt and appropriate for the first-year budget for immediate implementation as well as provide a plan for the second year. She further noted the second year allowed for changes to be made for new developments. Ms. Day noted the evening's focus was on FY 2021, the first year of the biennial budget, which begins on July 1, 2020 and ends on June 30, 2021. Ms. Day further noted the budget continued to incorporate the County's Strategic Plan goals and initiatives. She noted the County's main operating fund, the General Fund, allocated funding to several other funds and JCSA. Ms. Day noted the other funds included a Capital Fund for County and school projects, a Debt Service Fund for outstanding debt obligations, and several other funds to account for substantial federal and state grants which the County used to provide services to residents including Social Service programs, Housing and Neighborhood Development programs, Probation and Pre-Child Services, and tourism, all of which were vital to the community. Ms. Day further noted the FY 2021 Proposed Budget was \$261.9 million, which reflected a 6% increase over the current budget. She noted FY 2022 plan was \$265 million, which reflected a 1.2% increase over the FY 2021 Proposed Budget. Ms. Day continued the presentation noting compensation adjustments included a placeholder for potential mid-year salary increases, increased health insurance (which is shared with employees), increased costs for employees' retirement, and worker's compensation benefits. Ms. Day noted the General Fund had an FY 2021 Proposed Budget of \$216 million. She further noted the FY 2022 plan reflected a 1.6% increase over the FY 2021 Proposed Budget, which included the addition of four positions effective January 1, 2021, as well as no change in the real estate tax rate. Ms. Day noted the estimated costs to provide services greatly exceeded the revenue projection; the requests exceeded \$11.8 million and were not funded. She further noted personnel requests of over \$2 million which were not funded. She noted 24 positions were requested with four of those positions in the Proposed Budget. Ms. Day further noted personnel requests were evaluated by Human Resources, and while they were not without merit, were not funded due to funding constraints. She noted on the non-personnel side, there was over \$9.7 million in requests that were not funded. Ms. Day added most of that was related to Capital Improvements Program (CIP) projects, about \$7.1 million, and while not funded when requested, most of those projects did make it into the fiveyear plan. She noted some of the non-personnel requests which were not funded were tied to personnel requests. She cited the example of additional police personnel requests funding and the corresponding police vehicle request funding. Ms. Day noted the majority of the County's revenue for the General Fund was derived from real estate and personal property taxes, which accounted for 65% of the total budget. She further noted of the overall \$4.2 million increase in the General Fund revenue from FY 2020, the majority (\$3.5 million) was from general

property taxes. Ms. Day noted the FY 2021 Proposed Budget included an increase of \$900,000 in public service tax revenue from the new Dominion Energy Skiffes Creek connector. She further noted the Proposed Budget included no change in the real estate or personal property taxes. She noted the Other category (as seen in the PowerPoint presentation) included charges for services in the Proposed Budget for slight increases in Park revenues and development revenues that were mainly surety and stormwater related. Ms. Day further noted, if approved, those increases would be effective January 1, 2021. She noted with FY 2021 as a reassessment year, the general reassessment resulted in a 1.8% overall increase with residential assessments increasing on average 2%, and the overall commercial was slightly less than 1%. Ms. Day noted other local taxes such as the Historic Triangle 1% sales tax, which was estimated to increase by \$50,000 in FY 2021. She further noted, as directed, that entire revenue source had been designated for one-time spending specifically for CIP. Ms. Day noted that due to General Assembly action addressing the equalization of taxing authority for counties and effective July 1, 2021, James City County would be authorized to tax the sale of cigarettes at a maximum of \$0.40 per pack. She further noted, should the Board wish to do so, the revenues were estimated to be \$900,000 and the Proposed Budget has allocated that funding entirely to CIP. Ms. Day noted other revenue highlights which included the Recycling Program. She further noted the program had transitioned to a fee-based service in FY 2020 and addressed the revenue adjustment for FY 2021 based on the current level of participation. Ms. Day further noted proposed fee increases, if approved, would be effective January 2021 for Parks and Recreation, Planning and Building Safety Permits, and Stormwater. She noted the All Funds Summary increased in FY 2021 due to a planned \$9 million JCSA bond issuance, adding that the increase in FY 2022 was due primarily to Capital Projects. Ms. Day noted the expenditure summary in the presentation. She further noted the County's General Fund was broken down into functions or departments with the school division receiving 52% of that funding. She continued her presentation with a graphic depicting the financial breakdown for every dollar collected. Ms. Day noted the County's Strategic Plan addressed seven goals and how the allocations from the Budget were tied to those specific goals. She further noted \$2.2 million was dedicated to stormwater and watershed management projects throughout the County. Ms. Day noted \$1.45 million was dedicated to transportation funding. She further noted the economic development of Navien Inc. to the County in addition to continued improvements to the County Marina (FY 2022), Ambler House (FY 2023), and Jamestown Beach (FY 2024), Ms. Day noted four areas of public service were impacted: replacement of Computer-aided Dispatch system; replacement of cardiac monitors; construction of a sixth fire station, and replacement of the Records Management System for mobile data reporting in the Police Department. She further noted the breakdown for school projects. Ms. Day continued her presentation highlighting compensation adjustments and employee benefits costs. Ms. Day noted one of the Strategic Planning Goals was for the County to have a sustainable water supply. She introduced Mr. Powell to the Board for the JCSA budget presentation.

Mr. Icenhour opened the Public Hearing for the Board of Supervisors' meeting.

Ms. Larson opened the Public Hearing on the Fiscal Year 2021-2022 James City Service Authority Budget.

Mr. Icenhour noted there was one voicemail comment received.

Mr. Stevens confirmed that was so.

1. Mr. Jay Everson, 103 Branscome Boulevard, addressed the Board regarding the Budget, specifically Item No. 2 on Page No. B-3 and revenue. He noted concerns regarding the amount of revenue coming in from the Tommy Tax, the Hotel Tax, and the Meals Tax, which combined was about \$15 million. He further noted he felt that number should be significantly reduced, which would impact the Sales Tax number. Mr. Everson noted with the closing of

businesses, the Default Tax needed to be reduced also. He further noted on Page No. B-8, a number of entries for the Recreation Center regarding various fees and such would probably be impacted with possible refunds or reduced revenue. Mr. Everson noted taking \$15 million off the top and then build the budget that way. He further noted if the money 'came back' then it could be added later. He noted consideration of the budget from this viewpoint and since the schools were approximately half of the County's expenditures, he recommended they (the schools) take half the hit to the local government. He thanked the Board for its time and wished everyone well.

As there were no other speakers, Mr. Icenhour closed the Public Hearing for the Board of Supervisors.

Ms. Larson closed the Public Hearing for the JCSA Board of Directors and the Board of Directors meeting adjourned.

Mr. Icenhour noted the Board of Supervisors meeting would continue per the Agenda. Discussion ensued regarding the budget.

Mr. McGlennon noted sending any budget questions to Ms. Day, Mr. Stevens, or both. He further noted this was a particularly difficult budget process with so many unknowns.

Mr. Icenhour noted, in the event he forgot, that the Public Hearing was closed. He noted Mr. McGlennon's point that any budget questions prior to the April 21, 2020 Budget Work Session be forwarded.

Ms. Larson noted she had a follow-up question. She asked if the school division had any budget adjustments or what discussions had taken place with them. She noted her understanding that Governor Northam was holding on raises and asked Ms. Day for confirmation.

Ms. Day confirmed that was her understanding. She noted the school division had been having conversations with the County, particularly the Purchasing Department. She further noted Mr. Stevens had conversations with them as well as an upcoming phone call with them to address more specifics for this year's and next year's budgets.

Ms. Larson thanked Ms. Day.

Mr. Hipple noted the Budget Work Session and discussion on tax collection as well as potential revenue loss. He further noted various percentage losses and the length of time before this situation was over. Mr. Hipple noted reviewing many things, including the school division, to address those items and the need to work together.

Mr. McGlennon noted it would be interesting to see how this turned out as there were a lot of moving parts at this time with no firm grasp on any of it. He further noted the approval of approximately \$3.3 billion to Virginia to be divided between the state and localities to replace lost revenue as a result of this event. Mr. McGlennon noted the revenue big hits were not across the board and possible deferment on real estate tax payments for some people. He further noted rather it would be seen with hotel and motel taxes and understanding the different levels and their impacts. Mr. McGlennon noted his understanding of a move toward another recovery package that would include substantial money for state and local governments regarding revenue losses.

Ms. Day noted some domino effects and watching events at the state level. She further noted if no raises were provided to their employees for the constitutional officers then the County would not provide those raises, but it would also not have the revenue. She added from a

budget standpoint they offset. Ms. Day noted revenue from the Lodging Tax, of which 60% was mandated to be used for tourism-related activities, was used to fund several agencies. She further noted if that revenue was not available that would be a discussion to have with the Board and the County's other partners. She noted some expenditures were directly tied to revenue, while others were not. Ms. Day further noted the number of variables as well as the length of time would impact the situation.

Mr. Hipple noted the citizens who were unemployed and the burden on them. He further noted a fluctuation in the curve on incoming revenue and how to fill the gaps.

Ms. Larson asked if anyone had spoken with Busch Gardens as this was a big thing since it was closed for Spring Break. She questioned the impact if Governor Northam's Stay Home Order lasted until June 10, 2020. Ms. Larson asked about the process for slowly reopening and that impact on the revenue picture. She noted a second question involved getting updates from Economic Development and conversations it is having with area businesses. Ms. Larson also asked if the partners or agencies had reached out to see how the budget impacted them moving forward.

Ms. Day noted she had not heard from most of the agencies for the FY 2020 impact. She further noted most of that funding was done in a lump sum, depending on the dollar amount, so most of the agencies had already received their FY 2020 funding. Ms. Day noted there were very few agencies that received monthly or quarterly payments. She further noted receiving some phone calls from the agencies regarding funding for next year. She noted conversations with those agencies regarding their respective budgets and working together to communicate with each other. Ms. Day further noted conversations center around timeline, budget impacts, and such.

Mr. Stevens noted the County was monitoring the state's directive on the reopening of businesses. He noted the April 28 and June 10 timelines Governor Northam had implemented, adding that the number of cases will increase when reopening happens and whether that date was pushed out to July, August, or even September. He further noted the date was a state-level decision, but he felt the business community would follow suit pretty quickly. Mr. Stevens noted he had been on a call with Busch Gardens in which it was asked about reopening. He further noted the response had been it depended on the Governor's guidance to determine the business model and the process for moving forward. Mr. Stevens noted it hinged on information from the state level and its availability. He further noted an update at Governor Northam's 2 p.m. press conference on April 22. Mr. Stevens noted conversations with Hampton Roads and the Peninsula area so that they all start re-opening together. He further noted hesitation to open sooner in counter to the business community in terms of recreation centers and libraries and not be a community source for problems, but added the localities were talking on a very regular basis and discussing the process of reopening buildings to the public.

Mr. Hipple noted a letter from the Board sent to Governor Northam which encouraged a soft opening sooner than June 10 that could be done in a safe manner. He further noted the numbers in the County slowing down and the possible opening in parts of the state versus a statewide opening.

Ms. Larson expressed concern at Mr. Stevens' reference to reopening in July or August. She noted that would decimate the economy, but stressed safety was the first priority. She further noted she was hopeful, at the state level, that they were being reactive to current events as well as being proactive to future events and how to co-exist in the midst of an outbreak. Ms. Larson noted the composition of the County's community. She questioned the impact of a standstill through July.

Mr. Stevens noted he did not mean the County would be shut down through July, but referenced the numerous models available predicting the future when reopening occurred. He further noted four scenarios based on an April 23 reopening date from a University of Virginia model that had been shared by Governor Northam. Mr. Stevens noted, based on the model, two around April 23, two around June 10, with three of those models having similar peaks showing an increase of cases upon reopening. He further noted the expectation for an increase in the case count, but with varying peak times. Mr. Stevens noted one peaked in July, one in August, and another in September. He further noted it was a model and there were variances in models based on assumptions. Mr. Stevens noted the models were consistent for the expectation of a rise in the number of cases for whenever the economy started back up anywhere in the country. He noted the flattening of the peak or lowering the total number based on the actions that had been taken. Mr. Stevens further noted the past month's actions had allowed for PPE orders to be received for County Fire, EMS, and other personnel, where that had not been the case three weeks earlier. He continued with an update on incoming equipment and noted the timing had gotten better on shipments. Mr. Stevens noted a plan was in place to convert the Hampton Convention Center to a hospital if needed, but at present that was not the situation. He reiterated that upon reopening, expect the case count to rise across the Commonwealth.

Mr. McGlennon noted these thoughts must be going through the state's leaders' minds as well with regard to extended shutdowns in relation to public health. He further noted the area was a tourist town and he felt it would take time for tourists to come to an area where physical separation was more difficult. He cited Busch Gardens in relation to the practicality of maintaining the 6-foot social distancing. Mr. McGlennon noted tourism would have a difficult time in the immediate future even with sanctions lifted. He further noted he heard sectors would be opened at a time and that those particular sectors allowed for distancing. He expressed caution on a sense of filling hotels and restaurants sooner than what could be based on people and what they would want to do.

Ms. Sadler noted tourism and the need to have communication with York County and the City of Williamsburg on the Senate Bill 942 money allocation for advertisement. She further noted keeping that money fully funded so when the area reopened for tourism, the advertisement would be there to support it. She noted the school division and her hopes it was revising or amending its budget. Ms. Sadler further noted she had not heard anything on that point as of yet. She asked Mr. Stevens if he had any information to share it with the Board prior to the Budget Work Session. Ms. Sadler noted she felt the school division should take its fair share of the shortfall in terms of allocation and to be prepared for a budget revision on its part. She thanked everyone for all they were doing during the constantly changing situation. Ms. Sadler noted she had spoken with Mr. Icenhour regarding a letter to Governor Northam as Mr. Hipple had suggested and including other localities in doing the same thing. She further noted sending a unified message to Richmond.

Ms. Larson noted the difficulty of this situation regarding the value of economy over human life, but the reality remained. She further noted constituent concerns that this was the flu, but she added this was a severe respiratory attack that could require a ventilator. Ms. Larson noted the need to get more information out regarding testing and vaccination.

Mr. Icenhour noted his desire to open the economy as soon as possible also, adding that when that happens people needed to be aware a spike in the number of cases will occur. He further noted, from a public safety aspect and something where the state may need to be involved, was more better testing and tracking needed to be available. Mr. Icenhour noted once reopening occurred, if things went wrong, it would be a worse situation. He further noted a tracking mechanism for monitoring, but added he did not feel one was available right now.

Ms. Sadler noted that should be included in the letter to Richmond.

Mr. Icenhour echoed that statement.

Ms. Larson asked what was the latest information regarding testing.

Mr. Stevens noted there were ongoing conversations. He further noted communication with hospitals regarding testing. He added the fairly long turn around time on the testing. Mr. Stevens noted Sentara Hospital had tried to get internal testing for quicker turn time. He noted testing was available, but timing was still an issue for drive-up or walk-in, adding the criteria still needed to be met prior to testing. Mr. Stevens noted he felt the test timing would get better, but it still had a long way to go.

Mr. Hipple noted the letter for a soft opening should include allowing a limited number of attendees to Busch Gardens or restaurants. Mr. Hipple noted the American people were getting restless as well as County residents. He further noted opening the economy up and moving at incremental speeds until it was fully operational.

Discussion ensued on these points.

3. An Ordinance to Amend and Reordain the Code of James City County by Amending Appendix A - Fee Schedule for Development Related Permits to Improve Formatting and Readability; An Ordinance to Amend and Reordain James City County Code, Chapter 22, Wetlands; An Ordinance to Amend and Reordain James City County Code, Chapter 23, the Chesapeake Bay Preservation Ordinance

A motion to Approve was made by John McGlennon, the motion result was Passed. AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0 Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

Mr. Paul Holt, Director of Community Development, addressed the Board regarding the May 8, 2018, adoption of an Ordinance to Appendix A to allow for development-related fee references to be consolidated into one table. He noted prior to the 2018 adoption, fee references had been spread throughout the various chapters of the County Code. He further noted the Ordinance in the Agenda Packet continued the consolidation by including Chapter 22, Wetlands and Chapter 23, the Chesapeake Bay Preservation Ordinance. Mr. Holt noted the revisions improved formatting and readability with no fee changes or other substantive changes. He further noted staff recommended approval of the fee Ordinance.

Mr. Icenhour opened the Public Hearing.

As there were no speakers, Mr. Icenhour closed the Public Hearing.

Mr. McGlennon asked if it was permissible to move all three Ordinance changes in one motion.

Mr. Kinsman indicated yes.

4. An Ordinance to Amend and Reordain the Code of James City County by Amending Appendix A - Fee Schedule for Development Related Permits to Increase Certain Fees to Defray the Costs Incurred by the County and for Additional Resources to Administrate Each Program

Mr. Holt addressed the Board noting several staff amendment proposals to Appendix A of the

County Code as part of the FY 2021-2022 budget process. He noted the amendments addressed defrayment of costs for administration of various development-related programs. He further noted the amendments fell into three categories: formatting for consistency, changes to existing fees, and new fee proposals. Mr. Holt noted these categories were included in the Agenda Packet. He further noted two of the more substantive ones included a fee structure for the Stormwater Division, which involved land disturbance and construction and the wetlands impact. Mr. Holt noted when these instances occurred, significant staff and resource time was needed. He further noted additional fee structure for the Stormwater Division that would proactively administer and manage the development surety process. Mr. Holt noted the Division was managing 326 sureties to date, with a quarter of those 10 years old. He further noted staff's use of the additional resources on various items. Mr. Holt noted staff's recommendation to conduct a Public Hearing at the evening's meeting. He further noted no action was required of the Board at the evening's meeting, but rather be reviewed at the May meeting as part of the FY 2021-2022 budget process. He noted Mr. Tom Coghill, Director of Building Safety and Permits, and Ms. Toni Small, Director of Stormwater Management, were in attendance if the Board had any questions.

Mr. Icenhour asked the Board if it had any questions.

Mr. Hipple expressed his thanks to staff.

Ms. Larson noted her hope that some of the Stormwater implementation would assist citizens with long-term concerns. She also expressed her thanks to staff.

Discussion ensued on this point.

Mr. Icenhour opened the Public Hearing.

As there were no speakers, Mr. Icenhour closed the Public Hearing. He noted no action was required at this meeting, but it would be brought forward at the May meeting.

## 5. Amendment to Regjag/Gilley Deed of Easement

A motion to Approve was made by Michael Hipple, the motion result was Passed.

AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0 Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

A motion to Approve with the Amendment stated by the County Attorney was made by

Michael Hipple, the motion result was Passed. AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0

Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

Ms. Tammy Rosario, Assistant Director of Community Development, addressed the Board regarding an existing conservation easement for the collectively known Regjag and Gilley properties. She noted the details regarding the construction of an 8-foot wire mesh fence as part of a reforestation and water quality project. Ms. Rosario further noted the amendment would allow the County to consider and grant written permission for fencing not expressly permitted. She noted the final amendment would move the fencing provisions into its own section to further clarify that fencing was not considered an accessory structure. Ms. Rosario noted staff's recommendation that the Board adopt the attached resolution.

Mr. McGlennon asked if the intention was to retain the fencing permanently or would it be removed after the reforestation was completed.

Ms. Rosario noted it would remain permanently. She further noted the property owner wanted to protect the property from damage.

Mr. McGlennon asked about the possibility of any timbering.

Ms. Rosario noted the property owner indicated a hardwood mix would be planted with a 50-to 60-year maturity growth. She further noted approximately 15-20 years into that time, some thinning would occur to maintain a healthy forest. She noted it was not the property owner's intention, in his lifetime, to harvest the trees.

Mr. Hipple asked if this only applied to the property at 134 Smokehouse Lane. He asked if the wording addressed the other three properties coming back before the Board if they wanted to fence their properties.

Ms. Rosario noted the current posting applied to all of the other properties and would not require them to come before the Board if they wanted the same type of fencing and met the same criteria.

Mr. Hipple noted he would prefer the request coming back to the Board. He asked about the dimensions for the fencing and referenced the diagram in the Agenda Packet.

Ms. Rosario noted reviewing the fencing layout.

Discussion ensued on the fencing dimensions of the Smokehouse property, residency, neighbors, and concerns on other property owners fencing their respective properties.

Mr. Icenhour asked Mr. Kinsman about the change to restrict the fencing amendment to the 134 Smokehouse Lane property only and that surrounding property owners would need to come before the Board separately if they wanted to add fencing.

Mr. Kinsman noted an amendment to the first "Now therefore it be resolved" section of the resolution to only refer to 134 Smokehouse Lane could be made.

Mr. Hipple noted he found that mention in rereading the material and apologized to Ms. Rosario for not getting that concern to her earlier.

Mr. Icenhour opened the Public Hearing.

As there were no speakers, Mr. Icenhour closed the Public Hearing and sought a motion.

#### 6. Readoption of Continuity of Government Ordinance

A motion to Approve was made by Ruth Larson, the motion result was Passed.

AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0

Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

Mr. Kinsman addressed the Board noting at its March 24, 2020 meeting the adoption of an Emergency Continuity of Government Ordinance. He noted per the Virginia Code that the Ordinance be properly advertised and re-adopted, which was currently before the Board. He further noted on April 7, 2020, he was contacted by Counsel for the School Board and asked that they be added to that Ordinance, which he did. Mr. Kinsman noted that was the only change from the previously adopted Ordinance. He further noted recommendation to adopt the Ordinance

Mr. McGlennon asked if this could be done for the schools.

Mr. Kinsman noted per its attorney yes.

Mr. McGlennon noted he asked the question since the School Board was a joint School Board with the City of Williamsburg.

Ms. Larson noted that was true and asked if the City was required to do the same.

Mr. Icenhour noted the School Board had reached out to him first and further noted the City had no problem with it. He further noted that upon verification, the Board had proceeded.

Mr. Kinsman noted since both elected and appointed members comprised the School Board, he had added them, but specifically excluded them from the Board of Supervisors' restrictions on subordinate boards and commissions so that the School Board and the City of Williamsburg could apply their own procedures.

Mr. Icenhour opened the Public Hearing.

As there were no speakers, Mr. Icenhour closed the Public Hearing.

## I. BOARD CONSIDERATION(S)

 Contract Award-Administration of Group Medical, Dental, Stop Loss, and Prescription Drug Coverage

A motion to Approve was made by John McGlennon, the motion result was Passed. AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0 Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

Mr. Patrick Teague, Human Resources Director, addressed the Board noting a Request for Proposal (RFP) had been solicited for comprehensive, full-service medical, dental, prescription drug, and reinsurance to support the medical program on behalf of eligible employees, pre-65 retirees, and dependents for the County. He noted 10 companies had responded to the RFP with their experience and references. He further noted staff's recommendation to approve the contract award to OPTIMA Health and Delta Dental for a one-year term.

Mr. Hipple asked about a comparison to what the County currently had and the quality of the program.

Mr. Teague noted OPTIMA had a larger in-state network with more specialty coverage in addition to approximately 99% of current providers were in the OPTIMA network compared to Cigna. He further noted the big difference was the price and based on the budget presentation and the anticipated increase in costs, OPTIMA's 2-5% range was better than the 15% range with Cigna.

Mr. Hipple noted good job. He asked about Delta Dental, which in previous years was less accepted at many dental offices, and if that had changed.

Mr. Teague noted Delta Dental had approximately 99% penetration in the Virginia markets. He further noted good experience with the group over the past few years.

Mr. Hipple thanked Mr. Teague for all the hard work.

#### 2. Authorization to Request Establishment of a No Wake Zone on Diascund Creek

No action taken on this item this evening, see Page 2 for details.

## J. BOARD REQUESTS AND DIRECTIVES

Ms. Sadler noted she did not have much to report. She further noted replying to numerous emails. Ms. Sadler noted the upcoming Food Drive on Saturday, April 18 at the Williamsburg Community Chapel through the Community Faith Network with a list of needed items. She encouraged others to send the list to their homeowner associations (HOAs).

Mr. McGlennon noted he had not attended many events for obvious reasons. He expressed his appreciation for the people who were working to provide necessary services in grocery stores, pharmacies, Emergency Management, and others. Mr. McGlennon noted loss in the community, but also acknowledged the resiliency and efforts of the County's citizens.

Ms. Larson noted her work on the Tourism Council was still ongoing. She further noted phone meetings with the group and the upcoming open meeting for the budget. Ms. Larson noted if any Board members were interested in listening to contact her for the phone information. She further noted the bleak outlook, but added there was a carryover of funds. Ms. Larson noted when the timing was appropriate, the Tourism Council would resume the media to promote tourism for the area. She further noted the Council's leadership was working with state tourism and other leaders as well as advertising. Ms. Larson noted the Finance meetings were also continuing with the next meeting in May. She further noted when the time was right, the area would be ready to welcome tourists back. Ms. Larson echoed Mr. McGlennon's comments on the workers who were keeping the country going in grocery stores, first responders, and other areas. She reminded people to have patience and understanding at this time. Ms. Larson thanked the community for all that it was doing.

Mr. Hipple noted the various Transportation Boards were continuing to meet, though in various formats. He further noted transportation being an economic driver for the state. Mr. Hipple noted the work among localities for these projects and the funding aspect. He further noted the Hampton Roads Military and Federal Facilities Alliance (HRMFFA) meeting. Mr. Hipple noted as its Finance Chair, he hoped at the upcoming and last meeting to finalize the budget with a zero balance. He further noted that meant not seeking funding from communities or private citizens who had joined HRMFFA for a year. Mr. Hipple noted funding was currently in place. He further noted the No Wake Zone discussion that had been postponed until May and his discussion with citizens for the best option for everyone. Mr. Hipple thanked the citizens and the employees who were working every day, whether at home or out in the community. He further noted extending thanks to the staff for its ongoing work.

Mr. Icenhour noted he had two interviews conducted from home. He further noted one was WHRO and the other with WMBG. Mr. Icenhour noted the radio interviews gave the Board members the opportunity to let the public know what was going on. Mr. Icenhour echoed the comments on how well County citizens were doing, though he noted there had been some golf complaints. He noted the golf courses being crowded, but he added that only one golfer per cart and social distancing were being practiced. He noted his neighborhood, Ford's Colony, had a walking path and it was being used regularly with residents being very respectful. Mr. Icenhour noted the commitment of staff to the citizens. Mr. Icenhour further noted the passing of Mr. Bob Stein, a former Ford's Colony HOA president, and the personal loss to the community. He extended thoughts and prayers to the Stein family. Mr. Icenhour noted congratulations were in order for Mr. Stevens on his recent marriage.

#### K. REPORTS OF THE COUNTY ADMINISTRATOR

Mr. Stevens noted his thanks to Ms. Day and her staff for the budget work, particularly during the technology challenges of the remote work environment. He further noted ongoing discussion regarding revenue reduction forecast and expenditure. Mr. Stevens noted contingency plans based on the COVID-19 situation. He further noted the Board's Work Sessions on April 21 and April 28, with a virtual Community Meeting on April 23 at 12:30. Mr. Stevens noted though the County buildings were closed to the public, County staff was working and available to answer questions, emails, and phone calls. He encouraged citizens to contact the County with concerns. Mr. Stevens noted ongoing conversations with the VDH, other localities, local hospitals, and that the measures taken were helping to 'flatten the curve'. He further noted the conversations also focused on reopening and the timeline. Mr. Stevens noted the County had an adequate supply of PPE for first responders, which had not been the case several weeks prior. He further noted with this week's supplies there should be a sufficient amount to last through the summer in terms of primary equipment such as surgical masks, N95 masks, and gowns. Mr. Stevens noted masks for general workers, teleworking, office cleaning, and other steps. He further noted the commitment of County workers. Mr. Stevens noted the ongoing updates from the County and the state on social media to keep the community informed. He further noted for citizens who were not on social media or have website access, they could call 564-2140 for daily updates. Mr. Stevens reminded everyone to stay home, and when out, practice social distancing, regular hand washing, and the use of masks. He thanked the employees for their continuation to serve the community, the residents for taking it seriously and being patient working with staff.

Ms. Larson noted she shared the daily social media updates every morning. She noted kudos on the updates.

Mr. Stevens thanked her and noted he would pass that on.

Mr. McGlennon noted the same to the Social Services Department.

## L. CLOSED SESSION

A motion to Enter a Closed Session was made by Michael Hipple, the motion result was Passed.

AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0 Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

At approximately 7:00 p.m., the Board entered Closed Session.

At approximately 7:13 p.m., the Board re-entered Open Session.

A motion to Certify the Board spoke only about those items indicated that it would speak about in Closed Session was made by John McGlennon, the motion result was Passed.

AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0

Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

#### Chesapeake Bay/Wetlands Board Appointment

A motion to Elect Michael O'Brien to the Chesapeake Bay and Wetlands Board was made by John McGlennon, the motion result was Passed.

AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0

Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

Mr. McGlennon noted the appointment of Mr. Michael O'Brien to the Chesapeake Bay and Wetlands Board as an alternate for a term effective immediately and which would expire on March 31, 2025.

## 2. Economic Development Authority Appointment

A motion to Elect Brandon Nice to the Economic Development Authority was made by John McGlennon, the motion result was Passed.

AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0

Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

Mr. McGlennon noted the appointment of Mr. Brandon Nice to the Economic Development Authority for a term that would expire on March 31, 2021.

#### M. ADJOURNMENT

1. Adjourn until 4 p.m., on April 21, 2020, for the Budget Work Session

A motion to Adjourn was made by Sue Sadler, the motion result was Passed.

AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0

Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

At approximately 7:14 p.m., Mr. Icenhour adjourned the Board of Supervisors.

# M I N U T E S JAMES CITY COUNTY BOARD OF SUPERVISORS BUDGET WORK SESSION

County Government Center Board Room 101 Mounts Bay Road, Williamsburg, VA 23185 April 21, 2020 4:00 PM

#### A. CALL TO ORDER

#### B. ROLL CALL

Michael J. Hipple, Vice Chairman, Powhatan District Ruth M. Larson, Berkeley District P. Sue Sadler, Stonehouse District John J. McGlennon, Roberts District James O. Icenhour, Jr., Chairman, Jamestown District

Scott A. Stevens, County Administrator Adam R. Kinsman, County Attorney

Mr. Icenhour requested a motion to allow Ms. Sadler to participate remotely for the Budget Work Session, due to an illness which did not allow her attendance.

A motion to Allow Ms. Sadler to Participate Remotely for the Budget Work Session was made by Michael Hipple, the motion result was Passed.

AYES: 4 NAYS: 0 ABSTAIN: 0 ABSENT: 1

Ayes: Hipple, Icenhour Jr, Larson, McGlennon Absent: Sadler

Mr. Icenhour welcomed Ms. Sadler to the meeting.

Ms. Sadler acknowledged her presence on the call.

#### C. BOARD DISCUSSIONS

## 1. Current Fiscal Year 2020 Budget Discussion

Mr. Stevens stated that per his request, some department heads were not present at the meeting due to social distancing efforts in regard to COVID-19; however, they were available by phone for any questions. He noted the discussion would be centered around the County's General Fund for Fiscal Year (FY) 2020 and for FY 2021 for the proposed budget. He commented the County is in good financial shape due to the actions of staff and the Board. He noted the intent was not to spend any County savings, which is in excess of \$30 million, within the General Fund and all efforts were geared toward maintaining those savings. He stated Ms. Sharon Day, Director of Financial and Management Services (FMS), was prepared to give a short overview of revenue and expense reductions for the current year and then proceed into projections of three-, six-, or nine-month scenarios for the proposed year. He asked the Board if there were any questions and mentioned documents prepared for the Board members which included budget books, handouts (one being Ms. Day's presentation), printed emails concerning the FY 2020 revenue adjustments, expenditure reduction recommendations, current year reduction amounts from the school system, FY 2021 revenue adjustments and expenditure recommendations, and revenue reduction assumptions FMS used in making

recommendations in what might be collected relating to property taxes and sales taxes in both years. He noted Board feedback regarding the recommendations would make a significant difference in projections moving forward.

Ms. Day began her presentation with an overview of the COVID-19 pandemic timeline, included in the Agenda Packet, when the County declared a Local State of Emergency on March 13 through present day April 21. She discussed the COVID-19 FY 2020 impact in relation to revenue and expenditures. She noted the focus was on preserving cash and providing essential services and stated departments have been notified to delay and eliminate non-essential and non-personnel items as well as capital projects. She further noted working together in partnership with the Williamsburg-James City County School Division, which comprised approximately 52% of the County budget, emphasizing many conversations had taken place. She explained the focus of this meeting was on the General Fund, also known as the operating fund, and reviewed the table reflecting the FY 2020 adopted budget as well as FMS's projection of actual revenues with the COVID-19 impact. She commented that most revenues were paid in arrears; therefore, there will be some insight into March's activity later this month. She reviewed the general property taxes and noted the reduction of approximately \$565,000 as well as other local taxes with a reduction of approximately \$2,995,000. She briefly discussed property tax bills and the possible hardship for citizens to pay on time, and noted convenience fees had been waived in an effort to assist citizens making payments online. She further discussed the various other local taxes projections and assumptions, noting three years' worth of data was used as opposed to the typical use of one year. She emphasized that the state has allowed remitters a one-month delay in making their payments, therefore what was due to the state in March is now due in April. She noted working with the state to determine if this was a filing requirement or a payment requirement.

Mr. McGlennon inquired if online sales were attracting the County, City of Williamsburg, and York County effectively.

Ms. Day replied yes. She continued her overview and discussed meal and transient occupancy taxes, also known as the lodging taxes.

Discussion ensued regarding meal taxes in regard to the COVID-19 pandemic.

Ms. Larson inquired if Mr. Chris Johnson, Director of Economic Development, could reach out to local businesses and see how much business was down at particular restaurants.

Mr. Stevens suggested the Restaurant Association might have insight to that information.

Ms. Larson noted to include hotel and motel numbers.

Mr. Hipple included Busch Gardens in the discussion. He estimated business losses could be much higher in terms of what was not going to be received as opposed to what had been projected. He observed many restaurants offering take-out could be an effort to try and stay open.

Ms. Day proceeded with her overview and discussed bank franchise, Deeds of Conveyance, and recordation taxes. She spoke of business license permits and fees, commonwealth/state taxes, charges for services, as well as miscellaneous monies referencing the PowerPoint slideshow included in the Agenda Packet.

Ms. Larson referenced ambulance fees and inquired if they were taken to collections if unpaid.

Ms. Day replied no, they were part of a "soft billing policy." She noted that in most cases these charges were paid by Medicare, Medicaid, or insurances.

Mr. McGlennon inquired about why a reduction could be seen.

Ms. Day replied there were self-pay categories with approximately \$2.7 million, with about \$600,000 of that being self-pay.

Mr. McGlennon inquired if the self-pays would be mostly tourists.

Ms. Day replied it would be people who are not eligible for Medicare, Medicaid, and do not have insurance. She continued her presentation and gave an overview of miscellaneous, other fees, and courthouse categories as seen on the PowerPoint slideshow included in the Agenda Packet.

Mr. Hipple inquired if there had been any furloughs at the courthouse.

Ms. Day replied she was not aware of any furloughs.

Mr. Stevens replied staff at the courthouse was still working in terms of teleworking as well as in the offices and commented there had not been any furloughs other than part-time staff within the County structure.

Ms. Larson inquired if the Sheriff's Department was continuing to pay staff whose primary job responsibility is providing security in the courthouse. She asked what types of conversations had occurred with the constitutional officers.

Mr. Stevens replied there were weekly conference calls with department heads and constitutional officers with discussions occurring regarding revenues, employees, as well as providing guidance. He discussed employee teleworking scenarios and maintaining the public's trust of working and being paid. He mentioned some departments had the ability to catch up on backlog work and noted the courthouse is still open and security still has to be provided for the building as well as limited court proceedings. He emphasized if an employee is being paid to work they should be working and if the job is not there, we either find something else or leave time/furlough should be used on a temporary basis.

Ms. Larson stated these are difficult conversations; however, moving forward we are looking at a rough period of budgetary issues. She emphasized the need for everyone to be playing on the same field by understanding what the Board's outlook is and why it is asking if there are efficiencies that can be realized and the opportunity taken to do so.

Discussion ensued regarding the Sheriff's Department and this issue as well as various department position vacancies not being filled at the present time.

Ms. Day continued her presentation and gave an overview of the COVID-19: FY 2020 Expenditure Reductions Summary available in the Agenda Packet. She discussed operations, capital, and monetary transfers in regard to the County as well as the School Division side.

Ms. Larson inquired about monies on the operating side for the School Division.

Ms. Day replied that a memorandum had been provided that discussed things the School Division was doing on the operating side, which were very similar to things the County had done. She noted academic and athletic stipends had been deferred, delayed, or not paid at all as well as less monies toward fuel, bus drivers, substitute teachers, and temporary help in classrooms.

Mr. Hipple remarked "it's a small number but a big number and with us funding 52% of their

budget shouldn't the cut be 52% of savings."

Ms. Day replied a fair way of looking at it would be to take the contribution to the School Division and deduct the debt to service payment, since that portion of the 52% is mandated.

Mr. Hipple inquired about the figure of that amount or percentage.

Ms. Day responded the debt service the County pays the School Division is \$14.8 million, so approximately \$95 million of it is operations and \$14.8 million is for debt.

Discussion ensued regarding this topic.

Mr. Stevens referenced the school superintendent and finance officer stating they have been team players and he and Ms. Day had shared good conversations with them. He noted the figures would be closer to \$1.2 million in operations, other items, and capital. He briefly discussed he expected to exceed the numbers given, that these were just for the current year and emphasized they do recognize the situation and where we are in terms of finances.

Mr. Hipple emphasized this Board does support the schools; however, in tough times what is equal for everyone has to be considered and then moved forward.

Mr. McGlennon stated he would like to see what the impact was going to be before deciding the right split figure. He commented we had funded at higher levels in the past, as a share of the total budget over the last couple of decades.

Mr. Hipple agreed and commented if we do not give up together, then one gives up more than the other. He noted that after schools, Police, EMS, and Fire are taken out of the equation, there is very little left to operate the rest of the County and wanted to make sure we were sharing in both sides equally or equally proportioned to what will be received.

Mr. Icenhour addressed the issue of capital and maintenance projects and referenced 2008 when maintenance was cut and things deteriorated over time. He emphasized there needed to be some type of recognition, that capital and maintenance cannot arbitrarily be cut, and it should be based on what needed to be done in order to maintain the capability going forward from a safety and financial aspect. He stressed the importance of having conversations with the School Board, noting there is a comfort level and we do not want to be not cutting them to the point where it makes it more difficult to recover in the long run. He further noted this was more important moving forward in FY 2021 than now, but still something that needed to be considered.

Mr. Hipple recommended reviewing the budget and Capital Improvements Program (CIP) at the next Board meeting and paying particular attention to three details: 1) asking our leaders what is a necessity and what items can be pushed back a year or two; 2) a budget set up with numbers that would be if there was enough revenue in the June or July 2021 timeframe; and 3) the budget that was presented before COVID-19 occurred. He emphasized this would allow the Board a better overview of different scenarios.

At approximately 4:39 p.m., the Board took a brief recess in order to deal with technical issues Ms. Sadler was experiencing.

At approximately 4:42 p.m., the Board reconvened and Ms. Sadler's technical problems were resolved.

Ms. Sadler conveyed concerns regarding CIP projects and referenced past CIP payments noting assets were viable at the time. She suggested possibly obtaining a small loan,

maintaining cash on hand, and when things return to normal to pay off the loans. She likened this method to those frequently used in household budgets. She emphasized the importance of having cash available during strenuous times. She inquired about FY 2020 meal and lodging taxes as well as Business, Professional, and Occupational License tax decreases.

Brief discussion ensued regarding these topics.

Ms. Sadler referenced Williamsburg-James City County school funding and briefly discussed that going forward we needed to be realistic in terms of what we are trying to accomplish with getting the budget through.

Mr. McGlennon remarked historically funds remained from schools where determinations were made in the fall, and asked if there was any reason to think that would not be true this year.

Ms. Day briefly discussed that this part of the budget discussion included the schools projections through June 30.

Mr. Stevens stated there was time to officially make the determination and he 'planted the seed' with the superintendent that it may be a year where the Board might not have the opportunity to prefund some of their capital items.

Mr. Icenhour inquired if there was a certain amount the schools were automatically allowed to keep and anything above that amount came back to us.

General discussion ensued regarding this topic and the approval process.

Mr. Stevens emphasized the schools were working very well with the Board in terms of sharing information and trying to do the same kinds of things the Board is doing.

Ms. Day stated there currently are shared services allowing visibility for major purchases. She continued her presentation and discussed the School Division expenditure side impacts referring to the PowerPoint slideshow included in the Agenda Packet.

Mr. Icenhour referenced going forward to the next budget work session and asked if there was any other guidance from the Board to staff before going into the FY 2021 portion.

Ms. Larson referenced a proactive email that Mr. Stevens sent to 'all staff' the previous day and noted it was a well-crafted message in moving forward.

Mr. Stevens expressed his thanks and commented he had a lot of help.

Ms. Larson noted efficiencies were currently being looked at to navigate through the end of this fiscal year and asked that the communications continue.

Mr. McGlennon stated he had some questions regarding the budget process for this year. He further stated the General Assembly would be meeting April 22, 2020, to consider amendments the Governor submitted to the budget. He noted the Coronavirus Aid, Relief, and Economic Security Act provides money for local government to recover pandemic related expenses. He referenced the Advanced Life Support and Basic Life Support transport issue. He pondered if that was potentially something that might be an impact of the COVID-19 situation, because it allows for the recovery of lost fees and sales taxes relating to the pandemic. He referenced the National Association of Counties and stated James City County would be eligible for approximately \$6.7 million under the recently passed proposal and briefly discussed qualifications and opportunities to draw federal funds. He asked if there had been

any guidance on transit.

Ms. Day replied guidance had been very general at this point. She stated the next work session would provide an update opportunity to review various programs staff has researched and feels would provide revenue relief. She noted researching loan programs that provide cash, but are a loan, as well as some programs where localities greater than 500,000 in population qualify for direct funding. She noted the County does not have that size population; therefore, funding would come from the state. She stressed there are lots of programs with many variables to consider in an effort to determine which provide the most benefit. She mentioned working with Olde Towne Medical to see what programs it qualified for and noted it recently applied for a loan which was approved.

Mr. Stevens stated Ms. Day was experienced with natural disasters in the area and tracking costs. He noted the challenge was replacing some of the lost revenues.

Mr. McGlennon stated Ms. Sadler raised the question of borrowing versus pay as you go. He noted information at the beginning of the presentation stating the intention was not to go into the cash reserves at this time, but rather to operate within the broader perimeters of the budget originally adopted.

Ms. Day replied yes.

Mr. Hipple stated it would be good to hold onto money put aside and try to tighten the budget. He briefly discussed these are the times that set things up one behind the other and when we get through this there will be funding to take care of an issue.

Ms. Larson remarked it was important to keep in mind the schools had not caught up from the recession in 2009 and were still being funded at 2009 levels, noting that was on the Commonwealth.

Mr. Icenhour asked Ms. Sadler if she had any further comments.

Ms. Sadler replied no.

Mr. Icenhour asked the Board be kept informed as the figures start to come in.

Mr. Hipple noted that in May the Board generally approved the budget; however, it did not have to be approved until July 1.

Ms. Day commented June 30.

Mr. Icenhour suggested pushing the date back in to June if needed, but wanted to be aware of not hindering the schools in its efforts to follow up on things that needed to be done.

Ms. Larson emphasized schools do not send contracts out until receiving the County's budget.

Mr. Hipple emphasized the possibility of new information or funding coming in that the Board was not aware of and perhaps may quickly change its course.

Mr. Stevens stated the Board may know a little more each month, but felt it did not necessarily change a lot month to month. He noted the possibility of the Board amending the budget from time to time throughout the year.

2. Proposed Fiscal Year 2021 Budget Discussion

Ms. Day continued her PowerPoint presentation included in the Agenda Packet and stated the proposed budget was issued on April 2, 2020, but was prepared before the COVID-19 pandemic. She noted \$500,000 that was originally earmarked for employee compensation was moved to a contingency account. She commented further adjustments are expected as more is learned about the situation and the potential impact on the County. She referenced and briefly discussed revenue and expenditure tables in the slideshow which depicted three different scenarios:

- 1. Assuming a three-month impact, meaning the impacts from COVID-19 would range from July 1-September 30, 2020; and
- 2. Assuming a six-month impact meaning the impacts from COVID-19 would range from July1-December 31, 2020; and
- 3. Assuming a nine-month impact meaning the impacts from COVID-19 would range from July 1-March 31, 2021.

Ms. Day asked the Board for guidance on which scenario it would like the focus or if it would like a different direction taken.

Mr. Icenhour clarified with Ms. Day that it was his understanding she had details for the three-month projection, but it would probably be the next meeting before there were specific details for the six- and nine-month projections.

Ms. Day replied that was correct. She stated a lot of the assumptions made for the three-month impact were very similar to the three months of this fiscal year and expects the impact will be greater as time moves forward.

Mr. Stevens referenced a handout given to the Board showing what the dollar amounts per category would be for reductions; however, did not give the detail the PowerPoint slides contain. He asked the Board for guidance regarding which scenario it would like to explore, stating the conversation today could be in regard to the three-month scenario. He commented the upcoming work session could include discussion regarding the six- or nine-month scenarios. He noted the budgets would be the best estimate to date and could be subject to change moving forward through FY 2021.

Ms. Larson suggested reviewing the three- and six-month scenarios.

Mr. Icenhour inquired if the three-, six-, and nine-month projections were based on the pandemic continuing that length of time and not necessarily including any recovery and briefly discussed a projection example. He stated he would like to start with the three-month impact and keep in mind that when we return to the budget work session next week we can begin looking at some of these scenarios. He further stated it was his opinion the Board would pick a number based on its best guess and then adjust to that number. He explained that a three-month number could require tightening the belt; whereas, a six-month number may not. He reiterated his choice of a three-month scenario and questioning the effects going forward.

Ms. Sadler stated rather than starting with the lower impacts and taking things away, she preferred concentrating on the six- and nine-month scenarios and plan for a 'hard hit.' She noted at that point as things recovered items could be added back. She stated no one knew what the full impact will be, but was optimistic there would be a great recovery. She shared her grandmother's old adage "you plan for the worst and hope for the best." She commented that as a citizen, planning for the worst scenario and then bringing things back on board, would make her feel more confident that elected officials were taking a serious look at how tax

dollars were being spent.

Mr. Icenhour briefly discussed the importance of keeping perception in the back of one's mind.

Mr. Hipple stated it could take up to a year to get back into a rhythm, but things would get back to where they were before this all started. He noted getting things up and running again and stressed that he favored a safe, thought out, soft business opening approach to getting things reopened. He discussed the possible economic impact of the pandemic, planning for financial losses, and bringing things back online and moving forward in the community.

Ms. Larson inquired about a clarification of the definition of "impact."

Discussion ensued regarding the definition of "impact" in various circumstances, percentages, assumptions, and issues.

Ms. Larson briefly discussed restaurants, activity programs, as well as tourism and their possible effects throughout the pandemic. She stressed the need for conversations and a plan of reentry on the state level. She commented the impact is based on something much larger than when the doors open, because we do not know what that will look like. She asked Ms. Day her recommendation for which of the scenarios the Board should review.

Ms. Day replied her recommendation would be to go with the three-month impact and make adjustments along the way, due to a current lack of information and discussed factors leading to her choice of scenarios.

Mr. Stevens stated whichever budget the Board chose to adopt that he, Ms. Day, and staff would be watching month to month and not approving large expenditures until revenue was secure. He noted in terms of employees, salaries and benefits were fixed numbers every two weeks. He referenced capital projects and stated we would not award any without the Board's involvement, except for the extremely critical ones, which would be very few. He commented the bid process would not be started on any of those things without first speaking with the Board. He noted sales and meal tax numbers delay; therefore, it could take a few months into the New Year before there was an idea of those figures. He noted anything we do we will use caution in terms of next year's budget.

General discussion ensued regarding the three different timeline scenarios and/or percentages.

Mr. McGlennon suggested an alternate way of thinking about what was presented. He explained, think about a situation with a cumulative effect over the course of a year where revenue could be under 5%, 10%, or 15% compared to what we were anticipating. He noted this scenario accomplished the same thing and allowed priorities to be set. He suggested perhaps thinking of a scenario in terms of operations and transfers to other funds and outside agencies. He explained we were discussing one level of reduction, but on the capital side we were thinking about using more tendency to adjust our needs; explaining if we were thinking about a 5% reduction generally, but maybe more toward the 10% reduction in capital projects for the year. He emphasized that he was just suggesting there are different ways to think of this matter of concern. He referenced the timeline we have been operating on and noted this started in March and we are currently in April. He stated in looking at the three-month projections we are really talking about a six-month period, the end of this fiscal year and the first quarter of the next fiscal year. He recognized as of today the number of cases identified went up, noting we have not hit the peak of the outbreak. He stated once we have hit the peak, we are supposed to be on a downward slide for a couple of weeks before things open up again. He further stated that everyone knows what will happen if we open up prematurely, which is, we will get another outbreak and will have to close everything down again in order to attempt to get it under control again. He noted Colonial Williamsburg (CW) announced today that it will be closed until May 31, adding it is a clear sign that CW does not think we are going to get that kind of level of all clear to start getting back to normal until that time. He briefly discussed the dynamics that make up the community and suggested offering ourselves as a community that wants to be on the frontline of the broadest testing possible, therefore allowing for a level of confidence to build and sending a message that we take this situation very seriously and are in control of the virus. He explained we have to push the state and national governments to make sure those effective tests are out and we have a contact program in place. He suggested perhaps spending money that had not been budgeted for those purposes and recovering the funds if possible.

Mr. Hipple clarified some of the points he made on having a soft reopening with various businesses and scenarios as well as noted concern for people dealing with health concerns during the pandemic.

Discussion ensued regarding the local virus peak and testing.

Mr. Icenhour commented to his fellow Board members that in order to commit to a number, figure, or percentage there needs to be the best possible information available from staff, which it has provided. He stated he would like staff to have the opportunity to bring a full-blown presentation at the upcoming April 28, 2020 budget work session, allowing Board members more detailed information.

Discussion ensued on this topic.

Ms. Sadler stated she had not seen any guidelines from Richmond as to what the openings are going to look like and asked how to take these different components and measure them in the budget. She noted that at some point a number will just have to be picked.

Mr. Icenhour stated the projections for the percentage decreases for the tourism related taxes are something that we can get a better feel for as more data becomes available over the next month or so. He noted real estate taxes on houses, if paid by a mortgage company, should be paid on time.

Ms. Larson inquired if a number was available regarding the percentage of local homes whose taxes were paid by mortgage.

Ms. Day replied approximately 20%.

Ms. Larson reiterated the number of citizens financially struggling during this pandemic. She stated she was fine with looking at three-, six-, and nine-month scenarios and having discussion about other areas we are willing to look at and make some cuts.

At approximately 5:57 p.m., the Board took a short break.

At approximately 6:03 p.m., the Board reconvened.

Mr. Icenhour asked Mr. Stevens his recommendation for moving the next budget work session and James City Service Authority (JCSA) Board of Directors meetings from April 28, 2020, to May 5, 2020, in an effort to allow extra time for collecting more data and scenarios.

Mr. Stevens referenced the idea of adopting the budget at a later date and commented that works well and allows time for more information. He further commented staff was prepared to meet next week as originally scheduled, but if the budget adoption date was moving to May 5 there would be time for gathering more data for discussions. He noted also having the JCSA

meeting on May 5 as the JCSA budget would go along with the County budget and be adopted at a later date. He commented staff would advertise the date revision of the two Board meetings following this budget work session. He stated following today's meeting staff would be preparing for the May 5 meeting with three to four different scenarios showing the differences between 10%, 15%, 20%, and 30% in terms of those 20% reductions. He explained this would allow side-by-side scenario comparisons.

Ms. Larson stated staff should check with schools to see what impact pushing the budget date back would have on contracts.

Mr. Hipple referenced the May 14, 2020, Board of Supervisors meeting where he spoke of funding for the Hampton Roads Military and Federal Facilities Alliance (HRMFFA). He stated he accidently missed its next meeting, which was a virtual meeting. He briefly discussed that during the virtual meeting it was decided HRMFFA would ask for full funding even though it currently had \$1.3 million in reserves. He noted he was not happy with the decision and would be reviewing tapes from that meeting. He further noted his recommendation was for zero funding for HRMFFA this year and the following year discussion should take place regarding full funding.

Ms. Larson explored different areas of cost savings and referenced the work force in regard to seniority noting costs and benefits, and inquired about employee buyouts. She asked about the possibility of temporarily closing recreational facilities on Sundays or changing the hours at the facilities.

Mr. Stevens replied he would speak with Human Resources in regard to retirement issues and noted no buyouts in recent years had been discussed. He recognized sometimes localities go through such an evolution as a cost saving measure and would research that scenario. He noted closing a building for one day does not generally save a lot on heating and cooling expenses, instead savings are typically found on staffing costs and commented information could easily be gathered.

Ms. Larson commented in a budget this size it may not be very 'meaty,' but she was trying to get answers to questions asked to her and would appreciate that information.

Mr. Icenhour referenced scenarios reviewed at the next meeting, and stated the details sought would be significant differences between operations and capital as well as being able to track how capital flows from one part to the other and ripples. Mr. Icenhour stated that moving the April 28, 2020, Budget Work Session date to May 5, 2020, for the Board and the JCSA, would allow for a decision to be made to delay the adoption of the budget or have different options going forward.

Ms. Larson stated she would appreciate a conversation with the Hotel/Motel and Restaurant Association to get some idea about what they were hearing.

Mr. Stevens replied absolutely.

Ms. Larson commented she would like to hear if Mr. Chris Johnson, Director of Economic Development, had heard of any businesses that may not be returning after this pandemic.

Mr. Icenhour referenced a document included in the handouts Mr. Stevens provided the Board that was from Economic Development and briefly discussed its content.

Mr. McGlennon expressed his surprise to read the newest manufacturing company in the County is already on the ground and operating.

A motion to Amend the Calendar to Move the April 28, 2020, Budget Work Session Meeting to May 5, 2020, for the Budget Work Session and have staff re-advertise for moving the James City Service Authority Meeting to May 5, 2020, was made by Michael Hipple, the motion result was Passed.

AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0 Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

Mr. Icenhour asked the Board if it had anything to mention in a Board Request and Directives type of approach.

As there were no comments from his fellow Board members, Mr. Icenhour referenced a previous discussion regarding composing a letter to the Governor. He noted there were enough differences of opinion on issues that it was difficult to achieve true consensus and for this reason did not feel comfortable sending out something without complete consensus of the Board. He recommended not doing this together as a Board, but instead for each member to individually express his/her thoughts to the Governor.

General discussion ensued regarding this topic.

Ms. Larson referenced a health team the Governor previously assembled and inquired about a possible reopening team.

Mr. Stevens replied he did not mind asking, but noted obtaining responses to some questions had been difficult. He commented he did not mind reaching out or pushing for an answer, but anything the Board could do to push those things along would be helpful. He further commented he had not heard enough of what the plan is or what all the teams are doing and briefly discussed testing and typical timeframes for results.

Ms. Larson inquired if the turnaround time was still 14 days.

Mr. Stevens replied the state lab was still the faster lab, but its capacity was only so much and hospitals were using independent labs that typically took approximately 6-10 days. He commented testing availability seemed to have improved, but it still took a while to get the results.

Discussion ensued regarding testing, frustration associated with turnaround times, testing facilities, and DNA analysis database.

Ms. Larson inquired about deaths and presumptions of deaths related to the COVID-19 pandemic.

Mr. Stevens replied according to the State of Virginia a deceased person had to test positive to be counted as a test positive. He stated that if a medical practitioner believed it was COVID-19 related, it could be reported as a COVID-19 death which would increase some of the counts.

Ms. Larson inquired about testing of a deceased person in case the death was not COVID-19 related.

Mr. Stevens replied that it was his understanding that currently in Virginia, if the medical practitioner felt it was COVID-19 related based on symptoms, no testing was required.

Mr. McGlennon referenced the Virginia Department of Health website and stated today it quoted approximately 330 deaths reported were directly related to COVID-19 with another 176 deaths presumed to be related to COVID-19.

Ms. Larson discussed possible symptom confusion.

Mr. Icenhour mentioned recent news where sailors aboard the USS Theodore Roosevelt tested positive for COVID-19 and were contagious, yet never displayed any symptoms. He noted these are the realities being faced in regard to this pandemic.

### D. CLOSED SESSION

None

### E. ADJOURNMENT

1. Adjourn until 4 p.m. on May 5, 2020, for the Budget Work Session

A motion to Adjourn was made by Michael Hipple, the motion result was Passed.

AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0

Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

At approximately 6:34 p.m., Mr. Icenhour adjourned the Board of Supervisors.

### **AGENDA ITEM NO. G.2.**

### **ITEM SUMMARY**

DATE: 5/12/2020

TO: The Board of Supervisors

FROM: Michael Woolson, Senior Watershed Planner

SUBJECT: Resolution of Chesapeake Bay Preservation Ordinance Violation at 2618

Chickahominy Road

### **ATTACHMENTS:**

	Description	Туре
В	Memorandum	Cover Memo
D	Resolution	Resolution
D	Notice of Violation, August 30, 2019	Backup Material
ם	Civil Charge Consent	Backup Material
ם	Restoration Agreement	Backup Material
ם	Civil Charge Policy	Backup Material
D .	Civil Charge Matrix	Backup Material

### **REVIEWERS:**

Department	Reviewer	Action	Date
Engineering & Resource Protection	Cook, Darryl	Approved	4/27/2020 - 8:03 AM
Development Management	Holt, Paul	Approved	4/27/2020 - 9:12 AM
Publication Management	Burcham, Nan	Approved	4/27/2020 - 9:21 AM
Legal Review	Kinsman, Adam	Approved	4/27/2020 - 10:46 AM
Board Secretary	Fellows, Teresa	Approved	4/29/2020 - 1:58 PM
Board Secretary	Purse, Jason	Approved	5/5/2020 - 1:43 PM
Board Secretary	Fellows, Teresa	Approved	5/5/2020 - 2:01 PM

#### MEMORANDUM

DATE: May 12, 2020

TO: The Board of Supervisors

FROM: Michael D. Woolson, Senior Watershed Planner

Elizabeth Parman, Assistant County Attorney

SUBJECT: Chesapeake Bay Preservation Ordinance Violation - Civil Charge Jonathan Powell, 2618

Chickahominy Road

Attached is a resolution for consideration by the Board of Supervisors involving a violation of the County's Chesapeake Bay Preservation Ordinance at 2618 Chickahominy Road, further identified as James City County Real Estate Tax Parcel No. 2140100011. The case involved the clearing of vegetation and land disturbance within a defined Chesapeake Bay Preservation Area on this parcel. This work was done without obtaining an approved plan of development, erosion and sediment control plan, land disturbing permit, building permit and/or Chesapeake Bay exception. Total disturbance within the Resource Protection Area was approximately 0.1 acre.

On or about August 23, 2019, County staff received a report of unauthorized activity at the subject parcel. County staff visited the site on August 23, 2019, and observed land disturbing and vegetation removal within portions of the property. Following the site visit, staff performed research on the parcel using County records and Geographic Information System (GIS) mapping. Subsequently, County staff sent a Notice of Violation (NOV) to the parcel owners on August 30, 2019. Staff then met with the parcel owner at the County Government Complex on August 25, 2019, to discuss the NOV.

In accordance with provisions of the Ordinance, the owner and County mutually came to terms to resolve and settle the violation through the County's civil charge process. The owner voluntarily signed a Consent Agreement and entered into a Chesapeake Bay Restoration Agreement with the County on January 23, 2020, and prepared a Chesapeake Bay Restoration Plan to restore impacted property. The restoration plan was submitted and approved on March 4, 2020. The restoration plan includes obtaining a building permit and complete stabilization of all denuded areas on the property. As part of the Chesapeake Bay Restoration Agreement, the owner is required to post a performance surety to guarantee implementation of the approved restoration plan and work must be completed by July 1, 2020.

The resolution and attachments present additional specific details of the violation. Under the provisions of the Ordinance, the Board may accept civil charges for each violation of up to \$10,000. The owner has agreed to the recommended civil charge of \$500 for violation of Section 23-10 of the County's Chesapeake Bay Preservation Ordinance.

The Chesapeake Bay Ordinance Civil Penalty Procedures Policy, endorsed by the Board in August 1999, was used by staff as guidance in determining the civil charge amount. The Policy considers the degree of water quality impact and the degree of noncompliance involved in the case. In this particular case, the owner has been cooperative with staff throughout the settlement process. The civil charge amount was based on using the civil charge determination matrix.

Staff recommends adoption of the attached resolution, establishing the civil charges for the Chesapeake Bay Ordinance violation presented.

Chesapeake Bay Preservation Ordinance Violation - Civil Charge Jonathan Powell, 2618 Chickahominy Road May 12, 2020 Page 2

MDW/EP/md CBPO-2618Chickhmy-mem

### Attachments:

- 1. Resolution
- 2. Notice of Violation, PIN 2140100011
- 3. Location Map
- 4. Consent Agreement
- 5. Restoration Agreement
- 6. 1999 Civil Charge Policy
- 7. Civil Charge Matrix

### RESOLUTION

### CHESAPEAKE BAY PRESERVATION ORDINANCE VIOLATION - CIVIL CHARGE -

### JONATHAN POWELL, 2618 CHICKAHOMINY ROAD

- WHEREAS, Jonathan Powell is the owner of a certain parcel of land commonly known as 2618 Chickahominy Road, Toano, Virginia, designated as Parcel No. 2140100011 within James City County Real Estate Tax Map system ("Property"); and
- WHEREAS, on or about August 23, 2019, Jonathan Powell caused clearing within a defined Chesapeake Bay Preservation Area (CBPA) on the Property without prior approval of a plan of development, erosion and sediment control plan, land disturbing permit and/or Chesapeake Bay exception; and caused impact to a CBPA; and
- WHEREAS, Jonathan Powell has executed a Consent Agreement and a Chesapeake Bay Restoration Agreement with the County agreeing to implement, in a timely manner, stabilization plantings in accordance with an approved Chesapeake Bay Restoration Plan in order to remedy a violation of the County's Chesapeake Bay Preservation Ordinance. The owner has posted sufficient surety guaranteeing plantings in accordance with the approved restoration plan to restore CBPA on the Property; and
- WHEREAS, Jonathan Powell has agreed to pay a total of \$500 to the County as a civil charge under the County's Chesapeake Bay Preservation Ordinance; and
- WHEREAS, the James City County Board of Supervisors is willing to accept the restoration of the impacted CBPA and the civil charge in full settlement of the Chesapeake Bay Preservation Ordinance violation, in accordance with Section 23-18 of the Code of the County of James City.
- NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, hereby authorizes and directs the County Administrator to accept the \$500 civil charge from Jonathan Powell as full settlement of the Chesapeake Bay Preservation Ordinance violations at the Property.

	James O. Icenhour, Jr. Chairman, Board of Supervisors			
		VOTES	S	
ATTEST:		<u>AYE</u>	<u>NAY</u>	<b>ABSTAIN</b>
	SADLER MCGLENNON LARSON			
Teresa J. Fellows	HIPPLE			
Deputy Clerk to the Board	ICENHOUR			
Adopted by the Board of Supervisors May, 2020.	s of James City Cou	nty, Virg	inia, this	12th day of

CBPO-2618Chickhmy-res



**General Services** 

107 Tewning Road Williamsburg, VA 23188 P: 757-259-4080

General.Services@jamescitycountyva.gov

jamescitycountyva.gov

Capital Projects 107 Tewning Road Williamsburg, VA 23188 757-259-4080

Fleet 103 Tewning Road Williamsburg, VA 23188 757-259-4122 Stormwater and Resource Protection 101-E Mounts Bay Road Williamsburg, VA 23185 757-253-6670

Facilities & Grounds 113 Tewning Road Williamsburg, VA 23188 757-259-4080 Solid Waste 1204 Jolly Pond Road Williamsburg, VA 23188 757-565-0971

### **Notice of Violation**

August 30, 2019

RVA Development, L.L.C. Attention Mr. Jonathan Powell 6312 Cyrus St. North Chesterfield, VA 232345891

## Re: Chesapeake Bay Preservation Ordinance Violation at 2618 Chickahominy Road, JCC PIN 2140100011

An inspection of the above referenced property on 8/23/19 revealed that land disturbing activities, to include clearing and grubbing have been performed without an approved plan of development and without securing the appropriate permits. The area in question is located at the parcel known as 2618 Chickahominy Road, JCC Property Identification Number 2140100011.

The provisions of Section 23-9 (4) of the County's Chesapeake Bay Preservation Ordinance state that "Any development and redevelopment exceeding 2,500 square feet of land disturbance shall be subject to a plan of development review process conducted in accordance with Section 23-10 of this chapter." At a minimum, Section 23-10 of the County's Chesapeake Bay Preservation ordinance requires the applicant to submit the following information: environmental inventory, clearing plan, stormwater management plan, and erosion and sediment control plan. Also, Section 23-10 (1) of the ordinance requires a determination as to whether activities should comply with the provisions of Chapter 19 and/or Chapter 24 of the County Code related to site and subdivision plans.

## All land disturbing activities, not pertaining to installation of temporary erosion and sediment control and stabilization measures, must cease until further notice.

The James City County Chesapeake Bay Preservation Ordinance requires compliance with the above referenced county codes. This violation of the ordinance may be subject to a civil penalty not to exceed \$5,000 for each day of violation.

Please contact representatives of the Stormwater and Resource Protection Division within thirty (30) business days to discuss resolution of this matter. Failure to do so could result in our Division turning this matter over to the County Attorney's office for further action. A record of this violation notice will be retained on file at the James City County Stormwater and Resource Protection Division. If you have any questions feel free to contact me at the number listed below.

Sincerely,

Michael Woolson Senior Watershed Planner Stormwater and Resource Protection Division (757) 253-6823

cc: Maxwell Hlavin, Assistant County Attorney Paul Holt, Development Manager Grace Boone, Director General Services



# **Chesapeake Bay Preservation Civil Charge Consent Agreement**

THIS AGREEMENT, made on this 23 day of January, 2020, by and between residing at 1520 N. BUN BILL MICH VA. ("OWNER") and the COUNTY OF
JAMES CITY, VIRGINIA, ("COUNTY").  7570 N. RVN Pol. Blen Aven Va. ("OWNER") and the COUNTY OF 23060
WHEREAS, the Owner of that certain parcel of land known and identified as;  2618 Chickahomana Rd , has
violated or has caused a violation of the James City County Chesapeake Bay Preservation Ordinance, Chapter 23 of the County Code, by uppermitted and disturbance
aforementioned parcel. on that
NOW, THEREFORE, to resolve this violation the parties hereto agree as follows:
1. The Owner herby agrees to provide for the payment of a civil charge in the amount of for the violation of the ordinance described above.
2. In consideration of the Owner's payment of the civil charge, the County agrees to accept the civil charge as the final resolution of this violation and in consideration of this executed agreement the County will not prosecute the Owner under the civil penalty provision provided for within the ordinance.
Once the consent agreement is executed, the County will proceed with processing the civil charge in accordance with th provisions of Section 23-18(b) of the Chesapeake Bay Preservation ordinance. This includes scheduling the case on the consent calendar at an upcoming Board of Supervisor regular meeting.
OWNER:
COUNTY OF JAMES CITY, VIRGINIA  By:
Approved as to form:
County Attorney



### **Chesapeake Bay Restoration Agreement**

THIS AGREEMENT by and between
residing at 2000 Chahminy (d (the "Owner")
and the County of James City, Virginia, a political subdivision of the Commonwealth of Virginia (the "County").
WHEREAS, the Owner is (are) the owner(s) of a certain tract of land located at ZOB, (the "Property) located in the County; and
WHEREAS, restoration of vegetation within portions of the Property is the responsibility of the Owner and required by the County as shown on a plan designated as
Professional Engineers, Owner or Designer; and
WHEREAS, the Owner has posted sufficient bond, letter of credit, certified or cashier's check, or escrow fund (collectively the "Security Instrument"), pursuant to existing ordinances, approved as to form by the County Attorney, and with surety satisfactory to the County in the amount of
guaranteeing the installation of the aforementioned improvements before
NOW, THEREFORE, THIS AGREEMENT WITNESSETH that for and in consideration of the premises and the covenants and agreements herein contained, the parties agree as follows:
1. The Owner does covenant and agree that it will, without cost to the County on or before 202, construct to the approval of the County all physical improvements as required by the Chesapeake Bay Preservation Ordinance of the County, or shown on the development plans approved by the County. If, in the sole judgment of the County, circumstances beyond the control of the Owner prevent the Owner from completing the improvements in the time set forth herein, then the County may, at its sole discretion, grant an extension of time for completion of said improvements and in such instance the County shall require an amended Security Instrument approved as to form by the County Attorney, and with surety satisfactory to the County in an amount to guarantee the installation of the aforementioned improvements.
2. It is mutually understood and agreed that in the event the Owner fails to properly complete the physical improvements provided hereinabove, the County may complete, or cause to have completed, the same and render a bill therefore to the Owner who shall be liable to the County for all proper costs so incurred by the County, or the County may draw the amount necessary from the surety to complete or cause to have completed the same. The Owner hereby grants the County, its agents and contractor, access to the property to install any improvements required under this Agreement.
3. In the event the County calls, collects, or otherwise draws on the Security Instrument pledged under this Agreement, the Owner agrees to either pay, or have the County use the proceeds of the draw to pay a reasonable administrative fee of \$35.00, plus any costs actually incurred by the County in drawing on the Security Instrument. The charge for an administrative fee plus costs shall apply regardless of whether the County later accepts a renewal or amendment of the Security Instrument.

- 4. It is mutually understood and agreed that this Agreement does not relieve the Owner of any responsibilities or requirements placed upon them by the various ordinances of the County applicable to such development of the property, and the development of the Property will be done in strict accordance with such ordinances.
- 5. It is mutually understood and agreed that if the Owner shall faithfully execute each and all requirements of the Chesapeake Bay Preservation Ordinance and the provisions of this Agreement, and shall indemnify, protect, and save harmless the County from all loss, damage, expense, or cost by reason of any claim, suit, or action instituted against the County or its agents or employees thereof, on account of, or in consequence of any breach on the part of the Owner, then the Security Instrument shall be released by the County to the Owner.

IN WITNESS WHEREOF, the parties hereto, being first duly authorized, have affixed their signatures on the date first above written.

Owner:

Owner:

(Signature)

County/City of Henrico
Commonwealth State of Vigin/19
The foreging instrument was acknowledged before me this and of January of Table of T

# Chesapeake Bay Preservation Ordinance Civil Penalty Procedures (As adopted by the Board of Supervisors - August 19, 1999)

### Principle

All violations of the Ordinance will be prosecuted to obtain an acceptable remedy. All RPAs and associated buffers that are disturbed without an exception or waiver granted in accordance with the provisions of the Ordinance will be restored on a 2:1 replacement basis.

#### **Process**

The process will be to document the violation with a Notice Of Violation that states the conditions necessary to bring their site into compliance with the Ordinance. If there is a failure to follow the terms stipulated in the Notice, the County will file suit to take the violator to court where civil penalties of up to \$5000 per day can be assessed. However, if the violator cooperates with all provisions of the Notice and remedies the violation, we will not file suit. An exception would be if we can determine that the violation was intentional as would be the case if we had prior contact with the violator regarding the matter of the RPA restrictions.

### Penalty

In order to serve as a deterrent, even in the event of a cooperative restoration settlement, civil charges will be sought. Under current state law, the Board of Supervisors must approve all civil charges. The amount of the civil charge recommended will be dependent on the violation's impact on water quality and the degree of non-compliance. Violations that are more severe and will take longer to be restored to an acceptable condition will have larger charges recommended by staff. Violations comprising less than 100 square feet of disturbance or the removal of no more than three trees will not have a civil charge recommended unless there have been prior violations by the violator. The maximum civil charge is \$10,000 per violation.

The following table presents a matrix that will guide staff recommendations on the establishment of a civil charge for a specific violation. The amounts presented are not absolute and are intended to be a guide. Each violation will have several unique characteristics that will require the exercise of judgment in arriving at a civil charge. Charges in each case could vary by up to 100% depending on the specific circumstances involved.

Civil Charge	<u>Determination</u>
--------------	----------------------

	Significant	\$5000	\$7500	\$10,000
Water Quality Impact	Moderate	\$1500	\$3000	\$4500
	Minor	\$500	\$1000	\$1500
		Minor	Moderate	Major

Degree of Non-Compliance

### Water Quality Impact

The impact of a given violation will be determined based on several factors. It involves more than just the square footage of impact; it also addresses the relative environmental value of the resource lost. Factors that will be considered as they relate to the violation's impact on water quality include the size of the violation, the number of trees and other vegetation removed, the size and maturity of the vegetation removed, the amount of tree canopy removed, the amount of ground disturbance involved, etc. Mitigating factors that will be considered are whether the vegetation removed would have qualified for removal if a request was made in accordance with the Ordinance. The Ordinance allows for the removal of vegetation weakened by age, storm, fire or other natural causes or vegetation that is dead, diseased or dying. These factors will be used to determine how much of the functional value of the buffer was lost and how long it will take for the function to be recovered.

### Degree of Non-compliance

This factor will be used to assess the motivation behind the violation. Factors that will be considered in assessing the degree of non-compliance are degree of willfulness, history of non-compliance, and cooperation. Unintentional violations that are cooperatively restored will not be charged the same as intentional violations that are difficult to resolve.

# **Civil Charge Determination**

	Significant	\$5,000	\$7,500	\$10,000
Water Quality	Moderate	\$1,500	\$3,000	\$ 4,500
Impact	Minor	\$500	\$1,000	\$ 1,500

Minor Moderate Major

Degree of Non-Compliance

### **AGENDA ITEM NO. G.3.**

### **ITEM SUMMARY**

DATE: 5/12/2020

TO: The Board of Supervisors

FROM: Michael Woolson, Senior Watershed Planner

SUBJECT: Resolution of Chesapeake Bay Preservation Ordinance Violation at 2640

Chickahominy Road

### **ATTACHMENTS:**

	Description	Туре
D	Memorandum	Cover Memo
D	Resolution	Resolution
D	Notice of Violation, August 30, 2019	Backup Material
D	Civil Charge Consent	Backup Material
D	Restoration Agreement	Backup Material
D	Civil Charge Policy	Backup Material
D	Civil Charge Matrix	Backup Material

### **REVIEWERS:**

Department	Reviewer	Action	Date
Engineering & Resource Protection	Cook, Darryl	Approved	4/27/2020 - 8:03 AM
Development Management	Holt, Paul	Approved	4/27/2020 - 9:13 AM
Publication Management	Burcham, Nan	Approved	4/27/2020 - 9:22 AM
Legal Review	Kinsman, Adam	Approved	4/27/2020 - 10:46 AM
Board Secretary	Fellows, Teresa	Approved	4/29/2020 - 1:59 PM
Board Secretary	Purse, Jason	Approved	5/5/2020 - 1:44 PM
Board Secretary	Fellows, Teresa	Approved	5/5/2020 - 2:01 PM

#### MEMORANDUM

DATE: May 12, 2020

TO: The Board of Supervisors

FROM: Michael D. Woolson, Senior Watershed Planner

Elizabeth Parman, Assistant County Attorney

SUBJECT: Chesapeake Bay Preservation Ordinance Violation - Civil Charge Jonathan Powell,

2640 Chickahominy Road

Attached is a resolution for consideration by the Board of Supervisors involving a violation of the County's Chesapeake Bay Preservation Ordinance at 2640 Chickahominy Road, further identified as James City County Real Estate Tax Parcel No. 2140100014. The case involved the clearing of vegetation and land disturbance within a defined Chesapeake Bay Preservation Area on this parcel. This work was done without obtaining an approved plan of development, erosion and sediment control plan, land disturbing permit, building permit, and/or Chesapeake Bay exception. Total disturbance within the resource protection area was approximately 0.1 acre.

On or about August 23, 2019, County staff received a report of unauthorized activity at the subject parcel. County staff visited the site on August 23, 2019, and observed land disturbing and vegetation removal within portions of the property. Following the site visit, staff performed research on the parcel using County records and Geographic Information System mapping. Subsequently, County staff sent a Notice of Violation (NOV) to the parcel owners on August 30, 2019. Staff then met with the parcel owner at the County Government Complex on August 25, 2019, to discuss the NOV.

In accordance with provisions of the Ordinance, the owner and County mutually came to terms to resolve and settle the violation through the County's civil charge process. The owner voluntarily signed a Consent Agreement and entered into a Chesapeake Bay Restoration Agreement with the County on January 23, 2020, and prepared a Chesapeake Bay Restoration Plan to restore impacted property. The restoration plan was submitted and approved on March 4, 2020. The restoration plan includes obtaining a building permit and complete stabilization of all denuded areas on the property. As part of the Chesapeake Bay Restoration Agreement, the owner is required to post a performance surety to guarantee implementation of the approved restoration plan and work must be completed by July 1, 2020.

The resolution and attachments present additional specific details of the violation. Under the provisions of the Ordinance, the Board may accept civil charges for each violation of up to \$10,000. The Owner has agreed to the recommended civil charge of \$500 for violation of Section 23-10 of the County's Chesapeake Bay Preservation Ordinance.

The Chesapeake Bay Ordinance Civil Penalty Procedures Policy, endorsed by the Board in August 1999, was used by staff as guidance in determining the civil charge amount. The Policy considers the degree of water quality impact and the degree of noncompliance involved in the case. In this particular case, the owner has been cooperative with staff throughout the settlement process. The civil charge amount was based on using the civil charge determination matrix.

Staff recommends adoption of the attached resolution, establishing the civil charges for the Chesapeake Bay Ordinance violation presented.

Chesapeake Bay Preservation Ordinance Violation - Civil Charge Jonathan Powell, 2640 Chickahominy Road May 12, 2020 Page 2

MDW/EP/nb CvlChge-2640ChickRd-mem

### Attachments:

- 1. Resolution
- 2. Notice of Violation, PIN 2140100014
- 3. Location Map
- 4. Consent Agreement
- 5. Restoration Agreement6. 1999 Civil Charge Policy
- 7. Civil Charge Matrix

### RESOLUTION

### CHESAPEAKE BAY PRESERVATION ORDINANCE VIOLATION - CIVIL CHARGE

### JONATHAN POWELL, 2640 CHICKAHOMINY ROAD

- WHEREAS, Jonathan Powell is the owner of a certain parcel of land commonly known as 2640 Chickahominy Road, Toano, Virginia, designated as Parcel No. 2140100014 within James City County Real Estate Tax Map system ("Property"); and
- WHEREAS, on or about August 23, 2019, Jonathan Powell caused clearing within a defined Chesapeake Bay Preservation Area (CBPA) on the Property without prior approval of a plan of development, erosion and sediment control plan, land disturbing permit and/or Chesapeake Bay exception; and caused impact to a CBPA; and
- WHEREAS, Jonathan Powell has executed a Consent Agreement and a Chesapeake Bay Restoration Agreement with the County agreeing to implement, in a timely manner, stabilization plantings in accordance with an approved Chesapeake Bay Restoration Plan in order to remedy a violation of the County's Chesapeake Bay Preservation Ordinance. The owner has posted sufficient surety guaranteeing plantings in accordance with the approved restoration plan to restore CBPA on the Property; and
- WHEREAS, Jonathan Powell has agreed to pay a total of \$500 to the County as a civil charge under the County's Chesapeake Bay Preservation Ordinance; and
- WHEREAS, the James City County Board of Supervisors is willing to accept the restoration of the impacted CBPA and the civil charge in full settlement of the Chesapeake Bay Preservation Ordinance violation, in accordance with Section 23-18 of the Code of the County of James City.
- NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, hereby authorizes and directs the County Administrator to accept the \$500 civil charge from Jonathan Powell as full settlement of the Chesapeake Bay Preservation Ordinance violations at the Property.

	James O. Icen Chairman, Bo		pervisors	
		VOTE	S	
ATTEST:		<u>AYE</u>	<u>NAY</u>	<b>ABSTAIN</b>
	SADLER MCGLENNON			
	LARSON			
Teresa J. Fellows	HIPPLE			
Deputy Clerk to the Board	ICENHOUR			

Adopted by the Board of Supervisors of James City County, Virginia, this 12th day of May, 2020.



**General Services** 

107 Tewning Road Williamsburg, VA 23188 P: 757-259-4080

General.Services@jamescitycountyva.gov

jamescitycountyva.gov

Capital Projects 107 Tewning Road Williamsburg, VA 23188 757-259-4080

Fleet 103 Tewning Road Williamsburg, VA 23188 757-259-4122 Stormwater and Resource Protection 101-E Mounts Bay Road Williamsburg, VA 23185 757-253-6670

Facilities & Grounds 113 Tewning Road Williamsburg, VA 23188 757-259-4080 Solid Waste 1204 Jolly Pond Road Williamsburg, VA 23188 757-565-0971

### **Notice of Violation**

August 30, 2019

RVA Development, L.L.C. Attention Mr. Jonathan Powell 16412 Pinecote Low Moor Ln. Bevaerdam, VA 230151532

## Re: Chesapeake Bay Preservation Ordinance Violation at 2640 Chickahominy Road, JCC PIN 2140100014

An inspection of the above referenced property on 8/23/19 revealed that land disturbing activities, to include clearing and grubbing have been performed without an approved plan of development and without securing the appropriate permits. The area in question is located at the parcel known as 2640 Chickahominy Road, JCC Property Identification Number 2140100014.

The provisions of Section 23-9 (4) of the County's Chesapeake Bay Preservation Ordinance state that "Any development and redevelopment exceeding 2,500 square feet of land disturbance shall be subject to a plan of development review process conducted in accordance with Section 23-10 of this chapter." At a minimum, Section 23-10 of the County's Chesapeake Bay Preservation ordinance requires the applicant to submit the following information: environmental inventory, clearing plan, stormwater management plan, and erosion and sediment control plan. Also, Section 23-10 (1) of the ordinance requires a determination as to whether activities should comply with the provisions of Chapter 19 and/or Chapter 24 of the County Code related to site and subdivision plans.

## All land disturbing activities, not pertaining to installation of temporary erosion and sediment control and stabilization measures, must cease until further notice.

The James City County Chesapeake Bay Preservation Ordinance requires compliance with the above referenced county codes. This violation of the ordinance may be subject to a civil penalty not to exceed \$5,000 for each day of violation.

Please contact representatives of the Stormwater and Resource Protection Division within thirty (30) business days to discuss resolution of this matter. Failure to do so could result in our Division turning this matter over to the County Attorney's office for further action. A record of this violation notice will be retained on file at the James City County Stormwater and Resource Protection Division. If you have any questions feel free to contact me at the number listed below.

Sincerely,

Michael Woolson Senior Watershed Planner Stormwater and Resource Protection Division (757) 253-6823

cc: Maxwell Hlavin, Assistant County Attorney Paul Holt, Development Manager Grace Boone, Director General Services



## **Chesapeake Bay Preservation Civil Charge Consent Agreement**

THIS AGREEMENT, made on this 23 day of January 2020, by and between	
, residing at, ("OWNER") and the COUNTY O	C
JAMES CITY, VIRGINIA, ("COUNTY").	
WHEREAS, the Owner of that certain parcel of land known and identified as;  2640 Chyclahoumy Rd , h	as
violated or has caused a violation of the James City County Chesapeake Bay Preservation Ordinance, Chapter 23 County Code, by RPA disturbance and Oppermitted and disturbance	of the
aforementioned parcel. on that	
arorementioned parcer.	
NOW, THEREFORE, to resolve this violation the parties hereto agree as follows:	
1. The Owner herby agrees to provide for the payment of a civil charge in the amount of, for the violation of the ordinance described above	ð.
2. In consideration of the Owner's payment of the civil charge, the County agrees to accept the civil charge final resolution of this violation and in consideration of this executed agreement the County will not prose the Owner under the civil penalty provision provided for within the ordinance.	
Once the consent agreement is executed, the County will proceed with processing the civil charge in accordance of provisions of Section 23-18(b) of the Chesapeake Bay Preservation ordinance. This includes scheduling the case consent calendar at an upcoming Board of Supervisor regular meeting.	vith the
OWNER:	
COUNTY OF JAMES CITY, VIRGINIA	
By: WWO(U)	
Approved as to form:	
County Attorney	



### **Chesapeake Bay Restoration Agreement**

THIS AGREEMENT by and between On the "Owner" (the "Owner")
and the County of James City, Virginia, a political subdivision of the Commonwealth of Virginia (the "County").
WHEREAS, the Owner is (are) the owner(s) of a certain tract of land located at 7000, (the "Property) located in the County; and
WHEREAS, restoration of vegetation within portions of the Property is the responsibility of the Owner and required by the County as shown on a plan designated as
WHEREAS, the Owner has posted sufficient fond letter of credit, certified or cashier's check, or escrow fund (collectively the "Security Instrument"), pursuant to existing ordinances, approved as to form by the County Attorney, and with surety satisfactory to the County in the amount of
guaranteeing the installation of the aforementioned improvements before , 20 20
NOW, THEREFORE, THIS AGREEMENT WITNESSETH that for and in consideration of the premises and the covenants and agreements herein contained, the parties agree as follows:
1. The Owner does covenant and agree that it will, without cost to the County on or before 2, 20, construct to the approval of the County all physical improvements as required by the Chesapeake Bay Preservation Ordinance of the County, or shown on the development plans approved by the County. If, in the sole judgment of the County, circumstances beyond the control of the Owner prevent the Owner from completing the improvements in the time set forth herein, then the County may, at its sole discretion, grant an extension of time for completion of said improvements and in such instance the County shall require an amended Security Instrument approved as to form by the County Attorney, and with surety satisfactory to the County in an amount to guarantee the installation of the aforementioned improvements.
2. It is mutually understood and agreed that in the event the Owner fails to properly complete the physical improvements provided hereinabove, the County may complete, or cause to have completed, the same and render a bill therefore to the Owner who shall be liable to the County for all proper costs so incurred by the County, or the County may draw the amount necessary from the surety to complete or cause to have completed the same. The Owner hereby grants the County, its agents and contractor, access to the property to install any improvements required under this Agreement.
3. In the event the County calls, collects, or otherwise draws on the Security Instrument pledged under this Agreement, the Owner agrees to either pay, or have the County use the proceeds of the draw to pay a reasonable administrative fee of \$35.00, plus any costs actually incurred by the County in drawing on the Security Instrument. The charge for an administrative fee plus costs shall apply regardless of whether the County later accepts a renewal or amendment of the Security Instrument.

- 4. It is mutually understood and agreed that this Agreement does not relieve the Owner of any responsibilities or requirements placed upon them by the various ordinances of the County applicable to such development of the property, and the development of the Property will be done in strict accordance with such ordinances.
- 5. It is mutually understood and agreed that if the Owner shall faithfully execute each and all requirements of the Chesapeake Bay Preservation Ordinance and the provisions of this Agreement, and shall indemnify, protect, and save harmless the County from all loss, damage, expense, or cost by reason of any claim, suit, or action instituted against the County or its agents or employees thereof, on account of, or in consequence of any breach on the part of the Owner, then the Security Instrument shall be released by the County to the Owner.

IN WITNESS WHEREOF, the parties hereto, being first duly authorized, have affixed their signatures on the

date first above written.	
ATTEST:	Owner: JONAThan POWell - DWWON (Print Name & Title)
(Signature)	By: (Signature)
County/City of Henrico Commonwealth/State of Virginia The foregoing instrument was acknowledged before me this S day of S, by by Conorthan Pour II  (named son seeking scknowledgement)  Noticy Papilic My Commission Expires: 05/31/2033	NOTARY PUBLIC REG. = 782/4803 REG. = 782/4803 EXPIRES GESTITUTH OFF
Approved as to form:	COUNTY OF JAMES CITY, VIRGINIA
County Attorney	By: McCounty Agent
	DATE: 3/4/2020

# Chesapeake Bay Preservation Ordinance Civil Penalty Procedures (As adopted by the Board of Supervisors - August 19, 1999)

### Principle

All violations of the Ordinance will be prosecuted to obtain an acceptable remedy. All RPAs and associated buffers that are disturbed without an exception or waiver granted in accordance with the provisions of the Ordinance will be restored on a 2:1 replacement basis.

#### **Process**

The process will be to document the violation with a Notice Of Violation that states the conditions necessary to bring their site into compliance with the Ordinance. If there is a failure to follow the terms stipulated in the Notice, the County will file suit to take the violator to court where civil penalties of up to \$5000 per day can be assessed. However, if the violator cooperates with all provisions of the Notice and remedies the violation, we will not file suit. An exception would be if we can determine that the violation was intentional as would be the case if we had prior contact with the violator regarding the matter of the RPA restrictions.

### Penalty

In order to serve as a deterrent, even in the event of a cooperative restoration settlement, civil charges will be sought. Under current state law, the Board of Supervisors must approve all civil charges. The amount of the civil charge recommended will be dependent on the violation's impact on water quality and the degree of non-compliance. Violations that are more severe and will take longer to be restored to an acceptable condition will have larger charges recommended by staff. Violations comprising less than 100 square feet of disturbance or the removal of no more than three trees will not have a civil charge recommended unless there have been prior violations by the violator. The maximum civil charge is \$10,000 per violation.

The following table presents a matrix that will guide staff recommendations on the establishment of a civil charge for a specific violation. The amounts presented are not absolute and are intended to be a guide. Each violation will have several unique characteristics that will require the exercise of judgment in arriving at a civil charge. Charges in each case could vary by up to 100% depending on the specific circumstances involved.

Civil Charge	<u>Determination</u>
--------------	----------------------

Water Quality Impact	Significant	\$5000	\$7500	\$10,000
	Moderate	\$1500	\$3000	\$4500
	Minor	\$500	\$1000	\$1500
		Minor	Moderate	Major

Degree of Non-Compliance

### Water Quality Impact

The impact of a given violation will be determined based on several factors. It involves more than just the square footage of impact; it also addresses the relative environmental value of the resource lost. Factors that will be considered as they relate to the violation's impact on water quality include the size of the violation, the number of trees and other vegetation removed, the size and maturity of the vegetation removed, the amount of tree canopy removed, the amount of ground disturbance involved, etc. Mitigating factors that will be considered are whether the vegetation removed would have qualified for removal if a request was made in accordance with the Ordinance. The Ordinance allows for the removal of vegetation weakened by age, storm, fire or other natural causes or vegetation that is dead, diseased or dying. These factors will be used to determine how much of the functional value of the buffer was lost and how long it will take for the function to be recovered.

### Degree of Non-compliance

This factor will be used to assess the motivation behind the violation. Factors that will be considered in assessing the degree of non-compliance are degree of willfulness, history of non-compliance, and cooperation. Unintentional violations that are cooperatively restored will not be charged the same as intentional violations that are difficult to resolve.

# **Civil Charge Determination**

	Significant	\$5,000	\$7,500	\$10,000
Water Quality	Moderate	\$1,500	\$3,000	\$ 4,500
Impact	Minor	\$500	\$1,000	\$ 1,500

Minor Moderate Major

Degree of Non-Compliance

### **AGENDA ITEM NO. H.1.**

### ITEM SUMMARY

DATE: 5/12/2020

TO: The Board of Supervisors

FROM: Brett Meadows, Planner

SUBJECT: Z-20-0001. Norge Center Proffer Amendment

### **ATTACHMENTS:**

	Description	Type
ם	Attachment 0. Z-20-0001 Staff Report	Cover Memo
D	Attachment 1. Ordinance	Ordinance
۵	Attachment 2. Location Map_Z-20-0001	Backup Material
۵	Attachment 3. Signed Proposed Proffer Agreement_Z-20-0001	Backup Material
۵	Attachment 4. Proffers_Z-11-88_June 12 1988	Backup Material
۵	Attachment 5. Proffers_Z-32-86_Dec 23 1986	Backup Material
ם	Attachment 6. Conditions_SUP-36-04	Backup Material
ם	Attachment 7. Applicant Narrative_Z-20-0001	Backup Material
ם	Attachment 8. Unapproved Minutes_April 1 2020 Planning Commission Regular Meeting	Backup Material
ם	Attachment 9. Public Comment Letter_Z-20-0001	Backup Material

### **REVIEWERS:**

Department	Reviewer	Action	Date
Planning	Holt, Paul	Approved	4/24/2020 - 2:01 PM
Development Management	Holt, Paul	Approved	4/24/2020 - 2:02 PM
Publication Management	Daniel, Martha	Approved	4/24/2020 - 2:05 PM
Legal Review	Kinsman, Adam	Approved	4/24/2020 - 3:52 PM
Board Secretary	Fellows, Teresa	Approved	4/29/2020 - 2:00 PM
Board Secretary	Purse, Jason	Approved	5/5/2020 - 1:44 PM
Board Secretary	Fellows, Teresa	Approved	5/5/2020 - 2:02 PM

### REZONING Z-20-001. Norge Center Proffer Amendment

### Staff Report for the May 12, 2020, Board of Supervisors Public Hearing

#### SUMMARY FACTS

Applicant: Mr. Vernon Geddy of Geddy, Harris, Franck,

& Hickman, LLP

Land Owner: Norge Plaza, Inc., c/o Pearson Properties

Proposal: To amend Condition No. 1 of the adopted

proffers to permit office uses on the property

Location: 115 Norge Lane

Tax Map/Parcel No.: 2320100071F

Project Acreage: 5.86 +/- acres

Zoning: B1, General Business with Proffers

Comprehensive Plan: Community Commercial

Primary Service Area: Inside

Staff Contact: Brett A. Meadows, Planner

### **PUBLIC HEARING DATES**

Planning Commission: April 1, 2020, 6:00 p.m.

Board of Supervisors: May 12, 2020, 5:00 p.m.

### **FACTORS FAVORABLE**

- 1. The proposed use is consistent with the recommendation of the 2035 Comprehensive Plan for community-scale commercial, professional, and office uses.
- 2. There are no proposed changes to the existing scale of development on the property.
- 3. Impacts: See Impact Analysis on Pages 3-4.

#### **FACTORS UNFAVORABLE**

1. Impacts: See Impact Analysis on Pages 3-4.

### SUMMARY STAFF RECOMMENDATION

Staff recommends approval of this application to the Board of Supervisors.

#### PLANNING COMMISSION RECOMMENDATION

At the March 4, 2020 Planning Commission meeting, a motion to recommend approval passed with a vote of 7-0.

### UPDATES SINCE THE PLANNING COMMISSION

None.

### PROJECT DESCRIPTION

Mr. Vernon Geddy of Geddy, Harris, Franck, & Hickman, LLP has submitted a request on behalf of Norge Plaza, Inc. and Chesapeake Bank to amend Condition No. 1 of the adopted Proffers, dated June 2,

### Staff Report for the May 12, 2020, Board of Supervisors Public Hearing

1988 (Attachment No. 4). Per the applicant, Chesapeake Bank has contracted with the landowner to purchase Parcel No. 2320100071F, located at 115 Norge Lane, and plans to convert the former Farm Fresh grocery store into office space. Business and professional offices are permitted uses on property zoned B-1, General Business. However, existing proffers on the parcel limit uses to a shopping center. The proposed use does not fit within the definition of a shopping center, and the proposed proffer amendment would allow for office use, in addition to the shopping center use, still within the existing overall square footage established for the Norge Center development.

According to information provided by the applicant, the office space will have the following characteristics:

- 1. The location will not have retail banking.
- 2. The existing vacant building (former Farm Fresh) will be repurposed, and no new development or construction is proposed other than the renovation of the interior of the building. The existing vacant building contains approximately 52,915 square feet of floor area.
- 3. Chesapeake Bank plans to use the building for its Chesapeake Payment Systems. Operations include phone support, electronic communications, or on-site support at a customer's place of business.
- 4. Chesapeake Bank also plans to use the building to consolidate and house call center and other support personnel who are currently in multiple locations throughout James City County. The applicant states that the use of the vacant building would provide space, allow pooling resources, and allow for growth.

### PLANNING AND ZONING HISTORY

- 1. In 1986, the Board of Supervisors approved the rezoning of approximately 37.13 acres of land bounded by Norge Lane, Richmond Road, and Croaker Road from A-1 General Agricultural to B-1, General Business, with Proffers.
- In 1988, the Board of Supervisors approved amendments to the existing Proffers. These amendments limited site development to a shopping center as well as provided for a 30-foot buffer and dedication of a 10-foot right-of-way along Norge Road.
- 3. In 2004, the Board of Supervisors approved a Special Use Permit (SUP), Case No. SUP-0036-2004, to allow the construction and use of gas pumps on the parcel. The SUP conditions included lighting, stormwater, and landscaping conditions specific to a master plan for the pump area.

### SURROUNDING ZONING AND DEVELOPMENT

The area surrounding the parcel contains a mix of zoning designations.

- 1. Parcels to the immediate southwest, northwest, and northeast are zoned B-1, General Business and currently include retail shops, retail banking, and undeveloped land. The immediate area is approximately defined by Croaker Road, Richmond Road, Norge Lane, and the CSX Railroad. This area is designated as Community Commercial in the 2035 Comprehensive Plan.
- 2. The parcels directly across Norge Lane are zoned R-8, Rural Residential (St. Olaf Catholic Church) and A-1, General Agricultural (a mix of single-family and multifamily uses). These parcels are designated as Low Density Residential in the 2035 Comprehensive Plan.

### Staff Report for the May 12, 2020, Board of Supervisors Public Hearing

Impacts/Potentially Unfavorable Conditions	Status (No Mitigation Required/Mitigated/Not Fully Mitigated)	Considerations/Proposed Mitigation of Potentially Unfavorable Conditions
Groundwater and Drinking Water Resources	No Mitigation Required	<ul><li>Project receives public water and sewer.</li><li>Staff finds this project does not generate impacts that require mitigation.</li></ul>
Watersheds, Streams, and Reservoirs	Mitigated	<ul> <li>The project is located predominantly within the Skimino Creek watershed and partially within the Yarmouth Creek watershed.</li> <li>The property currently has an existing stormwater management facility, YR011. This facility is an infiltration basin and was designed with the Norge Center Farm Fresh site plan, circa 2008. During the 2019 stormwater facility inspection cycle, this facility was noted as requiring general maintenance. The noted maintenance, submitted by letter to the owner in December 2019, must be completed prior to the issuance of a Certificate of Occupancy.</li> </ul>
Nearby and Surrounding Properties	No Mitigation Required	<ul> <li>The parcel is surrounded by commercial and undeveloped parcels. Across Norge Lane, the project is adjacent to residential and religious uses.</li> <li>The applicant has stated that no new development or construction is proposed beyond interior renovations.</li> </ul>
Community Character	No Mitigation Required	<ul> <li>The parcel is not located directly on a Community Character Corridor.</li> <li>The parcel is located within the Norge Community Character Area. The Community Character Area encourages "mixed use development which provides residential, commercial, and office uses in close proximity".</li> <li>Previously adopted Proffers require a 30-foot buffer along Norge Lane.</li> </ul>

Impacts/Potentially Unfavorable Conditions	Status (No Mitigation Required/Mitigated/Not Fully Mitigated)	Considerations/Proposed Mitigation of Potentially Unfavorable Conditions
<u>Cultural/Historic</u>	No Mitigation Required	- No new land disturbance has been proposed.
Public Transportation: Vehicular	No Mitigation Required	<ul> <li>Under general office building use, the Institute of Transportation Engineers (ITE) estimates average of 75 weekday vehicle trips during PM peak hours.</li> <li>Under the prior use as a supermarket, there was an estimated average of 402 weekday vehicle trips during PM peak hours.</li> <li>The applicant expects an estimated number of 60 employees, with office hours 8:30 a.m. to 5:30 p.m. Monday-Friday. This amount of traffic would be less than supermarket use and less or similar to the ITE estimate.</li> <li>The applicant states that most vehicles will be employees' personal vehicles; Chesapeake has several company logoed vehicles which may come and go occasionally; and delivery vehicles will be normal UPS, FedEx, and similar vehicles typically servicing an office facility.</li> <li>No changes to the right-of-way are proposed.</li> <li>Previously adopted Proffers provided a 10-foot right-of-way for Norge Lane.</li> </ul>
Public Transportation: Bicycle/ Pedestrian	No Mitigation Required	- No impacts anticipated
Public Safety	No Mitigation Required	- Staff finds this project does not generate impacts that require mitigation to the County's Fire Department facilities or services.
Public Schools	No Mitigation Required	- N/A since no residential dwelling units are proposed.
Public Parks and Recreation	No Mitigation Required	- N/A since no residential dwelling units are proposed.
Public Libraries and Cultural Centers	No Mitigation Required	- Staff finds this project does not generate impacts that require mitigation.

#### COMPREHENSIVE PLAN

The property is designated Community Commercial as are surrounding parcels between Norge Lane, Richmond Road, and Croaker Road. The property is also located within the Norge Community Character Area.

Community Commercial uses include community-scale commercial, professional, and office uses such as office parks and service establishments. Community Commercial has development standards for use and character compatibility. Each Community Commercial area should be clearly separated from other Community Commercial areas to retain the small town and rural character of the County, provide a sense of place, and promote transportation mobility. Furthermore, potentially objectionable aspects of commercial uses should be mitigated through an approach including performance standards, buffering, and special setback regulations.

Community Commercial should protect environmentally sensitive resources such as watersheds with watershed management plans and designated Community Character Areas and other sensitive resources by locating conflicting uses away from such resources and utilizing design features, including building and site design, buffers, and screening to adequately protect the resource.

Staff has determined that the proposed use fits the use of an office park and the proposed use is consistent with the recommendations of the adopted Comprehensive Plan. The proposed use is mitigated by several factors: the project does not propose to change the scale of the existing building and development; the project is located on a secondary arterial road, and estimated vehicle traffic is lower than the previous estimated vehicle traffic for a grocery store; the site of the proposed use is already developed with buffering and setbacks to fit with the rest of the existing commercial use as well as to provide separation from adjacent residential areas.

#### PUBLIC IMPACTS

Staff does not anticipate additional impacts to be generated by this Proffer amendment

#### PROPOSED PROFFER AMENDMENT

The full text of the proposed proffer amendment is provided in Attachment No. 3.

#### STAFF RECOMMENDATION

Staff finds that the proposal is compatible with surrounding zoning and development and consistent with the 2035 Comprehensive Plan.

Staff recommends the Planning Commission recommend approval subject to the attached proffer amendment.

BAM/nb Z-20-01NorgeCtrPffrAmd

# Attachments:

- 1. Ordinance
- 2. Location Map
- 3. Signed Proposed Proffer Amendment
- 4. Proffers, Z-11-88, dated June 12, 1988
- 5. Proffers, Z-32-86, dated December 23, 1986
- 6. Conditions for SUP-0036-2004
- 7. Applicant Narrative Statement
- 8. Approved Minutes, Planning Commission Meeting April 1, 2020
- 9. Public Comment Letter

ORDINANCE NO.
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### AN ORDINANCE TO AMEND EXISTING PROFFERS TO

### ALLOW FOR OFFICE USES

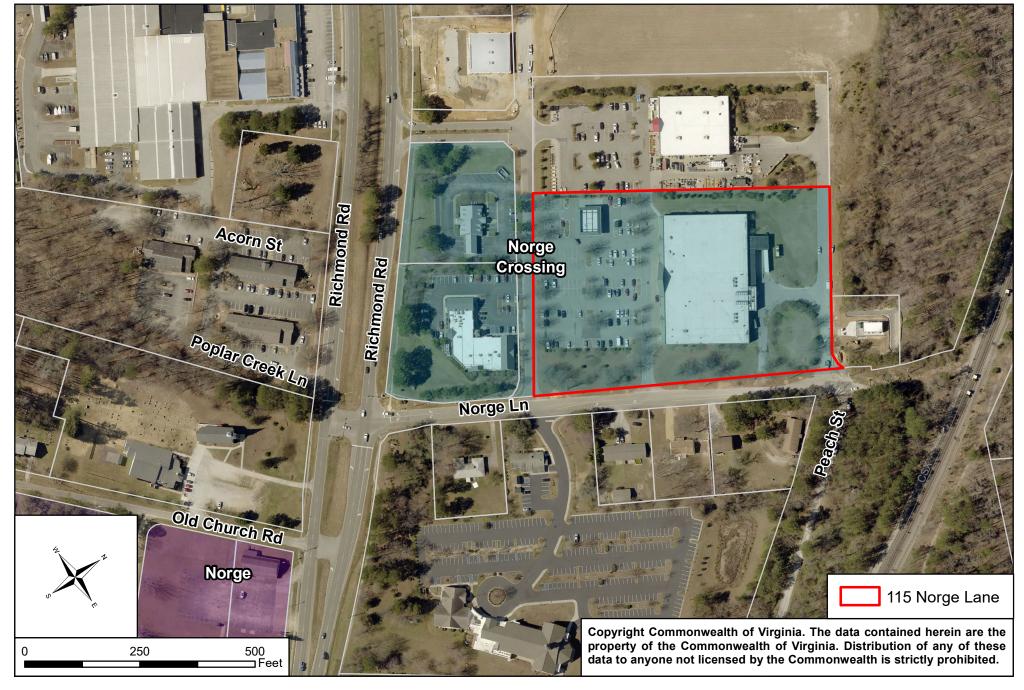
## CASE NO. Z-20-0001, NORGE CENTER PROFFER AMENDMENT

- WHEREAS, Norge Plaza, Inc., a South Carolina corporation (the "Owner") is the owner of James City County Tax Parcel No. 2320100071F located at 115 Norge Lane, James City County, Virginia, hereto (the "Property"); and
- WHEREAS, Chesapeake Bank, a Virginia banking corporation (the "Bank") is the contract purchaser of the Property and proposes to put the Property to an office use; and
- WHEREAS, on January 5, 1987, the Board of Supervisors conditionally rezoned the Property from General Agricultural, A-1 to General Business, B-1 as part of Case No. Z-32-86; and
- WHEREAS, the Property is now subject to proffered zoning conditions set forth in an Agreement dated June 2, 1988 made by Norge Center, Inc. and recorded in the Clerk's Office of the Circuit Court for the City of Williamsburg and County of James City in Deed Book 393 at Page 826 (the "Existing Proffers"), which were approved by the Board of Supervisors on June 6, 1988 as part of Case No. Z-11-88; and
- WHEREAS, the Existing Proffers limit the use of the Property to a "shopping center not to exceed 362,000 square feet of gross floor area;" and
- WHEREAS, the Owner and the Bank desire to amend the Existing Proffers to permit office uses on the Property; and
- WHEREAS, the Board of Supervisors finds that the amended proffers proposed as part of Case No. Z-20-0001 promote the health, safety, convenience, and general welfare of the public and further accomplish the objectives of zoning.
- NOW, THEREFORE, BE IT ORDAINED that the Board of Supervisors of James City County, Virginia, does hereby approve Case No. Z-20-0001 as described herein and accepts the amended voluntary proffers.

	James O. Icen Chairman, Bo		pervisors	<u> </u>
ATTEST:	,	VOTE AYE	S NAY	ABSTAIN
	SADLER MCGLENNON			
T. I.P.II	LARSON			
Teresa J. Fellows Deputy Clerk to the Board	HIPPLE ICENHOUR			
Adopted by the Board of Supe. May, 2020.	rvisors of James City Cou	unty, Virg	ginia, this	s 12th day of
Z20-01NorgeCtrPffrAmd-res				

# JCC Z-20-0001 Norge Center Proffer Amendment





Tax Parcel: 2320100071F

Prepared by:

Vernon M. Geddy, III, Esquire (VSB#21902) Geddy, Harris, Franck & Hickman, LLP

1177 Jamestown Road Williamsburg, VA 23185 Return to: County Attorney 101-D Mounts Bay Road Williamsburg, Virginia 23185

# FIRST AMENDMENT TO PROFFER AGREEMENT

This FIRST AMENDMENT TO PROFFER AGREEMENT is made this <u>23</u> day of <u>Marck</u>, 2020 by <u>NORGE PLAZA, INC</u>, a South Carolina corporation (the "Owner"), and <u>CHESAPEAKE BANK</u>, a Virginia banking corporation (the "Bank"), each to be indexed as Grantor, and <u>JAMES CITY COUNTY, VIRGINIA</u>, to be indexed as Grantee.

#### RECITALS

- A. Owner is the owner of James City Tax Parcel # 2320100071F located at 115 Norge Lane, James City County, Virginia, being more particularly described on Schedule A attached hereto (the "Property").
- B. The Bank is the contract purchaser of the Property and proposes to put the Property to an office use.
- C. The Property is now subject to proffered zoning conditions set forth in an Agreement dated June 2, 1988 made by Norge Center, Inc. and recorded in the Clerk's Office of the Circuit Court for the City of Williamsburg and County of James City in Deed Book 393 at page 826 (the "Existing Proffers"). The Existing Proffers limit the use of the property subject thereto, including the Property, to a "shopping center not to exceed 362,000 square feet of gross floor area."
- D. The parties desire to amend the Existing Proffers to permit office uses on the Property.

NOW, THEREFORE, the Existing Proffers are hereby amended as follows:

- 1. Condition 1 of the Existing Proffers is amended by the addition of the following sentence:
  - "The foregoing limitation notwithstanding, the Property may be used for office uses. Any such office use shall be included within the 362,000 square feet of gross floor area limitation set forth in the preceding sentence."
- 2. Except as specifically modified by this Amendment, the Existing Proffers remain in full force and effect.

[signatures appear on following pages]

# WITNESS the following signatures:

# NORGE PLAZA, INC.

	This Production
STATE OF MONTH COUNTY/CITY OF Gaston	to-wit:
23 day of March of Norge Plaz	edged before me in my aforesaid jurisdiction this , 2020, by Joseph Docks on , as a lnc. on behalf of the corporation.
My Commission expires: 5-30-33  Notary ID # 435	OTARY PUBLIC  Noton
	CHESAPEAKE BANK
	By:Title:
STATE OFCOUNTY/CITY OF	, to-wit:
The foregoing instrument was acknown day of of Chesap	vledged before me in my aforesaid jurisdiction this, 2020, by, beake Bank, on behalf of the corporation.
	NOTARY PUBLIC (SEAL)
My Commission expires:Notary ID #	

# WITNESS the following signatures:

# NORGE PLAZA, INC.

	By: Title:	
STATE OF		
COUNTY/CITY OF	, to-wit:	
The foregoing instrument was ackn	owledged before me	in my aforesaid jurisdiction this
		of the corporation.
of Norge	Plaza, Inc. on behalf	of the corporation.
		(SEAL)
	NOTARY PUBLI	
My Commission expires:	-0	
Notary ID #		
	CHESAP	EAKE BANK
3.	By: Title:	leigh H. Hough land
STATE OF Virginia COUNTY CITY OF Williamsbur	, to-wit:	Jenior VII.
The foregoing instrument was ackr as Senior Vice President of Che		e in my aforesaid jurisdiction this eigh It. Hough and, chall of the corporation.
	NOTARY PUBL	Mice Morrisky
My Commission expires: April 30, 20 Notary ID # 30 3390	2/	NOTARY PUBLIC REG # 303390 MY COMMISSION EXPIRES 4/30/2021
	Page 2 of 3	OWEALTH OF JE

## **SCHEDULE A**

ALL THAT CERTAIN PIECE OR PARCEL OF LAND, TOGETHER WITH ALL IMPROVEMENTS THEREON, LYING AND BEING IN THE COUNTY OF JAMES CITY, VIRGINIA, AND BEING DESIGNATED AS "PARCEL 7, 05.7978 AC.," ON THAT CERTAIN PLAT DATED OCTOBER 6, 1994, MADE BY AES CONSULTING ENGINEERS, ENTITLED "ALTA/ACSM LAND TITLE SURVEY, PARCEL 7, NORGE PLAZA, INC.", A COPY OF WHICH PLAT IS RECORDED IN PLAT BOOK 60, PAGE 38.

BEING THE SAME REAL ESTATE CONVEYED TO NORGE PLAZA, INC., A SOUTH CAROLINA CORPORATION BY DEED FROM NORGE CENTER, INC., A VIRGINIA CORPORATION, DATED AUGUST 10, 1993 AND RECORDED AUGUST 10, 1993 IN THE CLERK'S OFFICE OF THE CIRCUIT COURT OFJAMES CITY COUNTY, VIRGINIA IN DEED BOOK 634, PAGE 480.

# **Z-11-88.** Norge Shopping Center

\*These proffers are provided for reference purposes only and are not official documents. Please refer to the Proffer Books in the Planning Division or Zoning Division for copies of officially recorded proffers.

#### **AGREEMENT**

WHEREAS, Norge Center, Inc., a Virginia corporation, (hereinafter called "the Owner"), owns certain real property in James City County, Virginia (hereinafter called "the property"), and more particularly described as follows:

All that certain lot, piece or parcel of land, situate, lying and being in Stonehouse District, James City County, Virginia, fronting on U. S. #60, and shown on that certain plat of survey under the legend of "Section No. 4 37.13 acres, Mrs. Ellen Taylor Howard," which plat is attached to that certain deed dated April 10, 1940, between R. Kember Taylor, et als and Richard E. Taylor, et ux, of record in the Clerk's Office of the Circuit Court of James City County, Virginia, in Deed Book 32, page 93, and bounded and described on said plat of survey as follows:

Beginning at a point on said highway, which point marks the line dividing the subject property and the property partitioned to Kitty Taylor; thence along said line North 37 degrees and 39 minutes East 2305.0 feet to a point on the center line of the old York River Road; thence along said center line North 89 degrees and 12 minutes East 159.0 feet, North 71 degrees and 33 minutes East 500.0 feet, North 65 degrees and 35 minutes East 135.0 feet to a point on the line dividing the subject property and the property of Our Savior Lutheran Church; thence along said line North 81 degrees and 22 minutes East 231.0 feet to a point on the line dividing the subject property and the property partitioned to Rufus Taylor; thence along said line South 37 degrees and 39 minutes West 3132.0 feet to a point on the East line of Highway #60, thence along said right-of-way or a 3 degree and 20 minute curve to the left 621.0 feet to the point of beginning; containing 37.13 acres, more ore less; the lines included in the above description extend across the present right-of-way of the Chesapeake and Ohio railway, but this is done for the purpose of settling reversion rights in the event of abandonment of any portion of the present right-of-way of said railway; in severalty and divided from the portions of R. Kemper Taylor, Rufus Taylor, Kitty Taylor and Minnie Taylor Bentley.

WHEREAS, the Owner acquired the said real estate from Ellen Taylor Howard after the property was rezoned from General Agricultural District, A-1, to the General Business District, B-1; and

WHEREAS, the property was subjected to certain conditions for its development as set forth in an agreement with Ellen Taylor Howard and James City County executed December 23, 1986; and

WHEREAS, the Owner desires to alter the development plans and, therefore has requested of James City County that condition number 1. of the aforesaid agreement be amended.

NOW, THEREFORE, in consideration of the County of James City amending condition number 1, the Owner agrees that in addition to the regulations provided for in the General Business District, B-1, but subject to the limitations set forth in the aforesaid Codes, they will meet and comply with all of the following conditions for he development of the property:

1. Site development, excluding outparcels, will be for a shopping center not to exceed 362,000 square feet of gross floor area.

2. Owner agrees to impose a 100 foot structural setback from the right-of-way of Richmond Road. In addition, the Owner agrees to impose a 50 foot buffer strip along the entire Richmond road frontage and a 30 foot buffer zone along Norge Lane, the C&O Railroad, and also that portion of the property fronting on Croaker Road. The buffer zones will exclude parking and be broken only by necessary access roads, project signage and utilities. A landscaping plan will be submitted for approval by the James City County Staff and the Site Plan Review Committee for these buffer zones concurrent with the first site plan submitted on the subject property. The Owner agrees to implement the approved Landscaping Plan for this Buffer Zone concurrent with the site development of the first parcel.

This agreement specifically excludes the adjoining parcels which are rezoned General Business District, B-1.

- 3. The Owner agrees to limit the number of access points along the perimeter of the subject property to one on Richmond Road, four on Norge lane and one on Croaker Road (Route 607).
- 4. The Owner agrees to exclude the following uses permitted in the General Business , B-1, zoning district:
  - a. Funeral Homes
  - b. Cemetaries
- 5. The Owner agrees to design, furnish the equipment, and install a traffic signal at Norge Lane and Richmond Road concurrent with development of any portion of the property, excluding outparcels as depicted on the preliminary site plan as submitted.
- 6. The Owner agrees to install all left and right turn lanes as approved by the Site Plan Review Committee, concurrent with the development of the appropriate phase of site construction.
  - 7. The Owner will subdivide the property into no more than fourteen (14) parcels.
- 8. The Owner will dedicate a ten (10) foot right-of-way strip along the northeast border of the property fronting on Norge Lane for widening and improving of the existing road. In addition, the Owner agrees to improve Norge Lane concurrent with the appropriate phase of site construction in accordance with current VDOT requirements for the level of traffic envisioned by the preliminary site plan, said improvements to be approved by VDOT, and the appropriate planning commission review committee.

# **Z-32-86.** Norge Shopping Center

\*These proffers are provided for reference purposes only and are not official documents. Please refer to the Proffer Books in the Planning Division or Zoning Division for copies of officially recorded proffers.

#### **AGREEMENT**

WHEREAS, Ellen Taylor Howard, (hereinafter called "the Owner"), owns certain real property in James City County, Virginia, (hereinafter called "the property"), and more particularly described as follows:

All that certain lot, piece or parcel of land, situate, lying and being in Stonehouse District, James City County, Virginia, fronting on U.S. #60, and shown on that certain plat of survey under the legend of "Section No. 4. 37.13 acres, Mrs. Ellen Taylor Howard," which plat is attached to that certain deed dated April 10, 1940, between R. Kember Taylor, et als and Richard E. Taylor, et ux, of record in the Clerk's Office of the Circuit Court of James City County, Virginia, in Deed Book 32, page 93, and bounded and described on said plat of survey as follows:

Beginning at a point on said highway, which point marks the line dividing the subject property and the property partitioned to Kitty Taylor; thence along said line North 37° and 39" East 2305.0 feet to a point on the center line of the old York River Road; thence along said center line North 89° and 12" East 159.0 feet, North 71° and 33" East 500.0 feet, North 65° and 35" East 135.0 feet to a point on the line dividing the subject property and the property of Our Savior Lutheran Church; thence along said line North 81° and 22" East 231.0 feet to a point on the line dividing the subject property and the property partitioned to Rufus Taylor; thence along said line South 37° and 39" West 3132.0 feet to a point on the East line of Highway #60, thence along said right-of-way on a 3° and 20" curve to the left 621.0 feet to the point of beginning; containing 37.13 acres, more or less; the lines included in the above description extend across the present right-of-way of the Chesapeake and Ohio Railway, but this is done for the purpose of settling reversion rights in the event of abandonment of any portion of the present right-of-way of said railway; in severalty and divided from the portions of R. Kemper Taylor, Rufus Taylor, Kitty Taylor and Minnie Taylor Bentley.

WHEREAS, the Owner has entered into a contract for the sale of said real property and the purchasers thereof have applied for rezoning of the Property from the General Agricultural District A-1, to the General Business District, B-1; and

WHEREAS, the County of James City may be unwilling to rezone the Property from the General Agricultural District, A-1, to the General Business District, B-1, because the General Business District, B-1, zoning regulations may be deemed inadequate for the orderly development of the Property, because competing and incompatible uses may conflict; and

WHEREAS, more flexible and adaptable zoning methods are deemed advisable to permit the use of the Property; and

WHEREAS, the Owner, at purchasers' request, is desirous of offering certain conditions for the protection of the community that are not applicable to land similarly zoned in addition to the regulations provided for in the General Business District, B-1.

NOW, THEREFORE, THIS AGREEMENT WITNESSETH:

That for and in consideration of the County of James City rezoning the Property from the General Agricultural District, A-1, to the General Business District, B-1, and pursuant to Section 15.1-491.1, et seq of the Code of Virginia, 1950, as amended, and Section 20-14.2, et seq of Chapter 20 of the Code of James City County, Virginia, the Owner agrees that in addition to the regulations provided for in the General Business District, B-1, but subject to the limitations set forth in the aforesaid Codes, she will meet and comply with all of the following conditions for the development of the Property.

#### **CONDITIONS**

- 1. Site development will be in substantial accordance with the conceptual plan, together with a traffic study prepared by Wilbur Smith and Associates of Richmond, Virginia, as submitted. The Owner agrees that "Substantial Accordance" will be as determined by the James City County Staff and the Site Plan Review Committee.
- 2. Owner agrees to impose a 100 foot structural setback from the right-of-way of Richmond Road. In addition, the Owner agrees to impose a 50 foot buffer strip along her entire Richmond Road frontage and a 30 foot buffer zone along Norge Lane, the C & O Railroad, and also that portion of the property fronting on Croaker Road. The buffer zones will exclude parking and be broken only by necessary access roads, project signage and utilities. A landscaping plan will be submitted for approval by the James City County Staff and the Site Plan Review Committee for these buffer zones concurrent with the first site plan submitted on the subject property. The Owner agrees to implement the approved Landscaping Plan for this Buffer Zone concurrent with the site development of the first parcel.

This agreement specifically excludes Parcels 6 and 7 as shown on the submitted plans which are already zoned General Business District, B-1.

- 3. The Owner agrees to limit the number of access points along the perimeter of the subject property to one on Richmond Road, four on Norge lane and one on Croaker Road (Route 607).
- 4. The Owner agrees to exclude the following uses permitted in the General Business, B-1, zoning district:
  - a. Funeral Homes
  - b. Cemetaries.
- 5. The Owner agrees to purchase the equipment for a traffic signal at Richmond Road and Croaker Road (Route 607).
- 6. The Owner agrees to design, furnish the equipment, and install a traffic signal at Norge Lane and Richmond Road concurrent with development of any portion of the largest parcel as depicted on the preliminary plan as submitted.
- 7. The Owner agrees to install all left and right turn lanes as approved by the Site Plan Review Committee, concurrent with the development of the appropriate phase of site construction.
- 8. The Owner will subdivide the property into no more than fourteen (14) parcels, with twelve C12) being depicted on the submitted plans.
- 9. The Owner will dedicate a ten (10) foot right-of-way, strip along the northeast border of the property fronting on Norge Lane for widening and improving of the existing road. In addition; the Owner agrees to improve Norge Lane concurrent with the appropriate phase of site construction in accordance with current VDH&T requirements for the level of traffic envisioned by the preliminary plan,

said improvements commission review of		by	VDH&T,	the	County	Staff,	and	the	appropriate	planning

## RESOLUTION

## CASE NO. SUP-36-04. FARM FRESH GAS PUMPS

- WHEREAS, the Board of Supervisors of James City County has adopted by ordinance, specific land uses that shall be subjected to a special use permit process; and
- WHEREAS, the applicant has requested a special use permit to allow four gasoline pumps and a canopy in a B-1, General Business District, with proffers, located at 115 Norge Lane, further identified as a Parcel No. (1-71F) on James City County Real Estate Tax Map No. (23-2).
- NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, does hereby approve the issuance of Special Use Permit No. 36-04 as described herein with the following conditions:
  - 1. The architecture of the canopy shall be generally compatible with that of the Farm Fresh Store and contain architectural features, colors, and materials that reflect the surrounding character of the Norge community as determined by the Planning Director. The architectural design, color, and materials for the canopy shall be approved by the Planning Director prior to final site plan approval.
  - 2. There shall be no more that four gas pumps (a total of eight vehicle fueling stations) permitted on the property. The pumps shall be arranged in a configuration generally consistent with the attached conceptual site layout titled "Exhibit for Special Use Permit", prepared by MSA, P.C. and dated 03/24/2005, herein after referred to as the "master plan".
  - 3. A minimum horizontal separation of 100 feet shall be maintained between all water and sewer piping, the underground storage tanks, and all associated petroleum piping. Water lines and fire hydrants shall be relocated by the applicant at no cost to the James City Service Authority or the County as shown on the attached master plan prior to the issuance of a Certificate of Occupancy. The applicant shall dedicate new utility easements for the relocated lines to the James City Service Authority prior to the issuance of a Certificate of Occupancy. A Certificate to Construct Water and Sewer Facilities shall be obtained prior to construction of the relocated utilities once final site plan approval has been granted.
  - 4. No more than two signs shall be allowed on the canopy unless otherwise mentioned herein. Gas pricing signs may be allowed on a monument type sign in the parking area or the columns of the canopy. Signage shall be consistent with current zoning and sign regulations.
  - 5. An enhanced landscaping plan shall be provided for the landscaped area along Norge Lane. Unless reduced or waived by the Planning Director, the enhanced landscaping to be included with the site plan shall include a quantity of planting materials that is a minimum of 133 percent of the minimum ordinance requirements. A minimum of 50 percent of all trees and 50 percent of all shrubs shall be evergreen.

- 6. The lighting for the site, to include canopy lighting, shall be reviewed and approved by the Planning Director prior to final site plan approval. There shall be no glare outside the boundaries of the additional parking area and fueling facility. All lights, including any canopy lighting, shall have recessed fixtures with no bulb, lens, or globe extending below the casing or canopy ceiling.
- No outside display, sale, or storage of merchandise shall be permitted at the fueling 7. facility. As used for this condition, the term "merchandise" shall include but not be limited to ice, soda, candy, and/or snack machines.
- 8. Intercom and other speaker systems shall operate in such a manner that they shall not be audible from adjacent properties.
- 9. The area beneath the fuel area canopy shall not drain directly into the existing infiltration BMPs for the shopping center. An alternate BMP or a separation system to accept drainage from this project shall be shown on the site plan and shall be approved by the Environmental Division prior to final site plan approval.
- 10. If construction has not begun on the project within thirty-six months of the issuance of the special use permit, it shall become void. Construction shall be defined as obtaining permits for building construction and footings and/or foundation has passed required inspections.
- 11. The applicant shall design access ways, drive aisles, curbing, pavement markings and landscape islands in such a way as to provide for the safe flow of traffic in and around the fueling facility as determined by the Planning Director.
- 12. This special use permit is not severable. Invalidation of any word, phrase, clause, sentence, or paragraph shall invalidate the remainder.

Michael C. Brown

Chairman, Board of Supervisors

SUPERVISOR	VOTE
HARRISON	AYE
GOODSON	ABSENT
MCGLENNON	AYE
BRADSHAW	AYE
BROWN	AYE

ATTEST:

Sanford B. Wanner

Clerk to the Board

Adopted by the Board of Supervisors of James City County, Virginia, this 14th day of June,

SUP-36-04.res

2005.

#### APPLICANT'S NARRATIVE

Chesapeake Bank is the contract purchaser of Parcel 2320100071F located at 115 Norge Lane. The property is 5.86 acres, is zoned B-1 with proffers and has a vacant building containing approximately 52,915 square feet that was formerly occupied by the Farm Fresh grocery store. Chesapeake plans to convert the space into office space to house Chesapeake Payment Systems and other Bank back office functions. This location will not have retail banking. No new development or construction is proposed other than the renovation of the interior of the building.

Chesapeake Payment Systems, a division of Chesapeake Bank provides merchant card processing services. It is an office environment that has very little customer foot traffic. The majority of the operations involves support via phone, electronic communications or onsite support at the customer's place of business.

The division has been operating in a 4,500 square foot commercial unit on the ground floor of Foundation Square in New Town since 2013. In 2018 the division expanded operations into an additional 1,400 square feet of leased space in an adjacent unit to accommodate the department growth. As the department continues to grow it has been determined that a different facility will be necessary to house the department under one roof.

The Bank also has a call center and support personnel that are currently housed in multiple locations throughout the Williamsburg area. The former Farm Fresh Norge building would provide current office space needs, efficiencies through pooled resources, shared meeting spaces and onsite support staff in addition to future bank growth.

The existing proffers applicable to the Norge Center shopping center limit development to "a shopping center not to exceed 362,000 square feet of gross floor area." Staff has determined that the proposed office use of this building would not fall with the definition of a shopping center. Accordingly, the applicant is applying to amend the existing proffers applicable to this Parcel to also allow office use. Office use is generally permitted by right in the B-1 zoning district.

# **Unapproved Minutes of the April 1, 2020 Planning Commission Regular Meeting**

# **Z-20-0001.** Norge Center Proffer Amendment

Mr. Paul Holt stated that in order to minimize the number of people in attendance, he would present this case. Mr. Holt stated that Mr. Vernon Geddy of Geddy, Harris, Franck, & Hickman, LLP, on behalf of Norge Plaza, Inc. and Chesapeake Bank, has applied to amend the previously approved proffers to allow office use on the property. Mr. Holt stated that professional offices are permitted uses in the B-1 Zoning District; however, the existing proffers limit uses to a shopping center. Mr. Holt stated that the proposed use does not fit within the definition of a shopping center, and the proposed proffer amendment would allow for office use, in addition to the shopping center use.

Mr. Holt stated that the existing 52,915 square foot building previously served as a grocery store. Mr. Holt Chesapeake Bank plans to use the building for its Chesapeake Payment Systems. Mr. Holt stated that those operations include phone support, electronic communications, or onsite support at a customer's place of business. Mr. Holt further stated that Chesapeake Bank also plans to use the building to consolidate the call center and other support personnel that are currently in multiple locations throughout James City County. Mr. Holt noted that stated that according to information provided by the applicant, the location will not have retail banking. Mr. Holt stated that the existing vacant building will be repurposed, and no new development or construction is proposed other than the renovation of the interior of the building.

Mr. Holt stated that staff finds that the proposed use is compatible with the B-1, General Business Zoning District, surrounding zoning, and the adopted Comprehensive Plan. Mr. Holt stated that staff recommends that the Planning Commission recommend approval of this proffer amendment.

Ms. Null inquired if the fuel station would be removed.

Mr. Holt stated that the fuel station had demolished within the past several weeks.

Ms. Leverenz inquired about the number of employees to be transferred to that location.

Mr. Holt stated that, according to the applicant it would be 60.

M.s Leverenz stated that her question related to traffic impacts.

Mr. Holt stated that the traffic impacts would be greatly improved; reducing from 402 peak hour trips to 75.

Mr. Krapf called for disclosures from the Commission.

Mr. Krapf stated that he spoke with Mr. Geddy and with one of the property owners.

Mr. Haldeman stated that he also spoke with one of the property owners.

Mr. Holt noted that after the agenda materials were published, staff received a letter of support from the property owners. Mr. Holt further noted that this information was provided to the Commissioners by email.

There were no further disclosures.

Mr. Krapf opened the Public Hearing.

Mr. Vernon Geddy, III, Geddy Harris Franck & Hickman, LLP, 1177 Jamestown Road, addressed the Commission in support of the application.

Mr. Krapf noted that there is a tremendous amount of impervious cover on the site and inquired if the applicant would be amenable to converting some of that to pervious cover and adding greenspace.

Mr. Geddy stated that this is something that is being considered.

As no one further wished to speak, Mr. Krapf closed the Public Hearing.

Mr. 'Connor stated that he commends the applicant for seeking to repurpose an existing structure. Mr. O'Connor stated that he would support the application.

Mr. Krapf stated that, since there had not been any interest from another grocery store for the property, this is an excellent reuse of the structure. Mr. Krapf stated that he will support the application.

Ms. Null stated that she supports the application. Ms. Null stated that it is important to ensure that buildings do not remain dormant and deteriorate.

Mr. Polster stated that this is the first project he has seen that falls under the category of infill development. Mr. Polster stated that repurposing a structure for economic development that will bring jobs to that area is a positive factor. Mr. Polster further stated that in light of what the County is doing to widen Croaker Road and improve access to the interstate, this makes good sense in terms of economic development.

Mr. Haldeman made a motion to recommend approval of the application.

On a roll call vote, the Commission voted to approve Z-20-0001. Norge Center Proffer Amendment. (7-0)

# [External] Support for Z-20-0001

# Gary Massie

To: Brett Meadows

CC: 'Steve Massie'; Faith; Bobby Singley; jpearson@pearsonproperties.net; vgeddy@ghfhlaw.com

Sent: 3/30/2020 3:27 PM

Mr. Meadows

Please review our attached letter of support for the above referenced rezoning request.

Due to Covid-19 considerations we do not intend to address the Planning Commission in person. Were it not for that we would appear at the meeting and speak at the public hearing in support of this application.

We request that the attached letter of support be forwarded to the Planning Commission and our letter of support be made a part of the Public Hearing record.

# Gary M. Massie

President J.S.G. Corporation 5701 Centerville Road Williamsburg, VA 23188

Office: 757 645-4870 Mobile: 757 880-7923

E-mail: gary.massie@jsgcorp.com

# Norge Center, Inc. 5701 Centerville Road Williamsburg, Va. 23188 "Developer Norge Crossing"

March 30, 2020

James City County Planning Commission C/O Brett Meadows, Planner James City County Department of Community Development 101 Mounts Bay Road, Building A Williamsburg, VA 23185

Re: James City County Zoning Case Z-20-0001 - 115 Norge Lane

Dear Mr. Meadows:

In regards to the above referenced zoning case Norge Center Inc. is an adjacent property owner. We support the application and urge approval.

Our family developed this property and were a part of the applicants for the rezoning in 1986 and subsequent SUP for a "Shopping Center" on this parcel. Since then several changes have occurred that support the Z-20-0001 rezoning request:

- 1) Food Lion and CVS have opened facilities in Norge.
- 2) Harris Teeter has opened a facility in Lightfoot.
- 3) Farm Fresh our original grocer has vacated the grocery business
- 4) Internet ordering and Amazon delivery has changed the point of sale for groceries from a "store" to your front door.

As the original applicants, who commenced the start of Norge Crossing we are pleased to have this opportunity to welcome Chesapeake Bank's Payment Systems to 115 Norge Lane. They will be a welcome addition to the commercial property. They are a great use for this parcel.

We request that the Planning Commission support Z-20-0001. Please share this support letter with the Planning Commission.

Norge Center, Inc.

Day Molining

Sincerely,

Gary M Massie President

757 645-4870 Ext 202

757 880-7923

Gary.massie@jsgcorp.com

CC: Via e-mail

Steve Massie

Faith Willin

**Bobby Singley** 

Joe Pearson

S:\Gary Shared\Norge Center Inc\Parcel 6 Chesapeake Bank\2010-03-30 - Support Z-20-0001.doc

# **AGENDA ITEM NO. H.2.**

# ITEM SUMMARY

DATE: 5/12/2020

TO: The Board of Supervisors

FROM: Alex Baruch, Acting Principal Planner

SUBJECT: Z-19-0003. Fords Colony Proffer Amendment

# **ATTACHMENTS:**

	Description	Type
П	Attachment 0. Staff Report	Staff Report
ם	Attachment 1. Ordinance	Ordinance
ם	Attachment 2. Location Map	Backup Material
D	Attachment 3. Location Map w_Unit Distribution	Backup Material
ם	Attachment 4. Proffers 03132020	Backup Material
D	Attachment 5. Fords_Colony Traffic Impact Study 01152020 w_appendix	Backup Material
D	Attachment 6. Fords Colony Traffic Agreement Exhibit A (October 1987)	Backup Material
ם	Attachment 7. Z_0004_1998 Proffers	Backup Material
D	Attachment 8. Ford's Colony 1998 Master Plan	Backup Material
ם	Attachment 9. Unapproved Minutes Z-19-0003 Fords Colony Proffer Amendment	Backup Material

# **REVIEWERS:**

Department	Reviewer	Action	Date
Development Management	Holt, Paul	Approved	4/24/2020 - 2:30 PM
Publication Management	Burcham, Nan	Approved	4/24/2020 - 2:38 PM
Legal Review	Kinsman, Adam	Approved	4/24/2020 - 3:51 PM
Board Secretary	Fellows, Teresa	Approved	4/29/2020 - 1:59 PM
Board Secretary	Purse, Jason	Approved	5/5/2020 - 1:44 PM
Board Secretary	Fellows, Teresa	Approved	5/5/2020 - 2:02 PM

**SUMMARY FACTS** 

Applicants: Susan Tarley, Tarley Robinson, PLC

Drew Mulhare, Ford's Colony Homeowners

Association (HOA)

William Apollony, Windsor Healthcare

Equites, LLC

Brian Ford, Dorothea Ford, Trustee

Ryan Sansavera, c/o Wells Fargo and Redus

Land Owners: Ford's Colony HOA, Windsor, Ford, and

Redus

Proposal: A request to amend previously approved

proffers for Ford's Colony to address traffic

improvements and outstanding proffers

Locations: 100 Manchester

245 Ford's Colony Drive

1000 Eaglescliffe

185 Ford's Colony Drive 1051 St. Andrews Drive

Tax Map/Parcel Nos.: 3620300291

3130100053A 3131700001 3130100058 3130100053B

Project Acreage: +/- 20.18 acres (only acreage of parcels listed

above, Ford's Colony totals 2,962 acres)

Zoning: R-4, Residential Planned Community

Comprehensive Plan: Low Density Residential

Primary Service Area: Inside

Staff Contact: Alex Baruch, Senior Planner

### **PUBLIC HEARING DATES**

Planning Commission: April 1, 2020, 6:00 p.m.

Board of Supervisors: May 12, 2020, 5:00 p.m.

#### **FACTORS FAVORABLE**

1. There are no proposed changes to gross density.

2. The proposed Proffer amendment addresses the outstanding unbuilt improvements accounted for at full build-out of Ford's Colony.

3. The proposal is consistent with the recommendations of the adopted Comprehensive Plan.

4. See Impact Analysis on Pages 4-5.

#### **FACTORS UNFAVORABLE**

1. Staff finds no unfavorable factors.

2. See Impact Analysis on Pages 4-5.

#### PLANNING COMMISSION RECOMMENDATION

At its April 1, 2020 meeting, the Planning Commission recommended approval of this application and acceptance of the amended proffers by a vote of 7-0.

# PROPOSED CHANGES MADE SINCE THE PLANNING COMMISSION MEETING

None.

#### SUMMARY STAFF RECOMMENDATION

Staff recommends approval and acceptance of the amended proffers.

#### PROJECT DESCRIPTION

Ms. Susan Tarley of Tarley Robinson, PLC has submitted a request on behalf of Ford's Colony HOA, Windsor, Ford, and Redus to amend Condition Nos. 1 and 3 of the adopted Proffers, dated March 11, 1987 and attached as Exhibit A to the restated proffers dated October 1, 1987 along with Condition No. 5 of the amended and restated proffers dated January 24, 1999, related to traffic, road improvements, and bike lanes associated with the build-out of Ford's Colony.

The Ford's Colony development is nearing build-out. The Master Plan (not including the Continuing Care Retirement Communities on the south side of News Road) allows for up to 3,250 dwelling units. Approximately 2,857 units have been constructed to date and other lots have been platted but are not yet improved. The subject properties listed on the application include those properties where new development is still planned.

Specifically, staff and the applicants are in agreement there are 104 dwelling units that remain to be constructed on four parcels that have a residential designation on the Master Plan. The overall purpose and intent of this proffer amendment is as follows:

- Clarify that up to 30 of the remaining residential units will be constructed on the Windsor parcel;
- Clarify that up to 60 of the remaining residential units will be constructed on the two Redus parcels;

- Clarify that up to 14 of the remaining residential units will be constructed on the Ford parcel; and
- The proffer amendment will also clarify and specify remaining traffic improvements that need to be constructed as part of the buildout of Ford's Colony with the remaining 104 units and eliminate traffic related improvements which were listed in the original proffers, but which are no longer necessary.

The proffer amendment to clarify and specify remaining traffic improvements that are needed for build-out and the elimination of originally envisioned improvements, but which are no longer necessary is more fully described as follows:

Currently, Condition No. 1, executed through Exhibit A, lists various traffic improvements that were required to be assessed at different stages of development (Attachment No. 6). Table 10 in the attached Traffic Impact Study (TIS) (Attachment No. 5, Page 37) shows a breakdown of these improvements and whether they have already been constructed or are required at full build-out of Ford's Colony. New Proffer B-1 requires improvements related to the full build-out of Ford's Colony as stated in the TIS: these remaining improvements are a turn lane and re-striping at the intersection of Ford's Colony Drive/Longhill Road, as further detailed in the Impact Analysis table on Page 4.

Condition No. 3 and Exhibit A state that a traffic study is required every five years. The last traffic study was conducted in 2008 and only consisted of the improvements related to the Continuing Care Retirement Community, not the entirety of Ford's Colony. New Proffer B-2 requests that the attached TIS be the last traffic study that Ford's Colony would need to complete as they relate to the original agreement. As such the traffic study put forth by Kimley-Horn and Associates analyzes all of the required traffic improvements as required by Exhibit A. The Virginia Department of Transportation (VDOT) has also reviewed the TIS and concurred with the findings

generally, but believe a signal is warranted at the intersection of Ford's Colony Drive and Longhill Road. Staff does not find that this improvement is needed due to the Longhill Road Corridor Study which did not identify a signal as necessary at that intersection and looked beyond the build-out of Ford's Colony to make that assessment.

Lastly, Condition No. 5 (Attachment No. 7) states that a bike lane would need to be installed and 10 feet of property dedicated along Longhill Road using property associated with Case No. Z-0004-1998/MP-0003-1998. In the Longhill Road Corridor Study concept design, a multiuse path is proposed for the north side of Longhill Road, not a bike lane adjacent to Ford's Colony as originally anticipated with Case No. Z-0004-1998/MP-0003-1998. This proffer amendment would eliminate the requirements in Condition No. 5.

#### PLANNING AND ZONING HISTORY

Ford's Colony: The existing Ford's Colony subdivision was originally rezoned with proffers to R-4, Residential Planned Community in the late 1980s. Its Master Plan currently allows for 3,250 units with a mix of single-family units and multifamily units. The Ford's Colony development currently has an outstanding proffer obligation, which requires a traffic study to be completed every five years in order to assess the need for several traffic improvements along Centerville Road, Longhill Road, and News Road. If warranted, the proffers commit the development to construct the improvements. Traffic studies were most recently completed and provided to the County in 2004 and 2008; however, the 2008 traffic study was not a complete traffic study of the entire development. Between 2008 and 2020, staff performed the Longhill Road Corridor Study with VDOT and successfully received funding for Phase I of the Longhill Road Corridor improvements. Many of these improvements were originally proffered as improvements that Ford's Colony was responsible for in Exhibit A (Attachment No. 6) and detailed in the TIS in Table

10 (Attachment No. 5, Page 37). The TIS associated with this proffer amendment includes a complete analysis of the development at full build-out and fulfills the traffic study requirement for a five year period.

#### SURROUNDING ZONING AND DEVELOPMENT

The subject properties are internal to the Ford's Colony subdivision which is zoned R-4, Residential Planned Community. Ford's Colony is bound by Longhill Road to the north, Centerville Road to the west, News Road to the south, and Route 199 to the east.

Impacts/Potentially Unfavorable Conditions	<b>Status</b> (No Mitigation Required/Mitigated/Not Fully Mitigated)	Considerations/Proposed Mitigation of Potentially Unfavorable Conditions
Groundwater and Drinking Water Resources	No Mitigation Required	<ul> <li>Project Receives Public Water and Sewer</li> <li>Staff finds this project does not generate impacts that require mitigation.</li> </ul>
Watersheds, Streams, and Reservoirs	No Mitigation Required	<ul> <li>The project is located predominantly within the Powhatan Creek watershed.</li> <li>The property currently has an existing stormwater management facilities in place.</li> </ul>
Nearby and Surrounding Properties	No Mitigation Required	- The parcel is surrounded by residential subdivisions, commercial, and undeveloped parcels.
Community Character	No Mitigation Required	<ul> <li>Ford's Colony fronts on the Longhill Road, Centerville Road, and News Road Community Character Corridors.</li> <li>Previously adopted Proffers require a various buffering around the perimeter of Ford's Colony.</li> </ul>
<u>Cultural/Historic</u>	No Mitigation Required	- Any new land disturbance associated with proposed development will be reviewed by the appropriate agencies at the development stage.
Public Transportation: Vehicular	Mitigated	<ul> <li>Due to traffic movement concerns leaving Ford's Colony Drive to Longhill Road identified in the TIS, Proffer B-1-a states that the Association will update the striping including the stop bar and striping for the left and right-turn lanes on the earlier of: three years from Proffer Amendment approval or first Certificate of Occupancy for the new condominium units.</li> <li>The installation of a right-turn lane on Longhill Road onto Ford's Colony Drive is required at full build-out of Ford's Colony. Proffer B-1-b requires this improvement on the earlier of: three years from Proffer Amendment approval or first Certificate of Occupancy for the new condominium units.</li> <li>Instead of providing a bike lane along Longhill Road in a location that is not in line with the recommendations of the Longhill Road Corridor Study, the Association will dedicate Association owned property, upon request, to implement the Phase III, Longhill Road Corridor Plan (Proffer B-1-c).</li> <li>All traffic improvements previously constructed as a result of proffers shall remain in place as a part of Proffer B-1-d.</li> <li>The applicants are proposing in Proffer B-2 that a traffic study would no longer be required every five years since full build-out has been assessed with this application and all improvements required at full build-out are addressed.</li> </ul>

Impacts/Potentially Unfavorable Conditions	<b>Status</b> (No Mitigation Required/Mitigated/Not Fully Mitigated)	Considerations/Proposed Mitigation of Potentially Unfavorable Conditions
Public Transportation: Bicycle/ Pedestrian	No Mitigation Required	- Requirement for a bike facility along Longhill Road would no longer be required due to a different alignment shown in the Longhill Road Corridor Study.
Public Safety	No Mitigation Required	- Staff finds this project does not generate impacts that require mitigation to the County's Fire Department facilities or services.
Public Schools	No Mitigation Required	- N/A since no new residential dwelling units are proposed.
Public Parks and Recreation	No Mitigation Required	- N/A since no new residential dwelling units are proposed.
Public Libraries and Cultural Centers	No Mitigation Required	- Staff finds this project does not generate impacts that require mitigation.

#### **COMPREHENSIVE PLAN**

The property is designated Low Density Residential on the Comprehensive Plan Land Use Map. Recommended uses include single-family homes, multifamily units, accessory units, cluster housing, and recreation areas. Staff finds the proposed Proffer amendment to be consistent with the adopted Comprehensive Plan.

The Comprehensive Plan encourages development to mitigate its impacts, including traffic. As detailed above, the analysis provided indicates that with the improvements to the Ford's Colony Drive/Longhill Road intersection and right-of-way dedication commitment included in the proposed proffers, the road improvements previously completed by Ford's Colony during the course of its development, and the Phase I Longhill Road improvements, full build-out of Ford's Colony can be achieved while maintaining adequate levels of service.

#### STAFF RECOMMENDATION

Staff finds the proposal to be compatible with surrounding development and consistent with the adopted Comprehensive Plan and Zoning Ordinance. Staff recommends that the Board of Supervisors approves this application and acceptance of the amended Proffers.

AB/md RZ19-3FrdsColPrfAmd

#### Attachments:

- 1. Ordinance
- 2. Location Map
- 3. Location Map with Unit Distribution
- 4. Proposed Proffers
- 5. Traffic Impact Study

- 6. Traffic Phasing Agreement, Exhibit A, and October 1, 1987 Proffers
- 7. Z-0004-1998/MP-0003-1998 Proffers
- 8. Z-0004-1998/MP-0003-1998 Master Plan
- 9. Unapproved Minutes from the April 1, 2020 Planning Commission meeting

ORDINANCE NO.
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## AN ORDINANCE TO AMEND EXISTING PROFFERS TO CLARIFY THE DISTRIBUTION OF

## REMAINING UNITS, ADDRESS TRAFFIC IMPROVEMENTS, AND REMAINING

### **OUTSTANDING PROFFERS**

#### CASE NO. Z-19-0003. FORD'S COLONY PROFFER AMENDMENT

- WHEREAS, on March 12, 1973, by the approval of Case No. Z-1-73, the Board of Supervisors rezoned certain property from A-1, General Agricultural District to R-4, Residential Planned Community District, which development was to be known as "Middle Plantation;" and
- WHEREAS, over the following decade, Middle Plantation transitioned into the development known as "Ford's Colony;" and
- WHEREAS, on March 16, 1987, the Board of Supervisors approved Case No. MP-0004-1986, which added 750 acres zoned R-2, General Residential to the existing R-4, Residential Planned Community District, with restated proffers (the "Original Proffers"); and
- WHEREAS, the Original Proffers have been amended and restated many times over the years, including by Amended and Restated Ford's Colony Proffers approved by the Board of Supervisors dated October 1, 1987, August 26, 1993, September 29, 1995, January 24, 1999, September 20, 2002, and January 6, 2005 which added properties, proffers related to impacts from those additions, and retained other proffers contained in the Original Proffers (all together the "Existing Proffers"); and
- WHEREAS, owners of the remaining developable tracts in Ford's Colony have requested to amend certain conditions of the Existing Proffers related to traffic, road improvements, and bike lanes associated with the build-out of Ford's Colony and to clarify the distribution of remaining approved units within Ford's Colony; and
- WHEREAS, the properties subject to the application are located at 100 Manchester Drive, 245 Ford's Colony Drive, 1000 Eaglescliffe, 185 Ford's Colony Drive and 1051 St. Andrews Drive and can be further identified as James City County Real Estate Tax Map Parcels Nos. 3620300291, 3130100053A, 3131700001, 3130100058, and 3130100053B, respectively; and
- WHEREAS, the Planning Commission of James City County, following its consideration on April 1, 2020, recommended approval of Case No. Z-19-0003, by a vote of 7-0; and
- WHEREAS, the Board of Supervisors of James City County, Virginia, finds Case No. Z-19-0003 to be required by public necessity, convenience, general welfare, and good zoning practice.

- NOW, THEREFORE, BE IT ORDAINED by the Board of Supervisors of James City County, Virginia, that Case No. Z-19-0003 is hereby approved as described herein and the amended voluntary proffers are accepted.
- BE IT FURTHER ORDAINED that, because the amended proffers accepted herein remove the requirement for a transportation improvement phasing plan, the Board of Supervisors considers the agreement dated June 20, 1988, made between James City County and Realtec, Inc. to be moot and the County Administrator is authorized to sign those documents, if any, necessary to terminate such agreement.
- BE IT FURTHER ORDAINED that the conditions of the Existing Proffers amended herein by approval of Case No. Z-19-0003 shall be deemed satisfied for those properties subject to the Existing Proffers.

	James O. Icenhour, Jr. Chairman, Board of Supervisors VOTES			
ATTEST:  Teresa J. Fellows Deputy Clerk to the Board				
		<u>AYE</u>	NAY	<b>ABSTAIN</b>
	HIPPLE			
	LARSON			
	. SADLER			
	MCGLENNON ICENHOUR			
	ICENTIOUR			

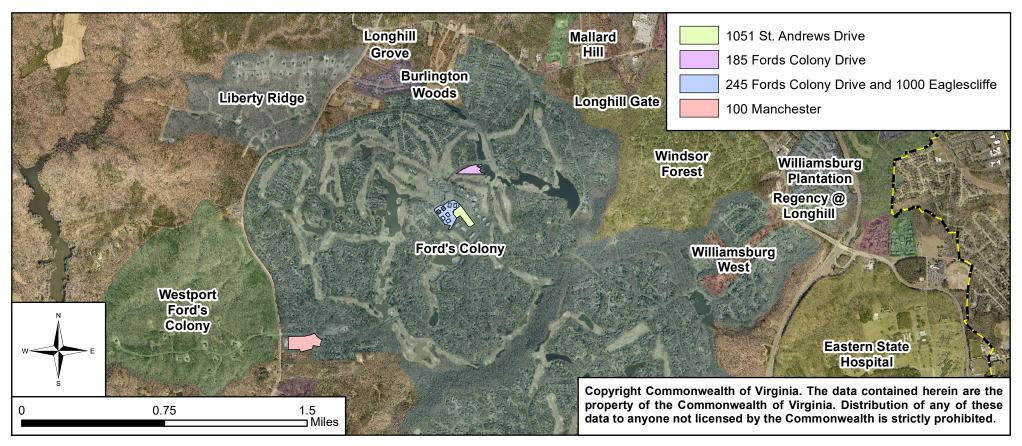
Adopted by the Board of Supervisors of James City County, Virginia, this 12th day of

RZ19-3FrdsColPrfAmd-res

May, 2020.

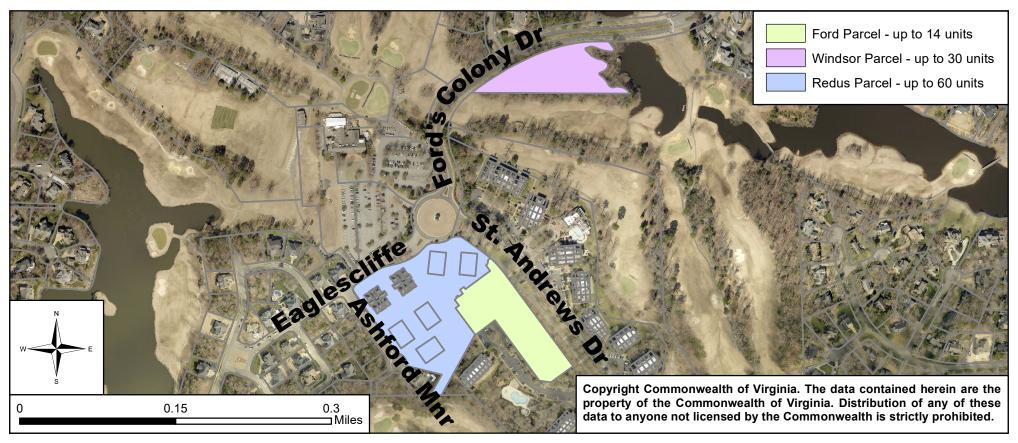
# JCC Z-19-003 Fords Colony Proffer Amendment





# JCC Z-19-003 Fords Colony Proffer Amendment





Tax Map Nos. 3130100053A, 3131700001, 3130100058, 3130100053B

Prepared by: Susan B. Tarley, Esquire VSB 28896 Tarley Robinson, PLC 4808 Courthouse Street, Suite 102 Williamsburg, VA 23188

# AMENDMENT TO FORD'S COLONY PROFFERS

THIS AMENDMENT TO FORD'S COLONY PROFFERS is made this day of March, 2020 by FORD'S COLONY AT WILLIAMSBURG HOMEOWNERS ASSOCIATION, a Virginia nonstock corporation (the "Association"), REDUS VA HOUSING, LLC, a Delaware limited liability company ("Redus"), WINDSOR HEALTHCARE EQUITIES, LLC, a Maryland limited liability company ("Windsor"), and the DOROTHEA M. FORD REVOCABLE DECLARATION OF TRUST, ("Ford"), collectively referred to as the "Parties" and to be indexed as "Grantors" and JAMES CITY COUNTY, VIRGINIA, a political subdivision of the Commonwealth of Virginia, to be indexed as "Grantee."

### **RECITALS:**

- A. Realtec, Incorporated, a North Carolina corporation ("Realtec") was the owner and developer of the Ford's Colony at Williamsburg development which contains approximately 2,962 acres and which is zoned R-4, Residential Planned Community, with proffers, and subject to a Master Plan previously approved by James City County.
- B. Realtec developed Ford's Colony in phases over a period of 30 years, with each phase subjected to the Ford's Colony Declaration of Protective Covenants, and each lot owner required to be a member in the Association.
- C. Realtec's authorization to do business in the Commonwealth of Virginia was revoked by the Virginia State Corporation Commission on or about April 30, 2015, and Realtec is no longer involved in the development of Ford's Colony at Williamsburg.
- D. The original proffers for Ford's Colony were made on March 11, 1987 and have been amended and restated many times over the years, including by Amended and Restated Ford's Colony Proffers (1) dated October 1, 1987 and recorded in the Clerk's Office of the Circuit Court for the City of Williamsburg and County of James City (the "Clerk's Office") in Deed

Return to: James City County Attorney 101-C Mounts Bay Road Williamsburg, VA 23185 Book 366 at page 512; (2) dated August 26, 1993 and recorded in the Clerk's Office in Deed Book 678 at page; (3) made by Richard J. Ford and dated as of September 29, 1995 and recorded in the Clerk's Office in Deed Book 757 at page 529 (the property subjected to these proffers became owned by Realtec); (4) dated September 29, 1995 and recorded in the Clerk's Office in Deed Book 757 at page 526; (5) dated January 24, 1999 and recorded in the Clerk's Office as Instrument No. 990002925; (6) dated September 20, 2002 and recorded in the Clerk's Office as Instrument No. 020024840; (7) dated as of January 6, 2005 and recorded in the Clerk's Office as Instrument No. 050001465; all of which incorporated the previously adopted proffers (together, the "Existing Proffers").

- E. Certain Existing Proffers made by Realtec for Ford's Colony at Williamsburg have not been completed and are considered not warranted or necessary by development build-out.
- F. The Existing Proffers run with the land and are binding on Realtec's successors.
- G. The Association is the homeowners association for Ford's Colony representing the residential owners.
- H. Redus is the owner of certain property located at 245 Ford's Colony Drive, Williamsburg, Virginia 23188, further identified as Parcel ID 3130100053A, and 1000 Eaglescliffe, Williamsburg, Virginia 23188, further identified as Parcel ID 3131700001, upon which a multifamily housing project consisting of sixty (60) residential condominium units is planned.
- I. Windsor is the owner of that certain property located at 185 Ford's Colony Drive, Williamsburg, Virginia 23188, further identified as Parcel ID 3130100058, upon which a multifamily housing project consisting of thirty (30) residential condominium units is planned.
- J. Ford is the owner of a certain property located at 1051 St. Andrews Drive, Williamsburg, Virginia 23188, further identified as Parcel ID 3130100053B, upon which up to fourteen (14) residential condominium units are planned.
- K. The Redus, Windsor, and Ford condominium units referenced above shall be cumulatively referred to, for the purposes of these Amended Proffers only, as the New Condominium Units.
- L. The Association and the governing documents for Ford's Colony provide consistency for the continued development of Ford's Colony as originally intended.

- M. Ford's Colony has grown from its original proposal as a 1410 acre neighborhood with 1976 residential dwellings and golf courses offering 45 holes of golf to 2962 acres with 3250 residential units, golf courses offering 54 holes of golf with an additional 660 residential units on 140 acres.
- N. The Parties propose amending the existing proffers that have not been completed by Realtec. This amendment request does not include any modification or amendment to the Master Plan layout, density, open space or unit count.
- O. There are three remaining areas shown as residential on the Master Plan along Ford's Colony Drive which have been made subject to the Ford's Colony Declaration. Mandatory membership in the Association will ensure that those residents on the remaining residential parcels have access to the Association's amenities as well as the rights, privileges, and responsibilities of ownership in Ford's Colony. Mandatory membership in the Association is consistent with the development intent and Master Plan.
- P. The Association owns and maintains all the roads and common areas in Ford's Colony, and all residential properties contribute to annual and long-term maintenance through assessments billed equally to all members.
- Q. The commercial properties within Ford's Colony include properties owned by ClubCorp NV XV, LLC, Manor Club at Ford's Colony and FRH, LLC. These owners are not members of the Association and their properties are not subject to the Ford's Colony Declaration, however, they are parties to a Shared Maintenance Agreement with the Association in which they contribute to the maintenance of Ford's Colony Drive, and any further commercial development on Ford's Colony Drive will have a responsibility to contribute to the road maintenance.

NOW, THEREFORE, for and in consideration of the approval by the Board of Supervisors of the County of James City, Virginia (the "Board"), of the applied for rezoning and acceptance of these Amended Proffers and pursuant to Section 15.2-2302 and Section 15.2-2303 of the Code of Virginia, 1950, as amended, the Parties agree that they shall meet and comply with all of the following conditions in developing Property:

- **A.** Existing Proffers Retained. Except as amended herein, the Existing Proffers shall remain in full force and effect and are incorporated into these Amended Proffers by reference.
- **B.** Amendments. The Existing Proffers are amended as follows:

- 1. TERMINATION OF CERTAIN ROAD IMPROVEMENT PROFFERS. Condition 1 of the Ford's Colony Proffers dated March 11, 1987 and attached as Exhibit A to the Restated Ford's Colony Proffers dated October 1, 1987 in James City County Case MP-2-97 and recorded in Deed Book 366, page 512, et. seq. shall be replaced and superseded by the following:
- (a) The Association will upgrade the main entrance to Ford's Colony at Ford's Colony Drive by extending the stop bar, and striping for a left and right turn lane on the outbound side of Ford's Colony Drive as required by the Traffic Impact Study Update, Ford's Colony Master Plan Phased Development, James City County, Virginia, prepared by Kimley-Horn and Associates, Inc. dated January 2020 (the "2020 Traffic Impact Study") on the earlier of three (3) years from the approval of these Amended Proffers, or the award of the first certificate of occupancy for the New Condominium Units.
- (b) The Association will install a right turn lane from Longhill Road onto Ford's Colony Drive as required by the 2020 Traffic Impact Study on the earlier of three (3) years from the approval of these Amended Proffers, or the award of the first certificate of occupancy for the New Condominium Units.
- (c) The Association will dedicate right-of-way as necessary, upon request, to implement the Phase III, Longhill Road Corridor Plan, to the extent the Association is the owner of any property necessary for the right-of-way. The Association shall not be required to purchase any land or acquire any right-of-way across private property nor shall it be required to construct new or remove existing improvements.
- (d) All road improvements proffered in the Existing Proffers and constructed as of the date of these Amended Proffers shall remain in place.
- 2. TRAFFIC IMPACT STUDY. Condition Number 3 of the Ford's Colony Proffers dated March 11, 1987 and attached as Exhibit A to the Restated Ford's Colony Proffers dated October 1, 1987 in James City County Case MP-2-97 and recorded in Deed Book 366, page 512, et. seq.in the Clerk's Office of the Circuit Court of James City County, is deleted in its entirety.
- 3. BIKE LANE. Condition Number 5 of the Amended and Restated Ford's Colony Proffers dated January 24, 1999 and recorded as Instrument No. 990002925 in the Clerks Office of the Circuit Court of James City County is deleted in its entirety.
- **C.** <u>Supplemental Conditions.</u> In addition to the Existing Proffers, as amended above, the Parties proffer the following conditions:

- 1. MEMBERSHIP IN HOMEOWNERS ASSOCIATION. Contingent on plan approval by James City County, all new residential development on the Property shall be subject to mandatory membership in the Association by a Supplemental Declaration of Protective Covenants approved by the Association.
- 2. UNIT DENSITY; TYPES OF UNITS. The parcel owned by Windsor, Parcel No. 3130100058 is to have up to thirty (30) residential condominium units. The two parcels owned by REDUS VA HOUSING LLC, Parcel Nos. 3130100053A and 3131700001 are to have up to sixty (60) residential condominium units. The parcel owned by Ford, Parcel Number 3130100053B is to have up to fourteen (14) residential condominium units.

SIGNATURE PAGES FOLLOW

of, 2020.
By: WINDSOR HEALTHCARE EQUITIES, LLC  William Apollony, Authorized Member
STATE OF MARYLAND CITY/COUNTY OF ANNE ARUNDEL, to-wit:
I, <u>TAMMY BETWEN</u> , a Notary Public in and for the jurisdiction aforesaid, certify that the foregoing Amended Proffers were executed and acknowledged before me on the day of <u>MARC</u> 2020 by William N. Apollony authorized signatory for Windsor Healthca Equities, LLC, a Maryland limited liability company on behalf of the company.
Notary Public
My Commission Expires: August 13, 2021 Registration No.
TAMMY R. BENNETT Notary Public-Maryland Anne Arundel County My Commission Expires August 13, 2021

The undersigned has executed this Amendment to Ford's Colony Proffers this 1/2 day of MARCH, 2020.
REDUS VA HOUSING, LLC  BY: REDUS PROPERTIES, INC, ITS SOLE MEMBER  By:   REDUS VA HOUSING, LLC  BY: REDUS PRESIDENT  REDUS VA HOUSING, LLC  BY: RESIDENT  REDUS VA HOUSING, LLC  BY: REDUS PROPERTIES, INC, ITS SOLE MEMBER  REPUS VA HOUSING, LLC  BY: REDUS PROPERTIES, INC, ITS SOLE MEMBER  LYAN SANSAVERA, Audhorized Member  VICE PRESIDENT
STATE OF NORTH CAROLINA CITY/COUNTY OF MECKLENBURG, to-wit:
I, Astghik Lordonyon, a Notary Public in and for the jurisdiction aforesaid, so certify that the foregoing Amended Proffers were executed and acknowledged before me on this day of 03, 2020 by Ryan Sansavera, authorized signatory for Redus Va Housing, LLC, a Delaware limited liability company on behalf of the company.
Notary Public
My Commission Expires: 04-03-2022 Registration No. 018/5030005

The undersigned has executed this Amendment to Ford's Colony Proffers this _//_ day of _MARCH, 2020.
FORD'S COLONY AT WILLIAMSBURG HOMEOWNERS ASSOCIATION
By: Ellwill, President
STATE OF VIRGINIA COUNTY OF JAMES CITY, to-wit:
I, MCCA BYCYLLY, a Notary Public in and for the jurisdiction aforesaid, so certify that the foregoing Amended Proffers were executed and acknowledged before me on this day of MCCA 2020 by RODGE MOULLY, Authorized signatory for
Ford's Colony at Williamsburg Homeowners Association, a Virginia nonstock corporation on behalf of the Corporation.
My Commission Expires:
Registration No. 722 7942
AMANDA

The undersigned ha of MARCH, 2020.	s executed this Amendment to For	d's Colony Proffers this day
	By: Brian For	TEA M. FORD REVOCABLE ECLARATION OF TRUST  d, Attorney-in-fact nea M. Ford, Trustee
STATE OF VIRGINIA COUNTY OF JAMES CIT	Y, to-wit:	
certify that the foregoing A  11 day of Man 2020 by	, a Notary Public in a mended Proffers were executed any Brian Ford, Attorney-in-fact for le Declaration of Trust, on behalf of Notary Pu	d acknowledged before me on this Dorothea M. Ford, Trustee of the fithe Trust.
My Commission Expires: Registration No.	A. B. Miller Notary Public Commonwealth of Virginia 183383 My Commission Expires Nov 30, 2021	

# TRAFFIC IMPACT STUDY (TIS) UPDATE

# Ford's Colony Master Plan - Phased Development

James City County, Virginia

# Prepared for:

Ford's Colony Home Owners Association (FCHOA)

Prepared by:

Kimley » Horn

January 2020

# Traffic Impact Study (TIS) Update for Ford's Colony Master Plan – Phased Development James City County, Virginia

# Prepared for:

Ford's Colony Home Owners Association (FCHOA)

# Prepared by:

Kimley-Horn and Associates, Inc.
Suite 100
11818 Rock Landing Dr
Newport News, VA 23606
P: 757.273.7016

117079000 January 2020

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## 1 EXECUTIVE SUMMARY

Ford's Colony Homeowners Association (FCHOA), with support of REDUS VA Housing, LLC (REDUS) is pursuing a Master Plan and Proffer Amendment which includes proposing the construction of 60 residential condominium/townhouse units (Eaglescliff) within the Ford's Colony development (i.e., Ford's Colony) in James City County, Virginia. Ford's Colony is a master planned community bounded by Longhill Road (State Route 612) to the north, Centerville Road (State Route 614) to the west, News Road (State Route 613) to the south, and a combination of retail/commercial land uses, residential areas, and Humelsine Parkway (State Route 199) to the east.

Through conversations with FCHOA, REDUS, and James City County staff as well as our review of the Ford's Colony Proffers (MP-2-87) dated June 20, 1988 and the Amended and Restated Ford's Colony Proffers (Z-04-98/MP-3-98) dated January 24, 1999, it was determined that a traffic impact study (TIS) must be prepared every five (5) years and/or prior to any proposed expansion or development within the Ford's Colony Master Planned residential development. The previous update was the *Ford's Colony Traffic Impact Study 2003-2004 Update*, completed in February 2004.

The purpose of this report is to satisfy the TIS requirement of the aforementioned proffers by summarizing existing and projected future traffic volumes as well as the associated operational conditions to determine if any of the identified off-site roadway, intersection, or traffic control (i.e., intersection signalization) improvements have been triggered for construction and/or may require accelerated implementation. In addition to the 60 residential condominium/townhouse units, the following units were included in this TIS as part of the background traffic to represent the totality of the Ford's Colony Master Plan.

- 295 platted, unbuilt lots
- 30 un-platted Windsor development lots
- 14 un-platted Brian Ford's property lots

This study will identify the potential impacts to the intersections and roadway network as a result of the proposed development.

Based on the analysis of the existing traffic volumes and operation findings provided in this traffic study, the following recommendations were identified and are summarized below for the Existing conditions:

#### Longhill Road at Williamsburg W. Drive/Lane Place Drive

- Maintain the existing geometric configuration and traffic control measures
- Continue to monitor and implement new timing and coordination plans as part of regular VDOT operations and maintenance
- It is noted that the Longhill Road Phase 1 Widening Project (VDOT UPC 100921) includes improvements that will enhance the capacity at this intersection, is fully funded, and currently under construction

#### Longhill Road at Fords Colony Drive

- Relocate and restripe the northbound approach STOP bar so driver sight distance is not impeded by the Ford's Colony monument sign and/or vegetation located in the median
- Restripe the 24-foot wide northbound approach to consist of a 12-foot shared through/left-turn lane and a 12-foot exclusive right-turn lane with 150 feet of storage

- Continue to monitor traffic volumes to identify when/if the full turn-lane warrant for the eastbound right-turn movement is satisfied
- Existing traffic volumes and the associated operational conditions (i.e., level of service (LOS)/side street delay) do not warrant or justify the installation of the traffic signal at this time.
- Although the installation of a traffic signal is specifically referenced in the Ford's Colony proffers, per VDOT policy and roadway design manual guidelines, should volumes warrant the consideration of a traffic signal the intersection will also need to be analyzed for the consideration of a roundabout.

#### Centerville Road at Manchester Drive

Maintain the existing geometric configuration and traffic control measures

#### News Road at Firestone Drive

Maintain the existing geometric configuration and traffic control measures

From the analysis of the Build conditions which included the background traffic growth and approved developments, the following recommendations were identified and are summarized below for the Build conditions:

#### Longhill Road at Williamsburg W. Drive/Lane Place Drive

- Continue to monitor and implement new timing and coordination plans as part of regular VDOT operations and maintenance
- The Longhill Road Phase 1 Widening Project (UPC 100921) is currently under construction. The widening project includes the following improvements to this intersection:
  - Widen Longhill Road to a four-lane divided typical section
  - Upgrade the traffic signal equipment to accommodate the additional through lanes
  - Pedestrian accommodations such as crosswalks, ADA ramps, and pedestrian signal displays for the crossing of select legs of the intersection

#### Eastbound Longhill Road

Widen and construct an additional approach and receiving through lane
 Westbound Longhill Road

- Widen and construct an additional approach and receiving through lane
- Improvements associated with Longhill Road Phase 1 Widening Project (UPC 100921) address several of the proffered improvements associated with the Ford's Colony Master Plan. Proffers should be updated/modified to account for/recognize these changes in responsibility.

#### Longhill Road at Fords Colony Drive

 Based on future traffic volume projections, construct a full width right-turn lane consisting of 200-feet of storage and a 200-foot taper for the eastbound approach.

- Future traffic volumes and the associated future operational conditions (i.e., level of service (LOS)/side street delay) continue to reflect that a traffic signal is not warranted and do not justify the installation of a traffic signal at this intersection.
- It is noted that the installation of a traffic signal is specifically referenced in the Ford's Colony proffers. However, per VDOT policy and roadway design manual guidelines, if volumes warrant the consideration of a traffic signal then the intersection will also need to be analyzed for the consideration of a roundabout.
- Additionally, it is noted that the Longhill Road Corridor Study, completed in October 2014, did not recommended the installation of a traffic signal at this intersection as part of the long term (horizon year 2034) improvements. Therefore, it is recommended that a traffic signal should no longer be proffered as a means of traffic control for this intersection.

#### Centerville Road at Manchester Drive

Maintain the existing geometric configuration and traffic control measures.

#### News Road at Firestone Drive

Maintain the existing geometric configuration and traffic control measures.

Given the minimal residual development potential in Ford's Colony, no additional or proffered improvements are triggered beyond those that were identified under the Existing or Build operational conditions.

## 2 INTRODUCTION

Ford's Colony Homeowners Association (FCHOA), with support of REDUS VA Housing, LLC (REDUS) is pursuing a Master Plan and Proffer Amendment which includes proposing the construction of 60 residential condominium/townhouse units within the Ford's Colony development (i.e., Ford's Colony) in James City County, Virginia. Ford's Colony is a master planned community bounded by Longhill Road (State Route 612) to the north, Centerville Road (State Route 614) to the west, News Road (State Route 613) to the south, and a combination of retail/commercial land uses, residential areas, and Humelsine Parkway (State Route 199) to the east.

Through conversations with FCHOA, REDUS, and James City County staff as well as our review of the Ford's Colony Proffers (MP-2-87) dated June 20, 1988 and the Amended and Restated Ford's Colony Proffers (Z-04-98/MP-3-98) dated January 24, 1999, it was determined that a traffic impact study (TIS) must be prepared every five (5) years and/or prior to any proposed expansion or development within the Ford's Colony Master Planned residential development. The previous update was the *Ford's Colony Traffic Impact Study 2003-2004 Update*, completed in February 2004.

The purpose of this report is to satisfy the TIS requirement of the aforementioned proffers by summarizing existing and projected future traffic volumes as well as the associated operational conditions to determine if any of the identified off-site roadway, intersection, or traffic control (i.e., intersection signalization) improvements have been triggered for construction and/or may require acceleration. In addition, this study will identify the impacts to the intersections and roadway network due to the proposed development.

The proposed development will be located south of the roundabout intersection of Fords Colony Drive at St. Andrews Drive and is bounded by Eaglescliffe Condominiums to the west, single family units to the south, and the Marriott Manor Club at Ford's Colony to the east. **Figure 1** illustrates the proposed development's location. It is anticipated that the construction of the 60 residential condominium/townhouse units will be completed and operational for business by 2021. In addition to the 60 residential condominium/townhouse units, the following units were included in this TIS as part of the background traffic to represent the totality of the Ford's Colony Master Plan.

- 295 platted, unbuilt lots
- 30 un-platted Windsor development lots
- 14 un-platted Ford's property lots

Kimley-Horn has been retained to prepare a report that meets the requirements of updating the Ford's Colony TIS per the proffers as well as provides an assessment of the traffic impacts associated with the proposed development of the site. This report has been prepared for submittal to James City County and the Virginia Department of Transportation (VDOT) to evaluate existing conditions as well as future traffic conditions that include development related traffic volumes. Assumptions regarding the study area, access, and trip distribution were discussed with and approved by James City County staff prior to the completion of this analysis. The assumptions document is provided in **Appendix A**.

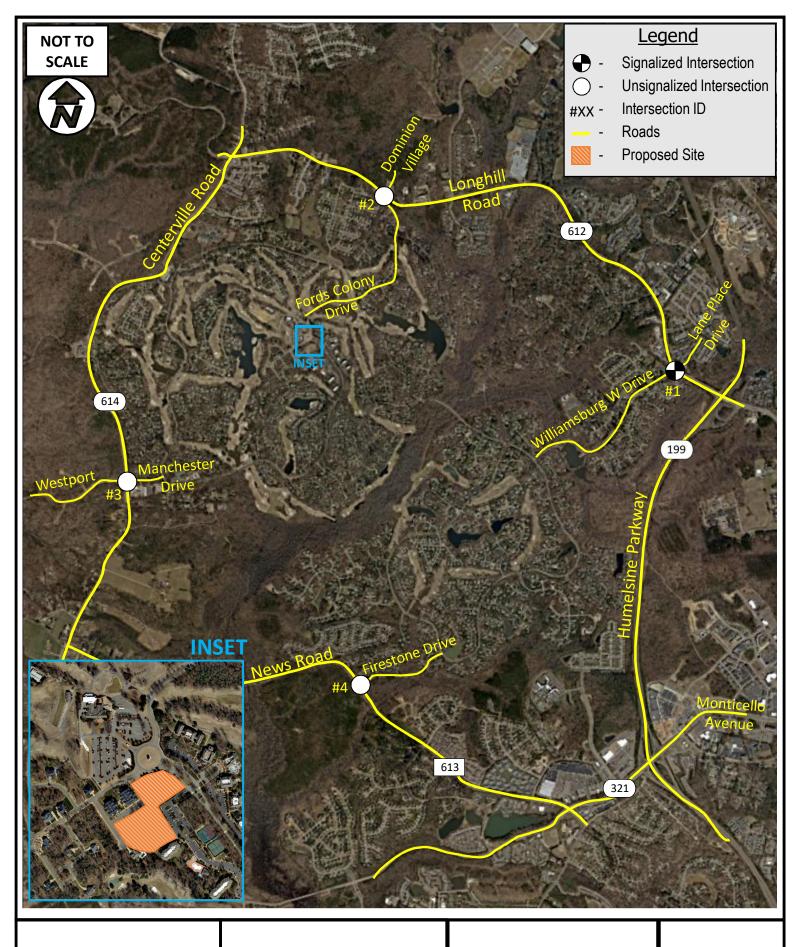
# 3 PROJECT BACKGROUND

## 3.1 STUDY AREA

Consistent with the previously completed TIS, the study area for this analysis, as illustrated in **Figure 1**, includes the following intersections:

#### Intersections

- Longhill Road at Williamsburg W. Drive/Lane Place Drive (signalized)
- Longhill Road at Fords Colony Drive (unsignalized)
- Centerville Road at Manchester Drive (unsignalized)
- News Road at Firestone Drive (unsignalized)



Kimley » Horn

Ford's Colony TIS Update James City County, VA

Study Area

FIGURE 1

#### 3.2 PREVIOUS STUDIES

As mentioned in **Chapter 2**, the previous *Ford's Colony Traffic Impact Study 2003-2004 Update*, was completed in February 2004. This study was conducted pursuant to the proffer requirements and included a schedule of roadway improvements at the four (4) intersections that provide access to/from the Ford's Colony development, as shown in **Table 1**.

Table 1: Ford's Colony Traffic Impact Study 2003-2004 Update Recommendations

	Proffered Improvement Description	Recommended Action
(a)	Installation of Traffic Signals	
(i)	Longhill Road at Williamsburg W. Drive	Monitor traffic volumes in future to determine signal warrant justification
(ii)	News Road at Firestone Drive	Not warranted
(iii)	Longhill Road at Fords Colony Drive	Not warranted
(d)	Construction of Longhill Road at Williamsburg W. Drive Intersection	on
(ii)	Add two through lanes on Longhill Road	Operational analysis determined improvement was not required
(iii)	Add second westbound left-turn lane on Longhill Road	Operational analysis determined improvement was not required
(iv)	Add second northbound right-turn lane on Williamsburg W. Drive	Operational analysis determined improvement was not required
(e)	Construct eastbound right-turn lane on Longhill road at Fords Colony Drive	Continue to monitor traffic volumes in future to determine turn lane warrant justification.
(f)	Dedication of a 15-foot strip of land and construction of four lanes on Longhill Road from Williamsburg W. to Route 199	Operational analysis determined improvement was not required

#### 3.3 EXISTING ZONING

The project site for the proposed development is located within the Ford's Colony Master Planned development. This parcel is currently unoccupied and is zoned as Residential Planned Community (R4). **Figure 2** illustrates the existing zoning adjacent to the site.

Zoning in this area primarily consists of the following districts: General Residential (R2), Residential Planned Community (R4), Rural Residential (R8), and General Agriculture (A1). The Marriott's Manor Club at Ford's Colony is located to the east of the proposed site and the Ford's Colony Country Club is located to the north of the proposed site, which contains hotel accommodations, restaurants, services, and various recreational golf uses. To the south and west of the proposed residential condominium/townhouse site are additional residential areas.

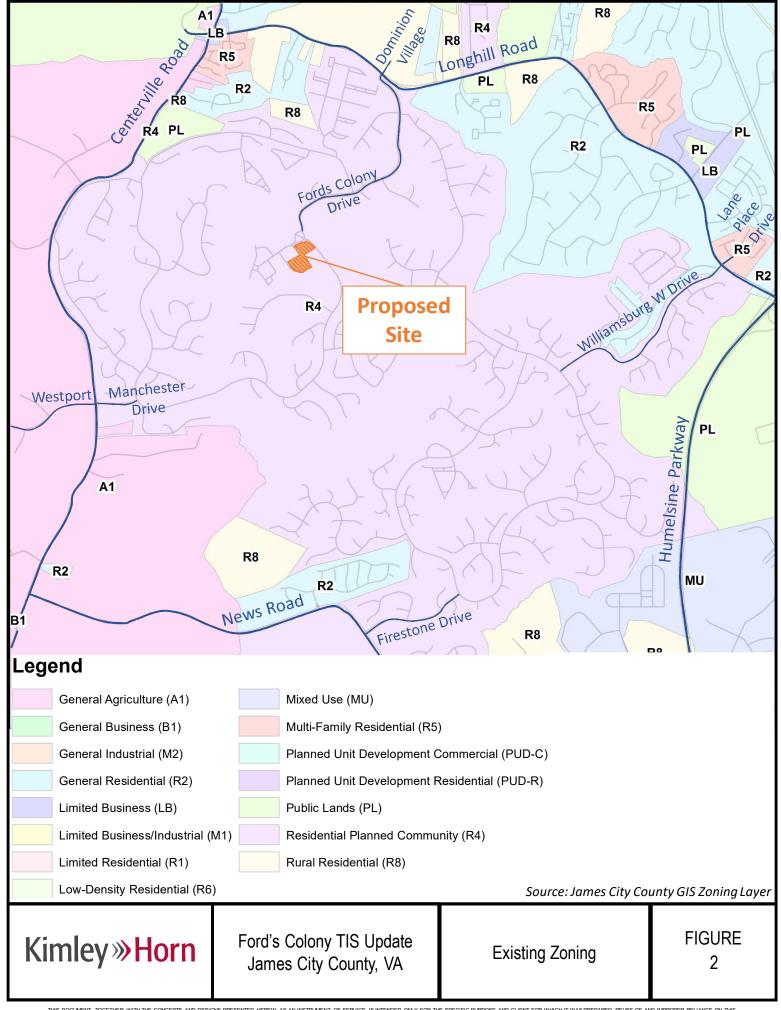
#### 3.4 EXISTING CONDITIONS

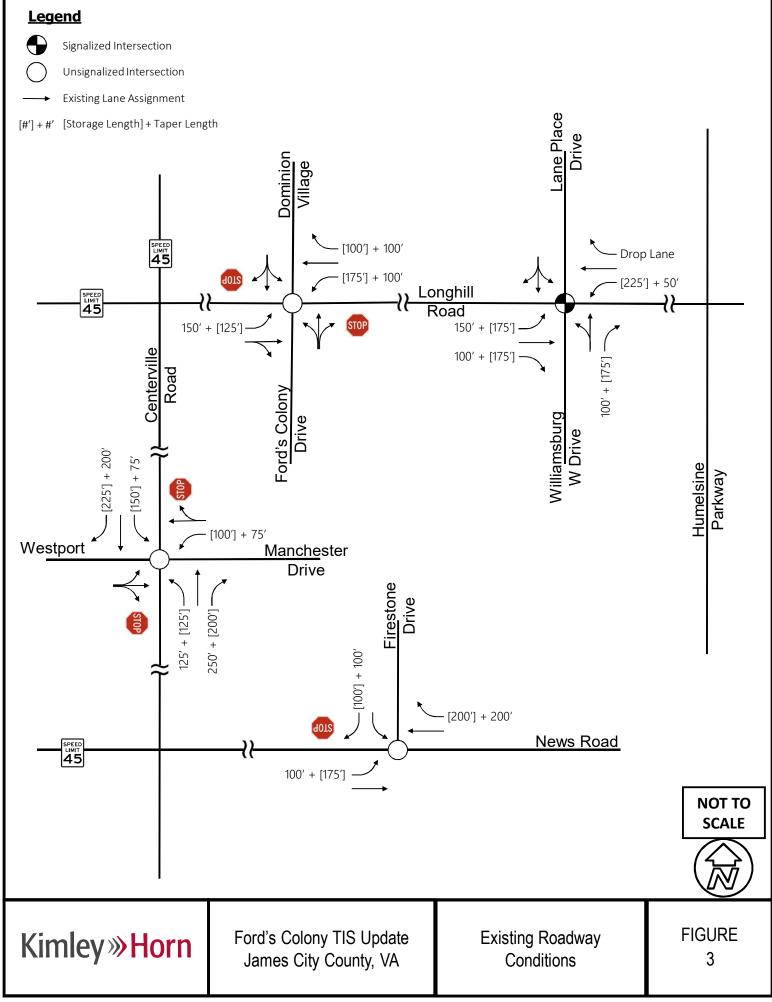
Longhill Road, Centerville Road, and News Road are the primary thoroughfares within the study area that provide connections to Williamsburg W. Drive, Ford's Colony Drive, Manchester Drive, and Firestone Drive, which provide access to/from the Ford's Colony community. **Figure 3** depicts existing roadway geometry, lane assignments, and conditions for study area roadways and intersections. The following provides a brief description of existing roadway characteristics for each facility:

**Longhill Road** (State Route 612) is a two-lane, undivided minor arterial that runs in an approximate east/west direction between Centerville Road to the west and the Humelsine Parkway (Route 199) interchange to the east. Traffic counts collected by VDOT in 2018 indicate that Longhill Road carried approximately 7,600 vehicles per day (vpd) between Centerville Road and Season's Trace and approximately 16,000 vpd between Season's Trace and Humelsine Parkway. The posted speed limit along this segment of roadway within the study area is 45 miles per hour (mph).

**Centerville Road** (State Route 614) is a two-lane, undivided minor arterial in James City County. Centerville Road runs in an approximate north/south direction in the study area between Longhill Road to the north and News Road to the south. Traffic counts collected by VDOT in 2018 indicate that Centerville Road carried approximately 4,900 vpd between News Road and Jolly Pond Road. The posted speed limit along this segment of Centerville Road is 45 mph.

**News Road** (State Route 613) is a two-lane, undivided major collector road that runs in an approximate east/west direction that extends from Centerville Road in the west to Ironbound Road in the east. Traffic counts collected by VDOT in 2018 indicate that News Road carried approximately 3,900 vpd within the study area. The posted speed limit is 45 mph.





#### 3.5 EXISTING PEDESTRIAN AND BICYCLE ACCOMMODATIONS

Pedestrian accommodations (i.e., crosswalks, pedestrian signal heads) are not provided at any of the study intersections. However, sidewalk is provided on the north side of Longhill Road from Williamsburg W. Drive/Lane Place Drive to Warhill Trail. Portions of sidewalk are located along Centerville Road but lack connectivity throughout the study area.

In addition, paved shoulders allow for bicycle traffic on Longhill Road from Williamsburg W. Drive to Old Towne Road. Dedicated bike lane pavement markings traversing through the intersections are provided at major intersections along Longhill Road to enhance the visibility and safety of the bicyclists. A dedicated bike lane is provided along southbound Centerville Road from Longhill Road to just north of Mallory Place. Paved shoulders allow for bicyclist traffic on Centerville Road, south of Mallory Place. Pedestrian and bicycle accommodations are not provided along either side of News Road.

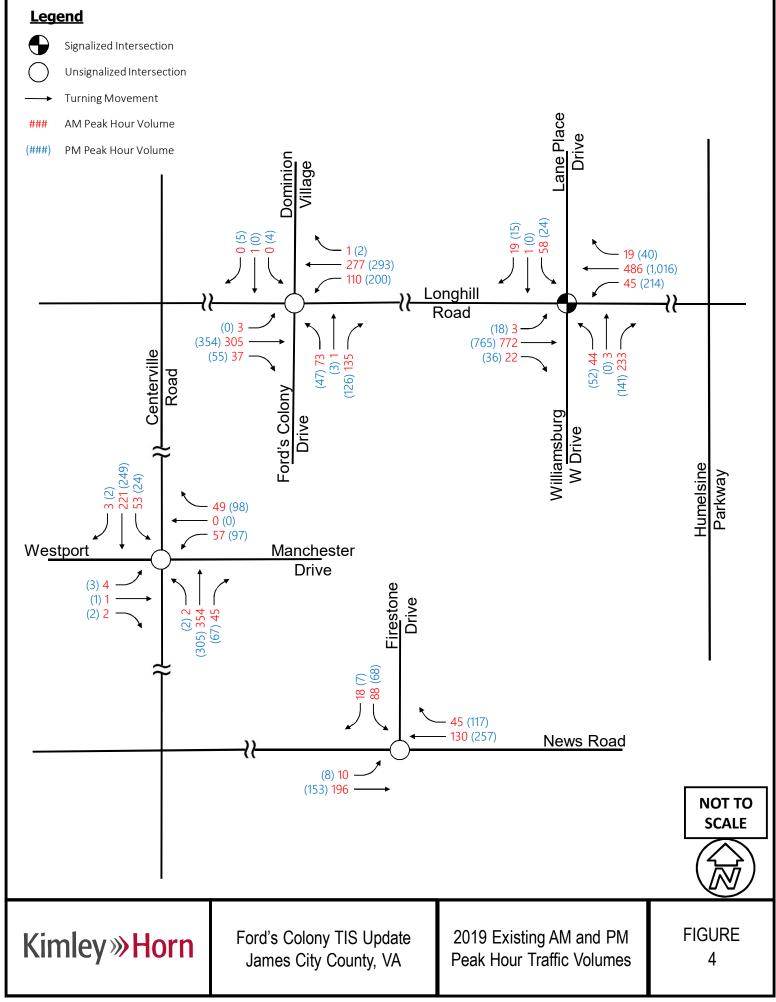
#### 3.6 EXISTING TRAFFIC

Consistent with the previously completed TIS, AM and PM peak conditions were analyzed to evaluate potential impacts of the proposed development. To coincide with these times, turning movement counts (TMC) which included vehicular, truck, and pedestrian traffic were collected at the following study area intersections on June 8, 2017:

- Longhill Road at Williamsburg W. Drive/Lane Place Drive
- Longhill Road at Fords Colony Drive
- Centerville Road at Manchester Drive
- News Road at Firestone Drive

The uniform peak hours for these intersections were found to be 7:30 AM to 8:30 AM and 4:45 PM to 5:45 PM for the AM and PM peak hours, respectively. It should be noted that peak hour volumes were not adjusted and/or balanced, due to the location and number of access driveways between study area intersections.

Each movement of the 2017 TMCs were grown using annualized growth rates detailed in **Section 6.1** to calculate the 2019 volumes for each intersection. The AM and PM peak hour turning movement volumes from the abovementioned data sources are shown in **Figure 4**. Detailed count data is also provided in **Appendix B**.



# 4 TRIP GENERATION

To determine the anticipated number of trips generated by the proposed residential condominium/townhouse development, the *Trip Generation Manual*, published by the Institute of Transportation Engineers [ITE], 10<sup>th</sup> Edition, 2017 was used to estimate the new traffic on the adjacent roadway network.

The proposed development will consist of 60 residential condominium/townhouse units. Based on this land use type and intensity, trip generation estimates were calculated as shown in **Table 2**.

Table 2: ITE Trip Generation Summary (10th Edition)

ITE Code	ITE Description	Density		AM	Peak H	our	PM Peak Hour		
				Enter (23%)		Total	Enter (63%)	Exit (37%)	Total
220	Multifamily Housing (Low-Rise)	60 Dwelling Units	413	7	22	29	23	14	37

Source: ITE Trip Generation Manual, 10th Edition

The total amount of traffic generated by the proposed development is anticipated to consisted of 413 daily trips, of which 29 trips will occur during the AM peak and 37 trips will occur during the PM peak hour, respectively. No pass-by or internal capture rate reductions were included as part of this analysis.

## 5 TRAFFIC DISTRIBUTION AND ASSIGNMENT

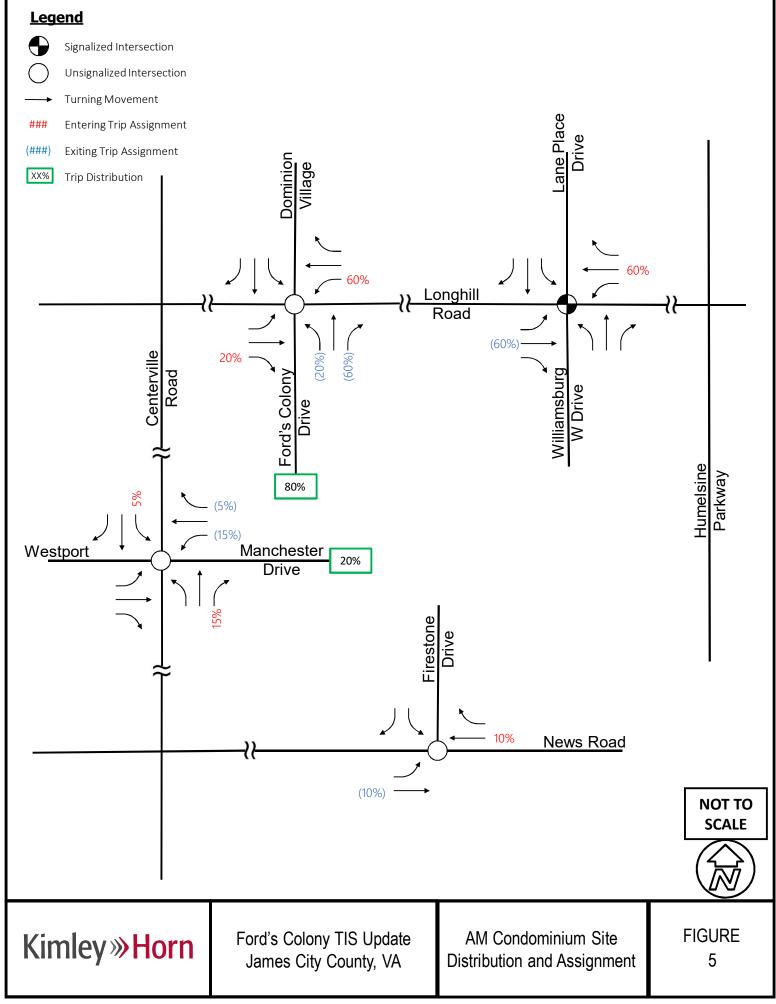
The directional distribution and assignment of trips generated by the proposed redevelopment was based on a review of existing traffic volumes, site access, the *Ford's Colony Traffic Impact Study 2003-2004 Update*, and an understanding of travel patterns within the study area. From this review and conversations with VDOT, the following traffic distributions were derived for the analysis of the study area:

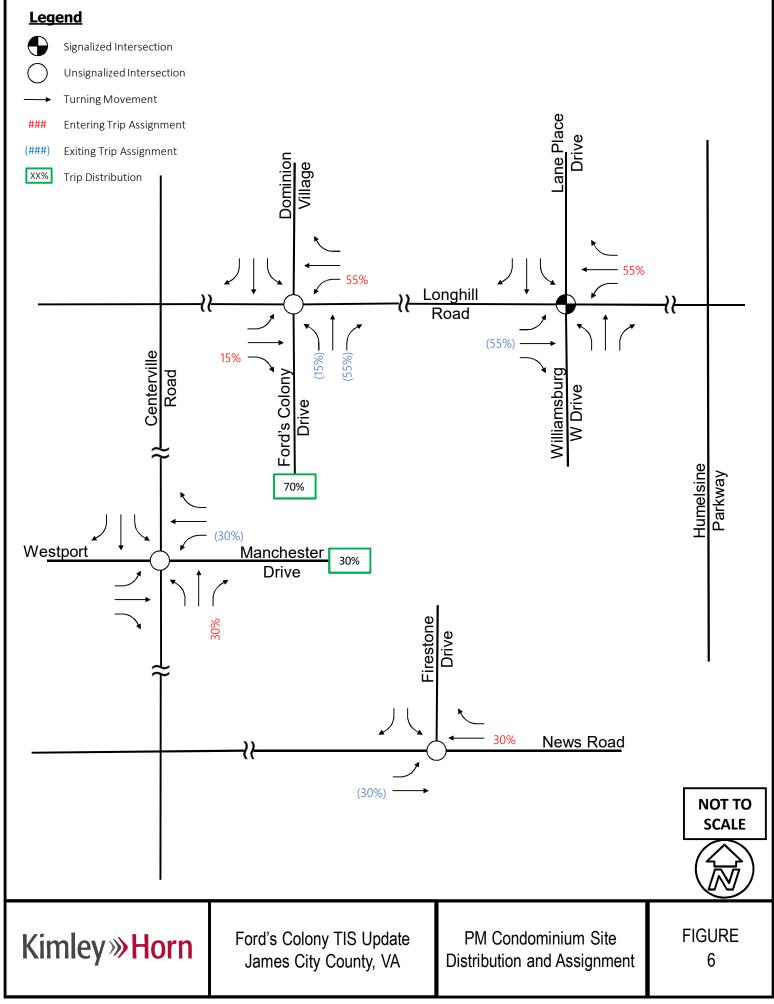
- AM Peak Hour
  - 80% of the trips generated will travel to/from the north on Ford's Colony Drive
    - 60% to/from the east on Longhill Road
    - 20% to/from the west on Longhill Road
  - o 20% of the trips generated will travel to/from the west on Manchester Drive
- PM Peak Hour
  - o 70% of the trips generated will travel to/from the north on Ford's Colony Drive
    - 55% to/from the east on Longhill Road
    - 15% to/from the west on Longhill Road
  - 30% of the trips generated will travel to/from the west on Manchester Drive

Based on conversations with VDOT, this TIS assumes site trips will not utilize the Williamsburg W. Drive or Firestone Drive access points due to the distance to/from the proposed development site.

As shown previously in and consistent with the previous TIS, the proposed development site will not introduce any new access points to existing/adjacent study area roadways.

Detailed AM and PM peak hour trip distribution and trip assignment is shown in **Figure 5** and **Figure 6**, respectively.





## 6 PROJECTED TRAFFIC VOLUMES

Based on discussions with James City County, the following existing and horizon year scenarios were agreed to and analyzed to determine future impacts of the proposed development based on the anticipated schedule for construction and opening:

- Scenario 1 2019 Existing traffic conditions
- Scenario 2 2021 Opening Year No-Build conditions Build-out year traffic conditions <u>with</u> only background development trips applied (i.e., approved adjacent development traffic)
- Scenario 3 2021 Opening Year Build conditions Build-out year traffic conditions <u>with</u> background development trips applied <u>plus</u> traffic volumes generated by the proposed development
- Scenario 4 2027 Opening Year +6 years No-Build conditions Build-out year traffic conditions with only background development trips applied (i.e., approved adjacent development traffic)
- Scenario 5 2027 Opening Year +6 years Build conditions Build-out year traffic conditions <u>with</u> background development trips applied <u>plus</u> traffic volumes generated by the proposed development

#### 6.1 BACKGROUND TRAFFIC GROWTH

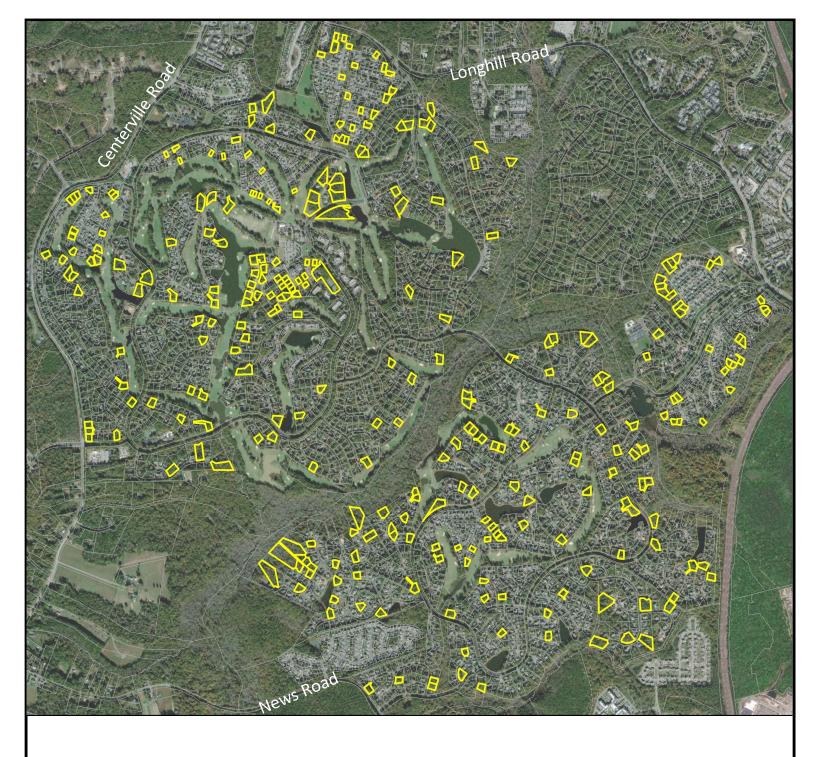
Background traffic growth rates were determined by using rates developed as part of the *Longhill Road Corridor Study*, completed and adopted in October 2014, and historical traffic volume trends over the previous six (6) years (i.e., 2011 to 2016) from VDOT data.

- Longhill Road 2.0% per year (consistent with *Longhill Road Corridor Study*)
- Centerville Road 2.5% per year
- News Road 2.0% per year

Since November 2019, approximately 2,851 of 3,250 total units have been built within Ford's Colony with a remainder of 399 unbuilt units, as shown in **Figure 7**. The 399 unbuilt units are as follows:

- 295 platted, unbuilt lots
- 60 un-platted Eaglescliff development lots
- 30 un-platted Windsor development lots
- 14 un-platted Ford's property lots

With the addition of 90 units, Ford's Colony has a remainder of 309 units available. The additional 90 units consist of 60 units in the Eaglescliff development (described in Chapter 4) and 30 units in the Windsor development (described in Section 6.1.1.). The aforementioned traffic growth rates were applied to all intersection movements to account for the trip generation potential of the remaining 309 units; thus, accounting for the full build-out of Ford's Colony.





Kimley»Horn

Ford's Colony TIS Update James City County, VA

Ford's Colony Unbuilt Lots

FIGURE 7

#### 6.1.1 OTHER DEVELOPMENT TRAFFIC

Since the 2004 study was completed, there has been minimal to no residential development/expansion occurring within the Ford's Colony Master Plan development. However, three additional developments adjacent to Ford's Colony were provided by James City County for inclusion in the analysis of future traffic operational conditions: The Villages at Ford's Colony (The Villages), Westport Subdivision at Ford's Colony (Westport), and Windsor Property (Windsor).

Per the *News Road Corridor Traffic Forecast and Analysis*, completed in April 2008, the Villages at Ford's Colony has a proposed entrance on the northbound approach of the News Road at Firestone Drive intersection. The Westport development's entrance is currently located on the eastbound approach (west leg) of the Manchester Drive at Centerville Road intersection.

In addition, the Windsor development is anticipated to be located along Ford's Colony Drive across from N. Knob Hill. Future traffic volumes associated with these other approved developments were accounted for and calculated using the most recent version of the *ITE Trip Generation Manual*.

Trip generation densities as well as the trip distribution and assignment percentages for The Villages and Westport developments will remain consistent with the *News Road Corridor Traffic Forecast and Analysis*. The trip distribution and assignment for the Windsor property will be consistent with the proposed redevelopment as detailed in **Chapter 5**.

The Villages development will consist of attached and detached senior adult housing, congregate care housing, assisted living, and a nursing home, for a total of 739 units. The trip generation was calculated, and the results are shown in **Table 3.** The total amount of traffic generated by The Villages development consisted of 2,078 daily trips, of which 101 and 161 trips will occur during the AM and PM peak hours, respectively.

Table 3: ITE Trip Generation Summary for The Villages at Ford's Colony Development

ITE	ITE Description	Density	Unit Daily		AM	l Peak H	our	PIV	1 Peak H	our
Code	TTE Description	Delisity	Onit	Daily	Enter	Exit	Total	Enter	Exit	Total
251	Senior Adult Housing - Detached	38	Dwelling Units	240	7	13	20	14	9	23
252	Senior Adult Housing - Attached	168	Dwelling Units	650	12	21	33	24	19	43
253	Congregate Care Housing	390	Dwelling Units	788	13	9	22	32	28	60
254	Assisted Living	83	Beds/Rooms	216	10	6	16	8	14	22
620	Nursing Home	60	Beds/Rooms	184	7	3	10	4	9	13
	Total	739		2,078	49	52	101	82	79	161

Note: It is assumed that there is one bed per room, and therefore each bed is considered one dwelling unit.

The Westport development will consist of 43 units of single-family detached housing. The trip generation estimates for the proposed Westport development are shown in **Table 4**. The total amount of traffic generated by the Westport development consisted of 478 daily trips, of which 35 will occur during the AM peak hour and 45 will occur during the PM peak hour, respectively.

Table 4: ITE Trip Generation Summary for Westport Subdivision at Ford's Colony Development

ITE	ITE Description	ITE Description Density Unit Da		Daily	AM	l Peak H	our	PM Peak Hour		
Code		Delisity	Unit	Daily	Enter	Exit	Total	Enter	Exit	Total
210	Single-Family Detached Housing	43	Dwelling Units	478	9	26	35	28	17	45

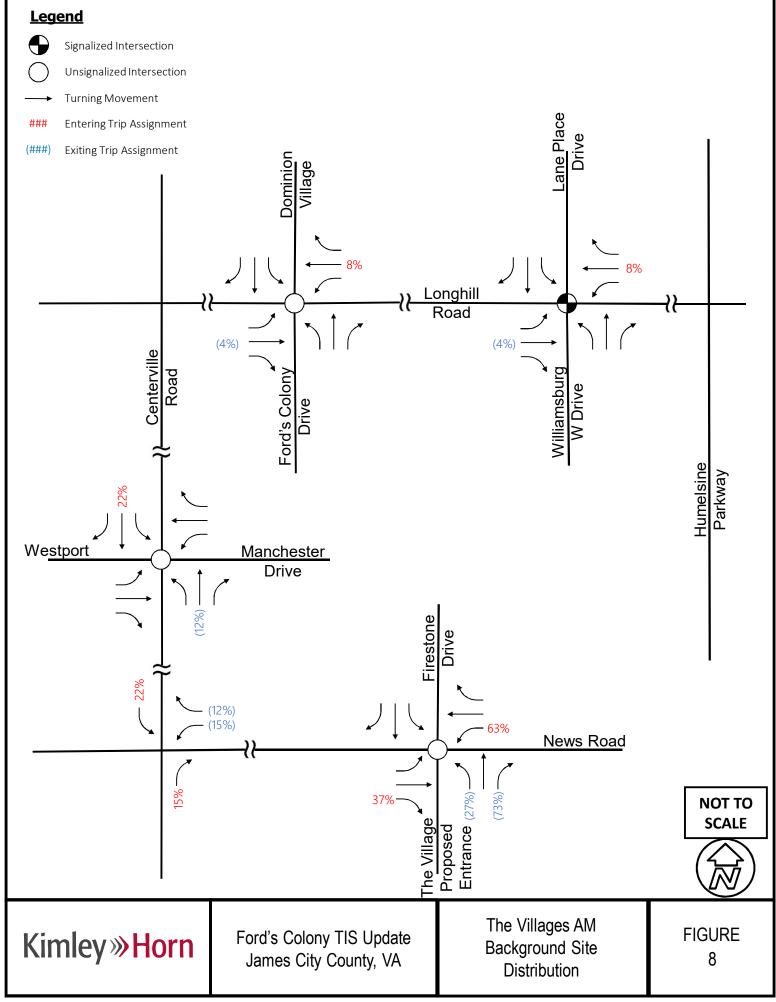
The Windsor development will consist of 30 units of multifamily attached housing. The trip generation estimates for the proposed Windsor development are shown in **Table 5.** The total amount of traffic generated by the Windsor development consisted of 186 daily trips, of which 15 will occur during the AM peak hour and 20 will occur during the PM peak hour, respectively. **Figure 8** through **Figure 13** illustrate the approved development site trip distributions and assignments.

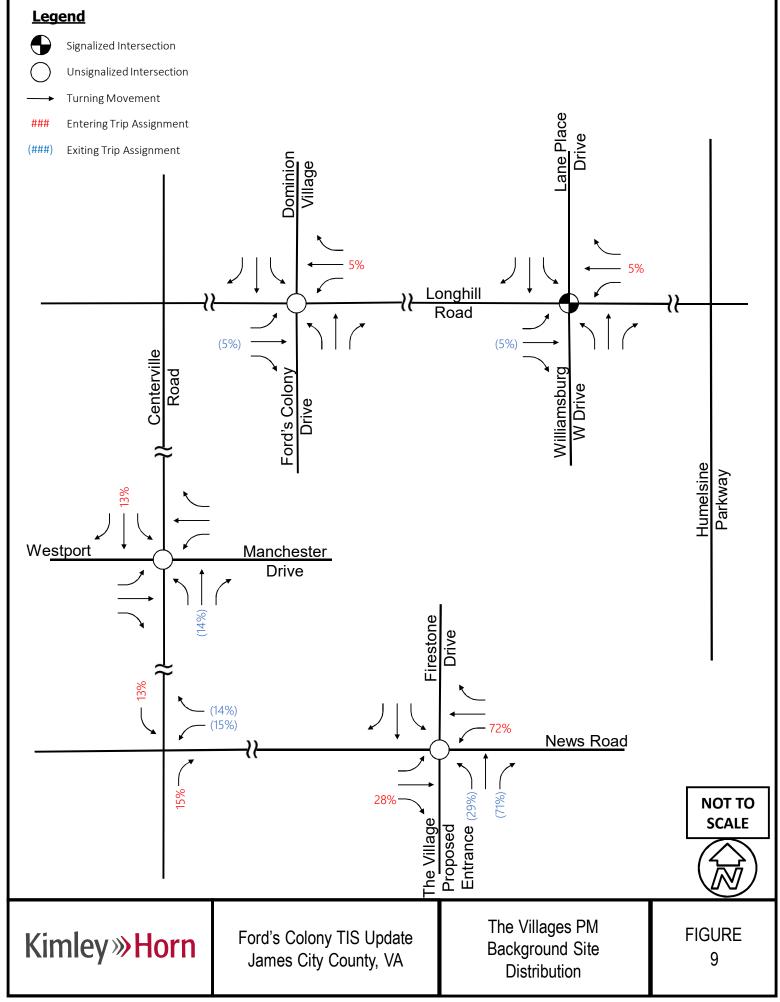
Table 5: ITE Trip Generation Summary for Windsor Development

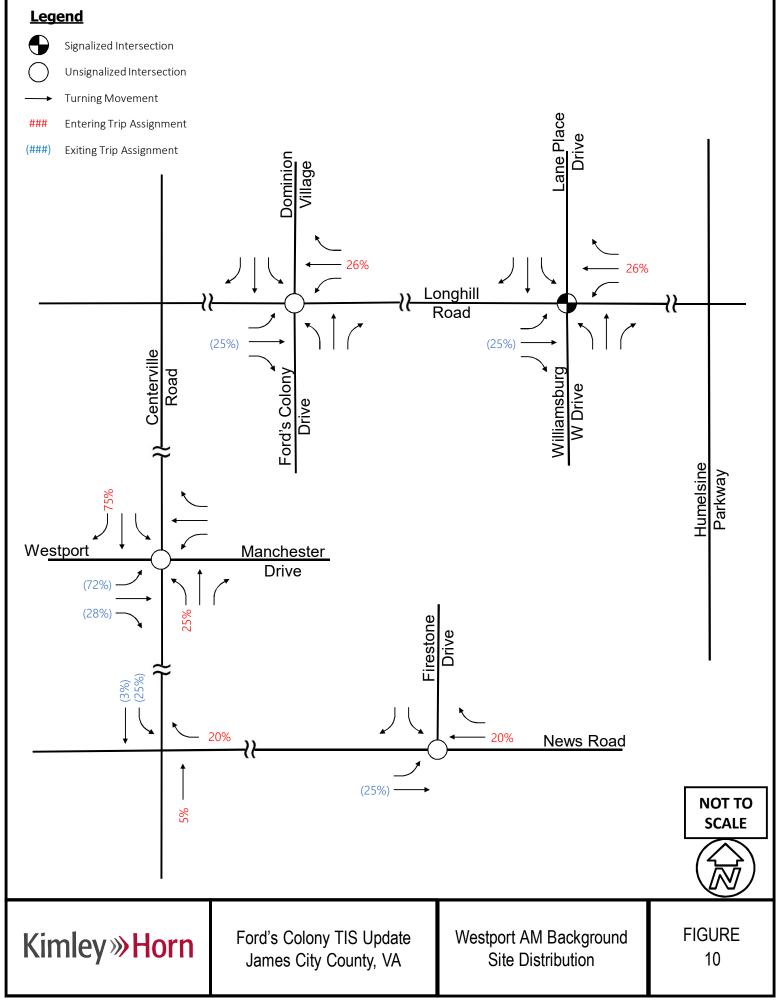
ITE	ITE Description	Density	Unit	Unit Daily	AM	Peak H	our	PIV	1 Peak H	lour
Code	THE Description	Delisity	Offic	Daily	Enter	Exit	Total	Enter	Exit	Total
220	Multifamily Housing (Low-Rise)	30	Dwelling Units	186	3	12	15	13	7	20

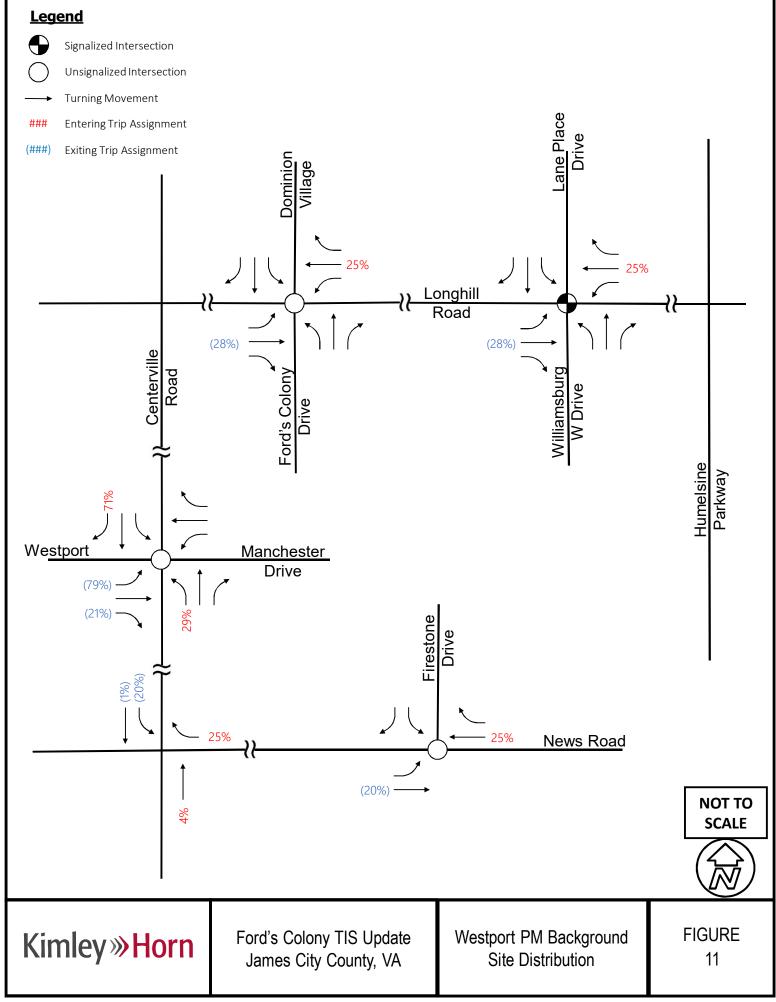
#### 6.2 TOTAL TRAFFIC

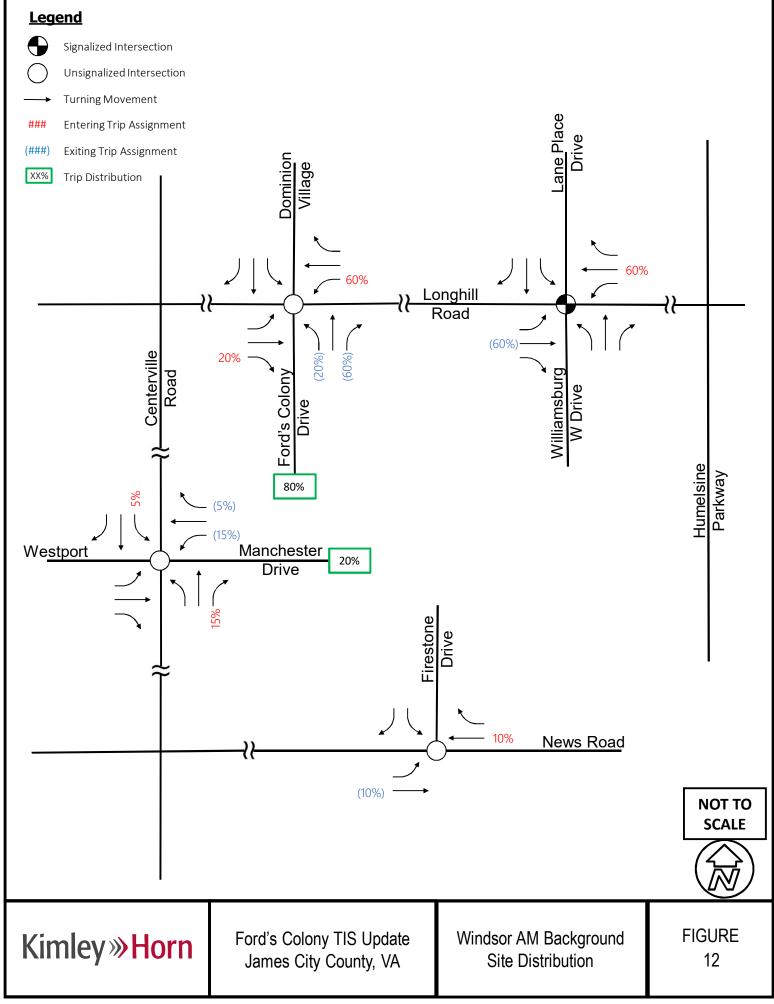
Traffic associated with the proposed residential condominium/townhouse development was added to the future background traffic volumes as well as the approved development traffic volumes to develop the total traffic volumes for 2021 and 2027 future Build conditions. **Figure 14** through **Figure 17** illustrate the peak hour traffic volumes used in the analysis of future conditions (i.e., No-Build and Build). Worksheets detailing the volumes for the study area intersections are provided in **Appendix C**.

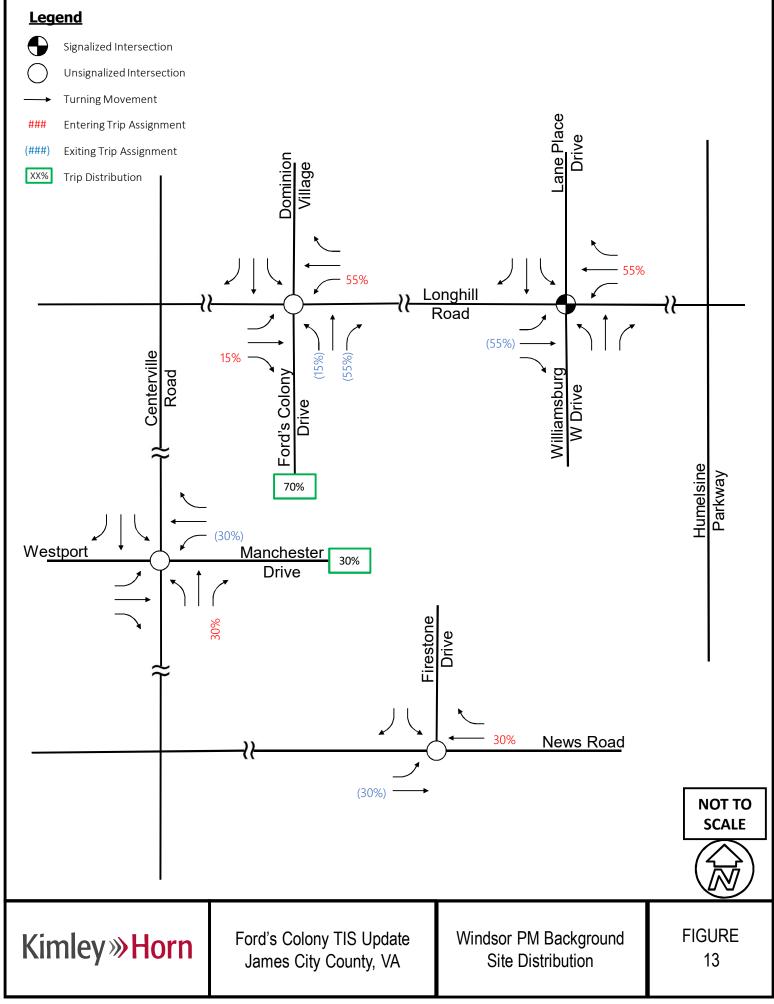


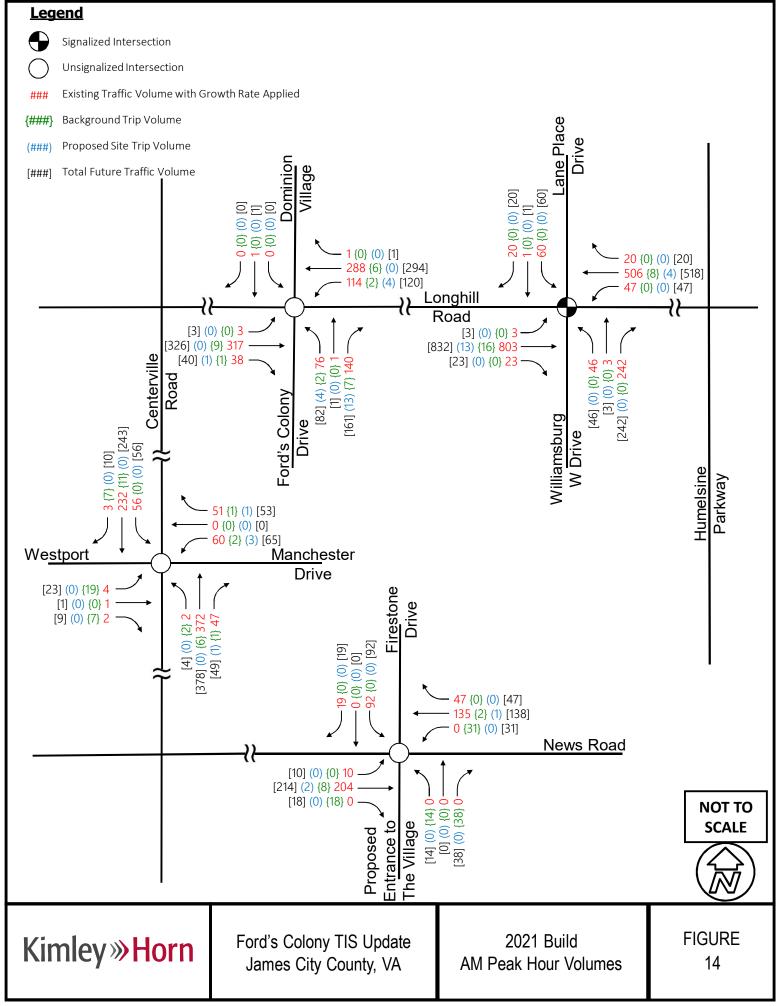


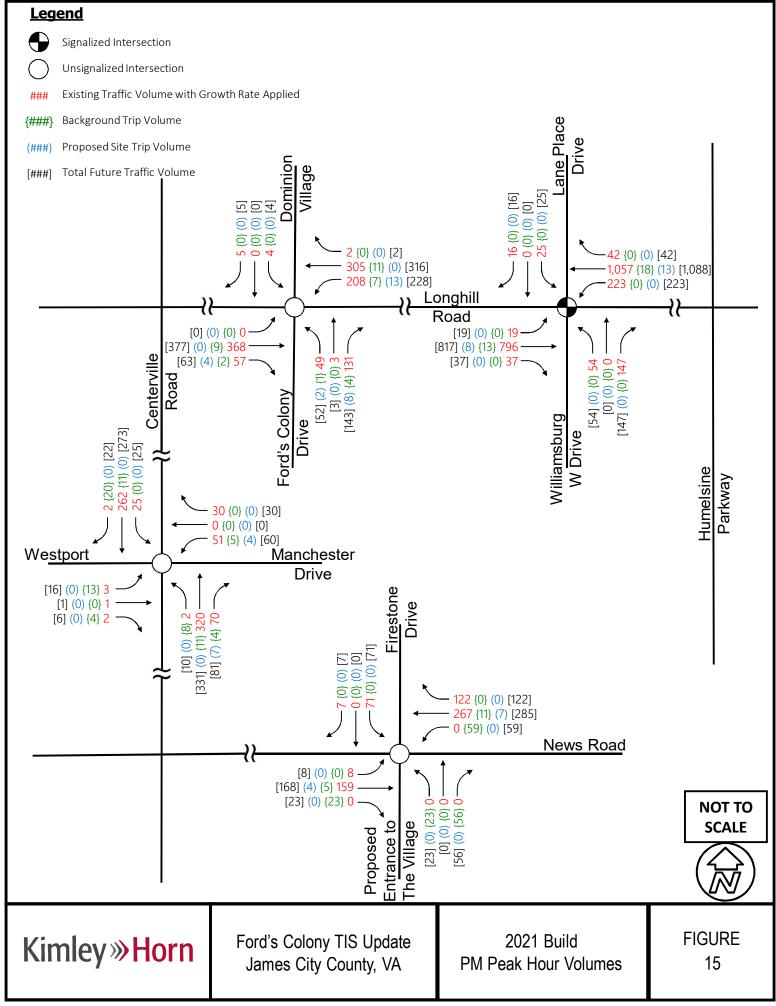


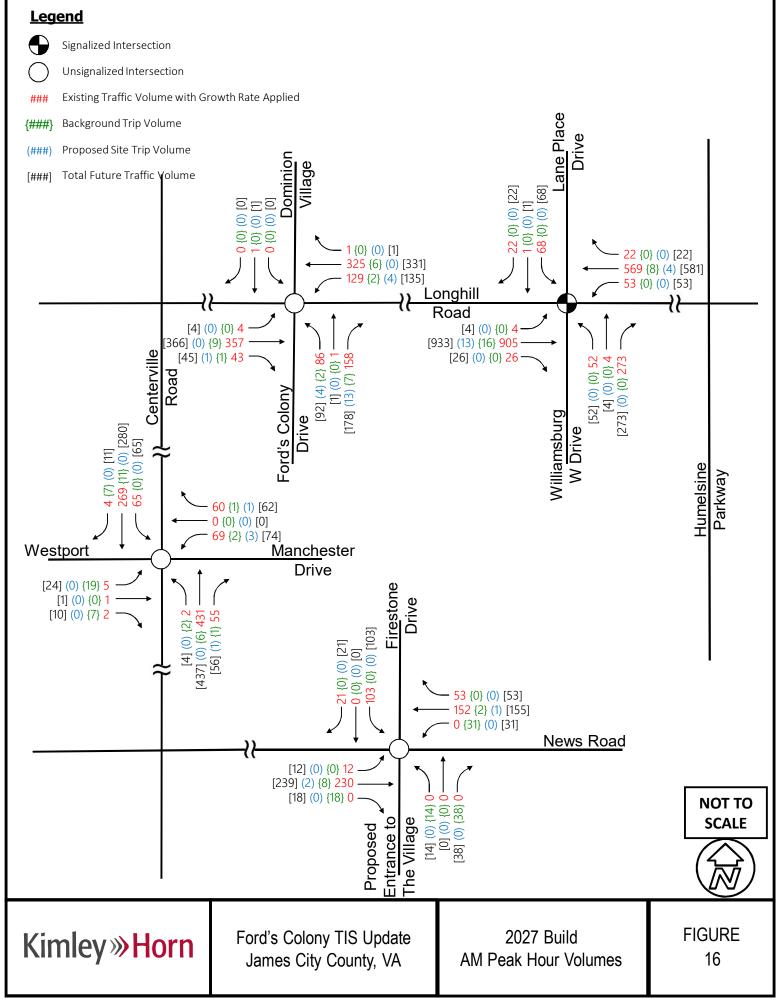


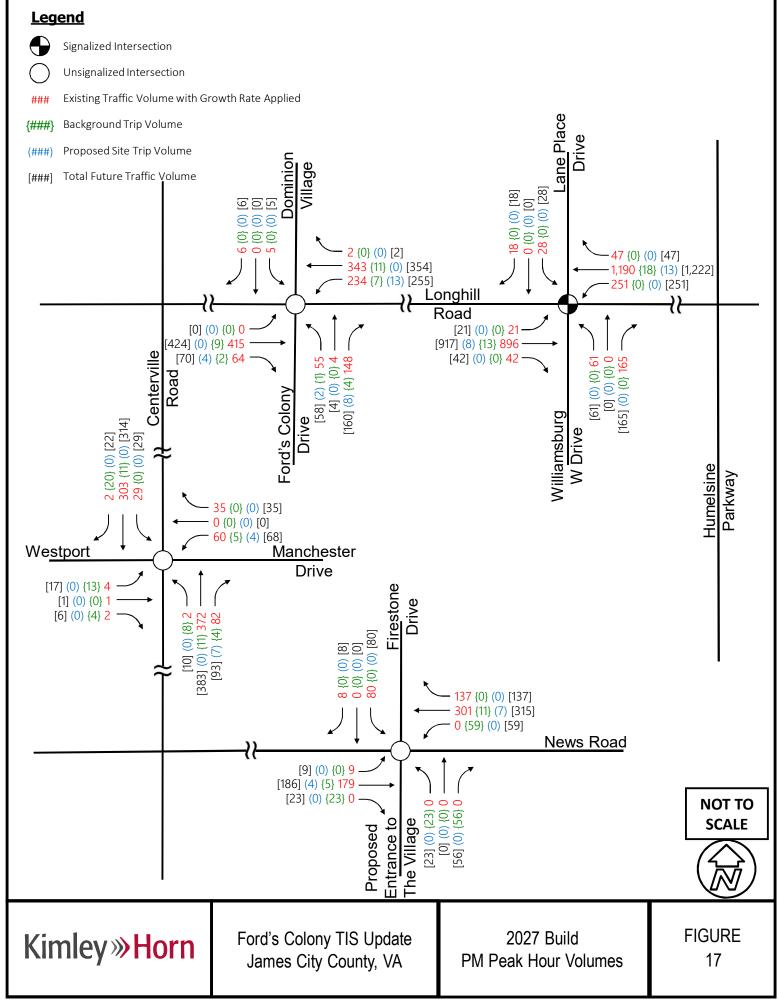












#### 7 TRAFFIC ANALYSIS

The traffic analysis for the proposed condominium/townhouse development as well as the improvements outlined in the proffers consisted of right-turn lane warrants, traffic signal warrants, and intersection operations. Analyses of study area intersections for AM and PM peak hours were performed for the following scenarios:

- 2019 Existing
- 2021 No-Build (background traffic only)
- 2021 Build (background traffic <u>with</u> proposed development trips)
- 2027 No-Build (background traffic only) Includes planned Longhill Road widening and intersection improvements currently under construction
- 2027 Build (background traffic <u>with</u> proposed development trips) *Includes planned Longhill* Road widening and intersection improvements currently under construction

The planned Longhill Road widening and intersection improvements currently under construction included in the study area are shown in **Figure 18**.



Figure 18: Longhill Road Widening and Intersection Improvements

#### 7.1 RIGHT-TURN LANE WARRANT

A right-turn lane warrant analysis was performed for the eastbound approach of Longhill Road at the Fords Colony Drive intersection to assess the need for a full-width exclusive right-turn treatment, as outlined by the proffers. This was conducted in accordance with VDOT right turn-lane warrant analysis guidelines per *Appendix F Access Management Design Standards for Entrances and Intersections*. Detailed data sheets for the turn lane warrant under each scenario are provided in **Appendix D**. Based on these guidelines, **Table 6** illustrates that a full-width, right-turn lane and taper is warranted for the PM peak hour under 2021 Build, 2027 No Build, and 2027 Build scenarios.. Based on these turn-lane warrant analysis findings, it is recommended that a full width right-turn lane be constructed for the eastbound approach Longhill Road at Fords Colony Drive.

Table 6: Summary of Right-Turn Lane Warrant Analysis for Fords Colony Drive at Longhill Road

	Warrant	ts Analysis
Scenario	Right-Turn	Lane Warrant
	AM	PM
Existing (2019)	√ (taper required)	✓ (taper required)
No Build (2021)	✓ (taper required)	✓ (taper required)
Build (2021)	(taper required)	(full-width turn lane and taper required)
No Build (2027)	(taper required)	(full-width turn lane and taper required)
Build (2027)	(taper required)	(full-width turn lane and taper required)

Notes: × - Warrant not met

✓ - Warrant met

#### 7.2 TRAFFIC SIGNAL WARRANT ANALYSIS

Traffic signal warrant analyses were performed for the unsignalized intersection of Longhill Road at Fords Colony Drive and the unsignalized intersection of News Road at Firestone Drive, consistent with the methodologies provided in the *Manual on Uniform Traffic Control Devices* (MUTCD), to evaluate the need for traffic signalization under existing and future traffic conditions. These warrants are based on mainline and minor street traffic volumes, the number of travel lanes, approach turn-lanes, and mainline posted speed limit. According to the MUTCD, a traffic control signal should not be installed unless one or more of the signal warrants are met. The warrants used in this analysis are as follows:

- Warrant 1 (Eight-Hour Vehicular Volume) is satisfied if ONE of the following conditions exists for any eight hours of an average day:
  - Condition A (Minimum Vehicular Volume) volumes meet or exceed the necessary hourly thresholds for any eight hours of an average day. Thresholds may be modified based on vehicle speeds and population of the local community.

- Condition B (Interruption of Continuous Traffic) volumes meet or exceed the necessary hourly thresholds for any eight hours of an average day. Thresholds may be modified based on vehicle speeds and population of the local community.
- Combination of Condition A and B intended to be used where Conditions A and B are not individually met and where volume thresholds may be reduced based on anticipated traffic delay at the intersection.
- Warrant 2 (Four-Hour Vehicular Volume) volumes meet or exceed the necessary hourly thresholds for any four hours of an average day. Thresholds are typically higher than those for Warrant 1 and may be applicable when high traffic volumes are concentrated over a shorter time period (less than eight hours). The thresholds may also be modified based on vehicle speeds and population of the local community
- Warrant 3 (Peak Hour Volume) volumes meet or exceed the necessary hourly thresholds for any one hour of an average day. This warrant should only be applied in unusual cases where an area is expected to discharge a large volume of traffic over a short period of time. Thresholds may be modified based on vehicle speeds and population of the local community.

Under each warrant analysis, existing turning movement volumes were used to determine if the volume thresholds provided in the MUTCD were met. This provides a baseline to establish the potential for needing a signal under current traffic loads. For future No-Build and Build conditions, the signal warrant analysis was performed accounting for future growth in traffic associated with and without the proposed development traffic. For the Longhill Road at Fords Colony Drive intersection, the westbound right-turn volumes were not accounted for as part of this analysis under the existing and future conditions since an exclusive right-turn lane is provided to accommodate this movement. In addition, the northbound right-turn lane volumes on Fords Colony Drive were not included in the signal warrant analysis as drivers are utilizing the 24-foot pavement width to turn right as other vehicles are stopped for the through or left-turn movements. For the News Road at Firestone Drive intersection, the southbound and westbound right-turn vehicles were not accounted for as part of this analysis under the existing conditions. In addition, the northbound right-turn vehicles were not included as part of this analysis for the Villages driveway under the future conditions.

To assign the hourly site traffic for the future warrant analysis, all assumptions and methods (i.e., trip generation, pass-by reduction, distribution, background traffic growth, other development traffic) were followed, with an additional step of applying hourly variations to the daily trip generation total. The hourly variation breakdown for Multifamily Housing (Low-Rise) (220), as provided in the ITE Trip Generation Manual, were used for this purpose, as shown in **Table 7**.

Table 7: Hourly Variations in Residential Traffic

	Average '	Weekday
<del>-</del>	Percent of 24-Hour	Percent of 24-Hour
Time	Entering Traffic	Exiting Traffic
6 am – 7 am	1.6%	5.7%
7 am – 8 am	2.5%	9.0%
8 am – 9 am	3.7%	9.1%
9 am – 10 am	3.7%	6.5%
10 am – 11 am	4.1%	5.5%
11 am – 12 pm	4.5%	5.7%
12 pm – 1 pm	5.3%	5.3%
1 pm – 2 pm	5.4%	5.7%
2 pm – 3 pm	6.5%	5.9%
3 pm – 4 pm	8.1%	6.3%
4 pm – 5 pm	9.8%	6.3%
5 pm – 6 pm	10.8%	6.5%

Source: ITE Trip Generation Manual, 10th Edition

The results of the signal warrant analyses are provided in **Table 8** and **Table 9**, with complete tables outlining the traffic volumes used, in **Appendix D**.

Table 8: Summary of Warrant Analysis for Longhill Road at Fords Colony Drive

		Wa	arrants Analysis		
Scenario	W	arrant 1 (8 Hou	ır)	Warrant 2	Warrant 3
	Condition A	Condition B	Combination (A & B)	(4 Hour)	(1 Hour)
Existing (2019)	×	×	×	×	×
	(0 out of 8)	(4 out of 8)	(0 out of 8)	•	
No Build (2021)	×	×	×	×	×
110 24114 (2021)	(0 out of 8)	(6 out of 8)	(0 out of 8)	•	•
Build (2021)	×	×		×	×
	(0 out of 8)	,	(1 out of 8)	•	•
No Build (2027)	×	/	×	<b>✓</b>	×
110 2 3 114 (2021)	(0 out of 8)	,	(1 out of 8)	•	•
Build (2027)	×	<b>✓</b>	×	<b>✓</b>	×
244 (2021)	(0 out of 8)		(3 out of 8)		

Notes: ➤ - Warrant not met

✓ - Warrant met

(# out of 8) – Number of hours that could meet the 8-hour warrant requirement

The warrant analysis for the Longhill Road at Fords Colony Drive intersection indicate that under the Existing and No Build future scenarios, Condition A, Condition B, and the Combination (A & B) Condition were not met except for the 2021 Build, 2027 No Build, and Build models, where Condition B was met.

Warrant 2 (4-hour volume) was not met under Existing and 2021 future scenarios for the Longhill Road at Fords Colony Drive intersection but was met for 2027 No Build and Build scenarios. From the warrant analysis, the traffic volumes on Longhill Road did not meet the minimum thresholds under Condition A and a maximum of 3 out of 8 volumes were met for the Combination Warrant. Since the intersection does not meet both Warrant 1 Condition A and Condition B or the Combination as well as low demand on Longhill Road, the traffic signal is not warranted and not recommended for further consideration as a part of the Fords Colony Master Plan.

Table 9: Summary of Warrant Analysis for News Road at Firestone Drive

		Wa	rrants Analysis		
Scenario	W	arrant 1 (8 Hou	r)	Warrant 2	Warrant 3
	Condition A	Condition B	Combination (A & B)*	(4 Hour)	(1 Hour)
Existing (2019)	(0 out of 8)	(0 out of 8)	<b>×</b> (0 out of 8)	×	×
No Build (2021)	× (1 out of 8)	(0 out of 8)	<b>×</b> (3 out of 8)	×	×
Build (2021)	(1 out of 8)	(0 out of 8)	× (3 out of 8)	×	×
No Build (2027)	(6 out of 8)	(3 out of 8)	<b>×</b> (6 out of 8)	×	×
Build (2027)	(6 out of 8)	(3 out of 8)	× (7 out of 8)	×	×

Notes: × - Warrant not met

✓ - Warrant met

(# out of 8) - Number of hours that could meet the 8-hour warrant requirements

The warrant analysis for the News Road at Firestone Drive indicated that under existing, No Build future, and Build future scenarios, conditions for Warrant 1 were not met. Under these scenarios, traffic generated by the current developments in Ford's Colony and approved developments were not high enough to meet the volume thresholds. Additionally, the 4-hour volume warrant was not met under existing conditions the News Road at Firestone Drive intersection. When taking into consideration the future site traffic generated by the background development and proposed residential condominium/townhouse development, a traffic signal is not warranted at the intersection for News Road at Firestone Drive.

#### 7.3 PROFFER SCHEDULE OF IMPROVEMENTS

In addition to the turn lane and signal warrant analyses, the proffers identified the schedule of improvements based on the number of residential building permits when the hotel was or was not built. Since the hotel has not been constructed, the number of remaining undeveloped parcels was identified as 399 undeveloped within Ford's Colony out of the total 3,250 parcels identified from the previously completed TIS. The 399 undeveloped units consist of the following:

- 295 platted, unbuilt lots
- 60 un-platted Eaglescliff development lots
- 30 un-platted Windsor development lots

14 un-platted Brian Ford's property lots

Therefore, 2,841 parcels have been developed to date. **Table 10** illustrates the schedule of improvements, satisfaction of schedule, and construction of improvements.

Under Proffer Item A, the Longhill Road at Fords Colony Drive intersection satisfies the number of units, but the intersection of News Road at Firestone Drive does not satisfy the number of units. The Proffer Item E improvement is satisfied by the number of units constructed. Although several of the schedule of improvements are satisfied by the number of units, traffic operations and warrant analyses results proceed this schedule of improvements as the traffic operations are acceptable and warrants are not met for signalization.

Table 10: Proffered Improvements Triggered by Ford's Colony Permits

Proffer Item	Proffer Improvement	Residential Building Permits if Hotel Not Built	Number of Units Constructed	Number of Units Satisfied	Improvement Constructed	Improvement for Full Build Out (3,250 Units)
A. Installation	of Traffic Signals			•		
i	Longhill Road at Williamsburg W. Drive	2,236	2,851	✓	✓	-
ii	News Road at Firestone Drive	3,250	2,851	Х	Х	Х
iii	Longhill Road at Fords Colony Drive	947	2,851	✓	X	Х
B. Installation	of Left and Right-Turn Lanes					
	News Road at Firestone Drive (Left-Turn)	0.000	2,851	✓	✓	-
ı	News Road at Firestone Drive (Right-Turn)	2,603	2,851	✓	✓	-
	Centerville Road at Manchester Drive (Left-Turn)	0.4=	2,851	✓	✓	-
ii	Centerville Road at Manchester Drive (Right-Turn)	947	2,851	✓	✓	-
C. Construct	Williamsburg W. Drive	<u> </u>		l	•	I
i.	Establish right-of-way for four-lane road to Longhill Road	1,545	2,851	✓	✓	-
ii.	Construct two-lane private road Williamsburg W. Drive to Longhill Road	1,545	2,851	✓	✓	-
iii.	If VDOT does not permit construction of an intersection with Route 199 as set forth in paragraph below, widen the initial two-lane road to a four-lane road	2,928	2,851	×	X	х
D. Longhill Re	oad at Williamsburg W. Drive Intersection Improvements					
i.	Construct intersection of Williamsburg W. Drive and Longhill Road with: Right-turn lane on Williamsburg W. Drive onto Longhill Road; Right turn-lane on Longhill Road onto Williamsburg W. Drive; and left-turn lane on Longhill Road onto Williamsburg W. Drive	1,545	2,851	<b>~</b>	1	-
ii.	Add two through lanes on Longhill Road	2,603	2,851	<b>✓</b>	Under construction	-
iii.	Add lane for dual left-turn lanes on westbound Longhill Road onto Williamsburg W. Drive	2,928	2,851	✓	X	Х
iv.	Add lane for dual right-turn on Williamsburg W. Drive onto Longhill Road	3,250	2,851	Х	X	Х
E. Installation Drive	of right-turn lane on Longhill Road onto Ford's Colony	947	2,851	<b>✓</b>	Х	<b>√</b>

#### 7.4 INTERSECTION OPERATIONAL ANALYSIS

Operational analyses were conducted for the study area intersections for the AM and PM peak hours under the existing and future scenarios. The existing signal timings, including cycle lengths, clearance intervals, and splits, were provided by VDOT. Under 2019 No Build and Build conditions, all signal timings, coordination offsets, and phasing were optimized. Additionally, splits were generally kept similar between scenario as well, with only minor changes made to compensate for additional site traffic.

In addition, the peak hour factor (PHF) used for the existing (2019) conditions represents the actual PHF based on recent traffic count data. Per VDOT's Traffic Operations and Safety Analysis Manual (TOSAM) guidance, PHFs less than 0.92 should be adjusted up to 0.92 for all future analyses. Therefore, under future conditions, the intersections with PHFs less than 0.92 were adjusted up to 0.92 for this purpose of this study.

Analyses were completed to determine the operating characteristics of the study area intersections using *Synchro Professional 10.0* modeling software, which uses methodologies contained in the 2010 Highway Capacity Manual (HCM) [TRB Special Report 209, 2000]. The intersection operational analysis inputs and analysis methodologies were consistent with VDOT's TOSAM. Intersection turning movement counts were used with information about the number of lanes, current traffic control, and signal timings to determine the operational conditions of each study area intersection. Level of service (LOS) is reported for each of the study area intersections.

LOS describes the amount of traffic congestion at an intersection or on a roadway and ranges from A to F (A indicating a condition of little to no congestion and F a condition with severe congestion, unstable traffic flow, and stop-and-go conditions). LOS is based on the average delay experienced by all traffic using the intersection during the busiest (peak) 15-minute period. Generally, LOS A through LOS D are considered acceptable. Delay and associated LOS for both signalized and unsignalized intersections are reported from the Synchro analysis. In the LOS/delay tables for each of the study area intersections, values highlighted in "bold" represent movements operating at LOS E or worse. **Table 11** shows the corresponding thresholds in delay for unsignalized and signalized intersections.

The queuing results represent the maximum simulated queues for each movement as they compare to the effective storage lengths. Effective storage lengths represent the amount of distance available to vehicles to queue without generally impacting the adjacent lanes and consist of the full width storage, plus half of the taper distance. By using the effective storage, vehicles that can use a portion of the taper length as additional room for storage can be accounted for. All traffic models were developed and analyzed with the effective storage lengths coded into the network. Values highlighted as "bold" represent queue lengths that exceed the available storage lengths/spill back to an upstream intersection. As part of the queuing analysis, "percent blocking" was noted in instances where queues impact adjacent turnand/or through-lanes. This percentage represents the approximate amount of time during the peak hour when a lane was observed to be blocked (e.g., "10% blocking" indicates that during the peak hour, the turn-lane storage was exceeded and impacted 10 percent of the adjacent lane volume). The results are presented in the following summaries and supporting calculations are presented in **Appendix E**.

Table 11: LOS Control Delay Thresholds

LOS	Signalized Intersections Control Delay Per Vehicle [sec/veh]	Unsignalized Intersections Average Control Delay [sec/veh]	Relative Delay			
	≤ 10	≤ 10				
А	Free-flow traffic operations at Vehicles completely unimpede Minimal delay at signalized in	ed in ability to maneuver.				
	> 10 – 20	> 10 – 15				
В	Reasonably unimpeded traffic speeds. Vehicle maneuverab traffic delays.		Short Delays			
	> 20 – 35	> 15 – 25				
С	Stable traffic operations. Land restricted. Travel speeds redufflow travel speeds. Longer in	uced to half of average free				
	>35 – 55	> 25 – 35				
D	Small increases in traffic flow Delays likely attributable to inc progression and adverse timir	crease traffic, reduced signal	Moderate Delays			
	>55 – 80	> 35 – 50	-			
E	Significant delays. Travel specaverage free flow travel speca					
	> 80	> 50				
F	Extremely low speeds. Intersidelays. Extensive traffic queu		Long Delays			

Source: Highway Capacity Manual, Transportation Research Board, Washington, D.C., 2010

The following sections summarizes each study area intersection's operations as it relates to vehicle traffic demand for the analysis scenarios. Results are presented in **Table 12** through **Table 19** and **Figure 19** through **Figure 28**.

#### 7.4.1 LONGHILL ROAD AT WILLIAMSBURG W. DRIVE/LANE PLACE DRIVE

Results of the capacity and queuing analysis for this signalized intersection are shown in **Table 12** and **Table 13**. Under existing and future conditions, the AM and PM peak hours are anticipated to experience an overall intersection LOS D or better with individual movements also expected to operate at LOS D or better. The overall intersection LOS improves to LOS C or better under 2027 No-Build and Build conditions due to the Longhill Road widening improvements.

Queuing results indicate that the intersection does not currently, nor is it projected to experience significant queuing or blocking. **Table 13** does show that the westbound left-turn and right-turn lanes have the potential to periodically meet or exceed its available storage length during the PM peak hour under 2019 Existing, 2021 No Build, and 2021 Build conditions. However, this is attributed to the adjacent through-lane stacking up and blocking access to this turn lane, and not due to the capacity of the turn lane. It has been observed with the SimTraffic software, that maximum queues can be recorded when vehicles are blocked from being able to enter a turn lane, because as soon as a vehicle is able to enter the turn lane, it meets the speed thresholds that the software uses to record maximum queue, which always happens at the back of the turn lane (i.e., 250 feet in this case).

Table 12: Longhill Road at Williamsburg W. Drive/Lane Place Drive Intersection Level of Service

					Level of Se	rvice per N	Movement	by Approa	ch (Delay	in sec/veh)				
Scenario	Overall LOS		Eastbound		·	Westbound	d	1	Northboun	d	Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
						AM Pea	k Hour							
2019	C (28.5)	A (9.8)	C (33.7)	B (10.9)	B (17.9)	B (14.5)	A (9.4)		) 9.7)	D (38.5)		D (44.0)		
Existing	(28.5)		C (33.0)			B (14.6)			D (38.7)			D (44.0)		
2021 No Build	C (27.8)	A (9.3)	C (33.0)	B (10.1)	B (17.2)	B (14.1)	A (9.0)		O 3.0)	D (37.5)		D (44.8)		
No bana	(27.0)		C (32.3)			B (14.1)			D (37.6)			D (44.8)		
2021 Build	C (28.9)	A (9.4)	D (35.2)	B (10.1)	B (17.7)	B (14.1)	A (9.0)		O 3.0)	D (37.6)		D (44.8)		
Bullu	(20.5)		C (34.5)			B (14.2)		D (37.7)				D (44.8)		
2027	C (24.0)	B (10.8)	B (19.1)	B (13.0)	B (12.7)	B (13.8)	B (11.2)		C 2.5)	D (35.2)		D (47.2)		
No Build	(21.0)		B (18.9)			B (13.6)		D (34.7)			D (47.2)			
2027 Build	C (21.1)	B (10.8)	B (19.2) B (19.0)	B (12.9)	B (12.8)	B (13.8) B (13.6)	B (11.2)		C 2.6) D (35.0)	D (35.5)		D (47.5) D (47.5)		
			В (19.0)		PM Peak Hour			D (35:0)				D (47.3)		
1		С	С	В	С	D PM Pea	A A	D D				D		
2019 Existing	C (31.2)	(20.46)	(26.0)	(10.8)	(25.7)	(36.1)	(7.9)		).9)	(39.0)		(42.9)		
		С	C (25.2)	В	<u> </u>	C (33.5)	Α		D (39.5)	D		D (42.9)		
2021 No Build	D (41.2)	(22.3)	(29.2)	(10.9)	(48.6)	D D (48.6) (51.4)			2.4)	(40.1)		(44.4)		
	, ,		C (28.3)	1		D (49.5)			D (40.7)			D (44.4)		
2021 Build	D (43.0)	C (22.4)	C (29.6)	B (10.9)	D (52.4)	D (54.2)	A (7.5)		) 2.6)	D (40.2)		D (44.6)		
build	(43.0)		C (28.7)			D (52.4)			D (40.9)			D (44.6)		
2027 No Build	B (17.3)	A (9.0)	B (17.7)	B (12.6)	B (14.4)	B (13.3)	A (8.1)		) 9.3)	D (37.3)		D (42.7)		
INO BUILU	(17.3)	B (17.3)			B (13.4)			D (37.8)			D (42.7)			
2027	B (17.2)	A (9.1)	B (17.7)	B (12.6)	B (14.6)	B (13.4)	A (8.1)		).4)	D (37.4)		D (42.8)		
Build	(17.3)		B (17.3)			B (13.5)			D (38.0)			D (42.8)		

Table 13: Longhill Road at Williamsburg W. Drive/Lane Place Drive Maximum Queuing

				Maxi	mum Qu	eue Lengt	th by Movem	ent (f	eet)							
Scenario	E	astboun	d	٧	Vestboun	d	North	boun	d	So	uthbour	nd				
	LT	TH	RT	LT	TH	RT LT TH		ГН	RT	LT	TH	RT				
Effective Storage Length	250	Cont.	225	250	Cont.	250*	Cont.		225		Cont.					
				Al	M Peak H	lour										
2019 Existing	69	479	164	81	230	41	92		120		112					
2021 No Build	46	563	205	67	206	51	93 13		133 11		115					
2021 Build	66	561	187	65	217	49	92	92 141			124					
2027 No Build	27	233	67	78	157	55	94		168	3 132						
2027 Build	49	264	29	67	166	44	98	98 167			124					
				PI	M Peak H	lour		,								
2019 Existing	148	519	206	250	763	690	97		109		81					
2021 No Build	167	562	224	250	772	777	115		115 83		115		83		88	
2021 Build	209	553	204	250	784	777	140		87		83					
2027 No Build	59	238	33	211	251	73	109		109 1:		110	110 90				
2027 Build	69	262	53	215	244	115	128		103 8		88					

Notes: Results displayed are the average results across 10 microsimulation runs

<sup>\*</sup>denotes the No Build and Build effective storage length associated with the Longhill Road widening

#### 7.4.2 LONGHILL ROAD AT FORDS COLONY DRIVE

Results of the capacity and queuing analysis for this unsignalized intersection are shown in **Table 14** and **Table 15**. Under existing and future conditions, the AM and PM peak hours are anticipated to experience an overall intersection LOS B or better with all movements at LOS D or better with the exception of the following movements/approaches:

- AM Peak Hour
  - o 2019 Existing Northbound Approach (LOS E)
  - o 2027 No Build Northbound Approach (LOS F)
- PM Peak Hour
  - 2021 No Build Northbound Approach (LOS E)
  - 2027 No Build Northbound Approach (LOS F)/Southbound Approach (LOS E)
  - o 2027 Build Northbound Approach (LOS E)/Southbound Approach (LOS E)

Restriping the northbound approach noticeably improves operations under the future 2027 No Build conditions from LOS F during the AM and PM peak hours to LOS D and LOS E respectively, under the 2027 Build conditions. Queuing results also indicate that the intersection is not projected to experience significant queuing or blocking issues. Based on these operational conditions (i.e., existing and future) the existing two-way STOP configuration provides sufficient traffic control for this intersection.

Table 14: Longhill Road at Fords Colony Drive Intersection Level of Service

					Level of Se	rvice per N	Movement	by Approa	ch (Delay i	n sec/veh)				
Scenario	Overall LOS		Eastbound			Westbound	i	ı	Northboun	d	:	Southboun	d	
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
·						AM Pea	ak Hour							
2019	А	Α		A	Α	Α	Α		E			С		
Existing	(8.9)	(7.9)	, ,	.0)	(8.6)	(0.0)	(0.0)	(35.5)				(22.2)		
LAISUIIG	(0.5)		A (0.1)			A (2.4)			E (35.5)			C (22.2)		
2021	Α	Α		Ą	Α	Α	Α		D			С		
No Build	(7.8)	(7.9)		.0)	(8.5)	(0.0)	(0.0)		(30.1)			(21.0)		
	( - ,		A (0.1)	1		A (2.4)			D (30.1)			C (21.0)		
2021	Α	A	Α	Α	Α	Α	Α		C	Α		C		
Build	(5.6)	(7.9)	(0.0)	(0.0)	(8.5)	(0.0)	(0.0)	(19	9.2)	(0.0)		(21.3)		
	` '		A (0.1)	_		A (2.5)			C (19.2)			C (21.3)		
2027	В	A (0.0)		Α	A (8.7)	A (0.0)	A (0.0)		F (55.5)			-		
No Build	(13.5)	(8.0) (0.0)		.0)	(8.7)		(0.0)	F (55.5)				(24.4) C (24.4)		
		А	A (0.1)	Α	Α	A (2.5)	А	D A						
2027	Α	(8.0)	(0.0)	(0.0)	(8.7) (0.0) (0.0) (25.9) (0.0)			C (24.8)						
Build	(7.1)	(0.0)	A (0.1)	(0.0)	(0.7)	A (2.5)	(0.0)	D (25.9)			C (24.8)			
			71(012)				ak Hour	l	B (23.3)			0 (2 1.0)		
		Α		Α	А	A	A		D			С		
2019	Α	(0.0)		.0)	(8.9)	(0.0)	(0.0)		(28.8)			(24.5)		
Existing	(6.5)		A (0.0)		, , ,	A (3.6)			D (28.8)			C (24.5)		
		Α	,	Ą	Α	Α	Α		E			D		
2021	B (0.2)	(0.0)	(0	.0)	(9.2)	(0.0)	(0.0)		(39.7)			(28.3)		
No Build	(8.3)		A (0.0)			A (3.7)			E (39.7)			D (28.3)		
2021	А	Α	Α	Α	Α	Α	Α		С	A (0.0)		D		
Build	(6.1)	(0.0)	(0.0)	(0.0)	(9.3)	(0.0)	(0.0)	(24	(24.7)			(27.3)		
build	(0.1)		A (0.0)			A (3.9)			C (24.7)			D (27.3)		
2027	В	Α		A	Α	Α	Α		F		E (39.8)			
No Build	(17.0)	(0.0)		.0)	(9.6)	(0.0)	(0.0)		(92.0)					
	(,		A (0.0)			A (3.9)			F (92.0)					
2027	Α	A	Α	Α	Α	Α	Α					E		
Build	(8.6)	(0.0)	(0.0)	(0.0)	(9.7)	(0.0)	(0.0)	(38.8) (0.0) (37.7)						
			A (0.0)			A (4.0)			E (38.8)			E (37.7)		

Table 15: Longhill Road at Fords Colony Drive Maximum Queuing

				Maxi	mum Qu	eue Lengt	th by Mo	vement (	feet)				
Scenario		astboun	d	٧	Westbound			Northbound			Southbound		
	LT	TH	RT	LT	TH	RT	LT	TH	RT LT		TH	RT	
Effective Storage Length	200	Со	nt.	225	Cont.	150	Со	nt.	175*		Cont.		
				Al	M Peak H	our							
2019 Existing	14	1	0	70	0	0		192			6		
2021 No Build	5	2	2	77	0	0		209			14		
2021 Build	9	8	0	103	0	0	13	15	93		14		
2027 No Build	7	1	9	84	0	0		291		5			
2027 Build	16	4	8	87	0	0	19	96	132		9		
				PI	M Peak H	our							
2019 Existing	0	2	1	88	4	0		156			17		
2021 No Build	0	3	3	105	0	0		246			22		
2021 Build	0	2	17	125	0	0	15	55	106	26			
2027 No Build	0	3	2	138	0	0	500			26			
2027 Build	0	5	19	134	0	0	35	57	156		24		

Notes: Results displayed are the average results across 10 microsimulation runs
\*denotes the Build effective storage length associated with the Fords Colony Drive widening

#### 7.4.3 CENTERVILLE ROAD AT MANCHESTER DRIVE

Results of the capacity and queuing analysis for this unsignalized intersection are shown in **Table 16** and **Table 17**. Under existing and future conditions, the AM and PM peak hours are anticipated to experience movements with LOS C or better. Queuing results also indicate that the intersection is not projected to experience significant queuing or blocking issues.

Table 16: Centerville Road at Manchester Drive Intersection Level of Service

					Level of Se	rvice per l	Movement	by Approa	ch (Delay i	in sec/veh)	)		
Scenario	Overall LOS		Eastbound			Westboun	d	,	Northboun	d	5	Southboun	d
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
						AM Pe	ak Hour						
2019	А		C (16.0)		C (19.7)		B I 0)	A (7.7)	A (0.0)	A (0.0)	A (8.6)	A (0.0)	A (0.0)
Existing	(2.8)		C (16.0)		(19.7) (11.0) (7.7) C (15.7)		(7.7)	A (0.0)	(0.0)	(8.0)	A (1.6)	(0.0)	
			C		С		В	Α	Α	А	А	A	А
2021	A (3.5)		(18.7)			(11	1.2)	(7.8)	(0.0)	(0.0)	(8.7)	(0.0)	(0.0)
No Build	(3.5)		C (18.7)			C (17.2)			A (0.1)			A (1.6)	
2021	А		С		С		В	А	Α	Α	Α	Α	Α
Build	d (3.6) (18.7)			(22.6)	(11	1.2)	(7.8)	(0.0)	(0.0)	(8.7)	(0.0)	(0.0)	
54.14	(0.0)	C (18.7)			C (17.5)				A (0.1)			A (1.6)	
2027	C (22.6)			D		B	Α	Α	Α	Α	A	Α	
No Build	(4.1)		(22.6)		(29.4)		1.9)	(7.9)	(0.0)	(0.0)	(9.0)	(0.0)	(0.0)
			C (22.6)			C (21.3)	В		A (0.1)			A (1.7)	
2027	Α	(22.7)			D (29.9)		в 1.9)	A (7.9)	A (0.0)	A (0.0)	A (9.0)	A (0.0)	A (0.0)
Build	(4.2)		C (22.7)		(23.3)	C (21.7)		(7.5)	A (0.1)	(0.0)	(3.0)	(0.0)	
			J (==:: /		<u> </u>		ak Hour		(3.12)			A (1.7)	
			В		С		В	А	Α	А	А	А	А
2019	A (1.0)		(13.5)		(15.9)	(10	0.3)	(7.7)	(0.0)	(0.0)	(8.1)	(0.0)	(0.0)
Existing	(1.9)		B (13.5)			B (13.8)			A (0.0)			A (0.7)	
2021	А		С		С		В	Α	Α	Α	Α	А	Α
No Build	(2.4)		(15.6)		(18.2)	(10	0.5)	(7.9)	(0.0)	(0.0)	(8.5)	(0.0)	(0.0)
110 54.114	(2)		C (15.6)			C (15.5)			A (0.2)			A (0.7)	
2021	Α		С		С		В	Α	Α	Α	Α	Α	Α
Build	(2.4)		(15.6)		(18.4)		0.5)	(7.9)	(0.0)	(0.0)	(8.5)	(0.0)	(0.0)
			C (15.6)			C (15.7)		ļ	A (0.2)			A (0.7)	
2027	Α		C (17.0)		C (22.0)		B	A (0.0)	A (0.0)	A (0.0)	A (0.7)	A (0.0)	A (0.0)
No Build	(2.6)		(17.9)		(22.0)		0.9)	(8.0)	(0.0)	(0.0)	(8.7)	(0.0)	(0.0)
			C (17.9)		-	C (18.1)	<u> </u>		A (0.2)			A (0.7)	
2027	Α		C (17.9)		C (22.5)		B ).9)	A (8.0)	A (0.0)	A (0.0)	A (8.7)	A (0.0)	A (0.0)
Build	(2.7)		C (17.9)		(22.3)	C (18.5)	J.J <sub>j</sub>	(6.0)	A (0.2)	(0.0)	(0.7)	A (0.7)	(0.0)
	C (17.9) C (18.5) A (0.2) A (0.7)			,,,,,,									

Table 17: Centerville Road at Manchester Drive Maximum Queuing

				Maxi	mum Qu	eue Leng	th by Mo	vement (	feet)				
Scenario		Eastbound	d	٧	Westbound			Northbound			Southbound		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Effective Storage Length		Cont.		Cont.	14	40	190	Cont.	325	190	Cont.	325	
				A	M Peak H	our							
2019 Existing		30		60	5	4	8	0	0	64	0	0	
2021 No Build		45		72	5	2	9	0	0	60	0	0	
2021 Build		47		68	5	5	7	2	0	64	0	0	
2027 No Build		47		69	5	8	10	2	5	72	0	0	
2027 Build		51		77	5	6	8	2	4	69	0	0	
		PM Peak Hour											
2019 Existing		28		42	4	6	4	0	0	30	0	0	
2021 No Build		40		56	4	6	16	0	0	50	0	0	
2021 Build	39		58	4	7	16	0	0	53	0	0		
2027 No Build	38		70	4	6	14	0	0	54	0	0		
2027 Build		42	•	63	4	9	19	0	0	49	0	2	

Notes: Results displayed are the average results across 10 microsimulation runs

#### 7.4.4 NEWS ROAD AT FIRESTONE DRIVE

Results of the capacity and queuing analysis for this unsignalized intersection are shown in **Table 18** and **Table 19**. Under existing and future conditions, the AM and PM peak hours are anticipated to experience movements with LOS C or better. Queuing results also indicate that the intersection is not projected to experience significant queuing or blocking issues.

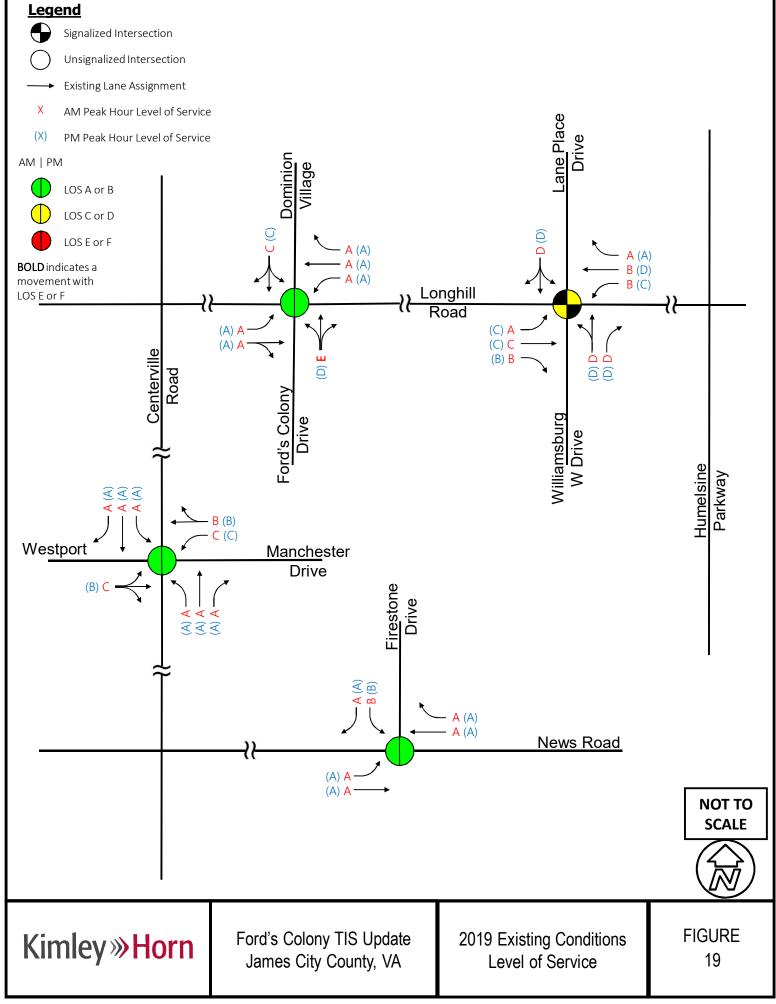
Table 18: News Road at Firestone Drive Intersection Level of Service

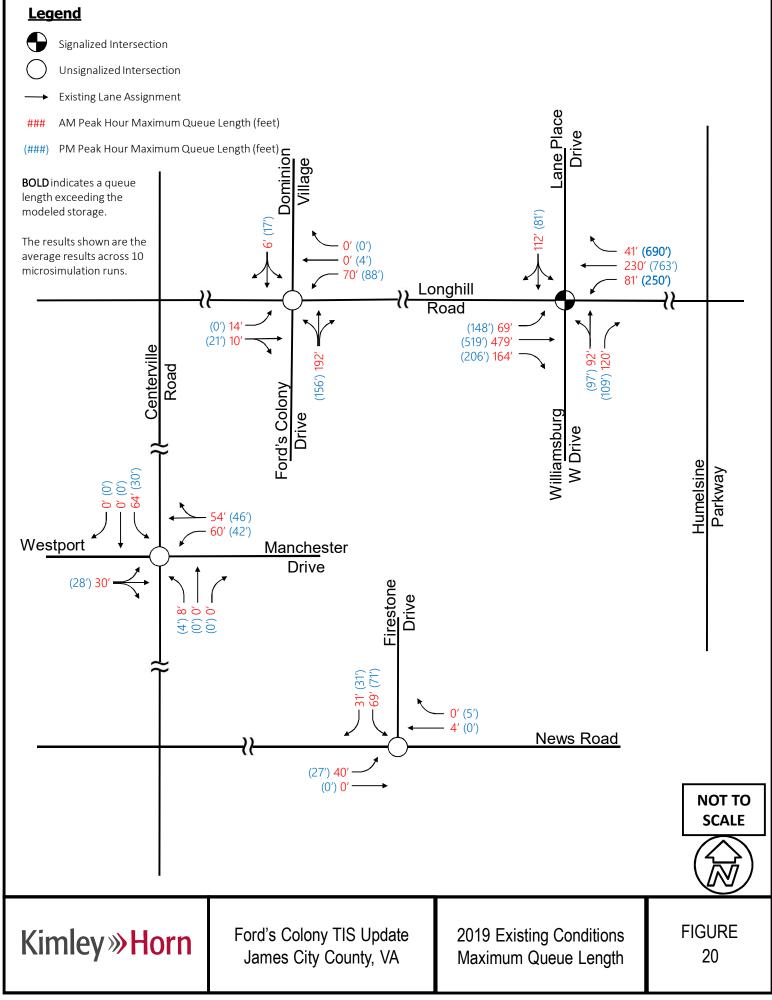
	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh) AM Peak Hour													
Scenario		Eastbound			Westbound			Northbound			Southbound				
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
						AM Pea	k Hour								
2019 Existing	A (2.6)	A (7.8)	A (0.0)	=	-	A (0.0)	A (0.0)	-	=	-	B (11.2)	-	A (0.0)		
		A (0.4)		A (0.0)			-			B (11.2)					
2021 No Build	A (4.0)	A (7.8)	A (0.0)		A (7.8)	A (0.0)		B (10.5)		A (0.0)	B (14.2)		A (0.0)		
NO BUITO	(4.0)	A (0.3)			A (1.1)			B (10.5)			B (14.2)				
2021 Build	A (4.0)	A (7.8)	A (0.0)		A (7.8)	A (0.0)		B (10.6)		A (0.0)	B (14.2)		A (0.0)		
			A (0.3)		A (1.1)			B (10.6)			B (14.2)				
2027	A (4.1)	A (7.9)	A (0.0)		A (7.9)	A (0.0)		B (10.8)		A (0.0)	C (15.5)		A (0.0)		
No Build		(1.15)	A (0.4)		A (1.0)			B (10.8)			C (15.5)				
2027	A (4.1)	Α	A		Α Α		В А		C A		Α				
2027 Build		(7.9)	(0.0)		(7.9)	(0.0)		(10.9)		(0.0)	(15.6)		(0.0)		
build		A (0.4)			A (1.0)			B (10.9)			C (15.6)				
						PM Pea	k Hour								
2019 Existing	A (1.6)	A (8.1)	A (0.0)	-	-	A (0.0)	A (0.0)	-	-	-	B (12.0)	-	A (0.0)		
LAISUIIG		A (0.4)			A (0.0)				-		B (12.0)				
2021 No Build	A (3.5)	A (8.4)	A (0.0)		A (7.7)	A (0.0)		B (11.1)		A (0.0)	C (18.6)		A (0.0)		
NO BUITU		A (0.3)			A (1.0)			B (11.1)			C (18.6)				
2021	A (3.5)	A (8.5)	(0.		A (7.7)	A (0.0)		B (11.2)		A (0.0)	C (18.9)		A (0.0)		
Build		A (0.3)		A (1.0)			B (11.2)			C (18.9)					
2027	A (3.7)	A (8.6)	A (0.0)		A (7.8)	A (0.0)		B (11.5)		A (0.0)	C (21.0)		A (0.0)		
No Build		A (0.3)			A (0.9)			B (11.5)			C (21.0)				
2027	A (3.7)	A (8.6)	, A		A (7.8)	A (0.0)		B (11.5)		A (0.0)	C (21.4)		A (0.0)		
Build		A (0.3)		A (0.9)			B (11.5)			C (21.4)					

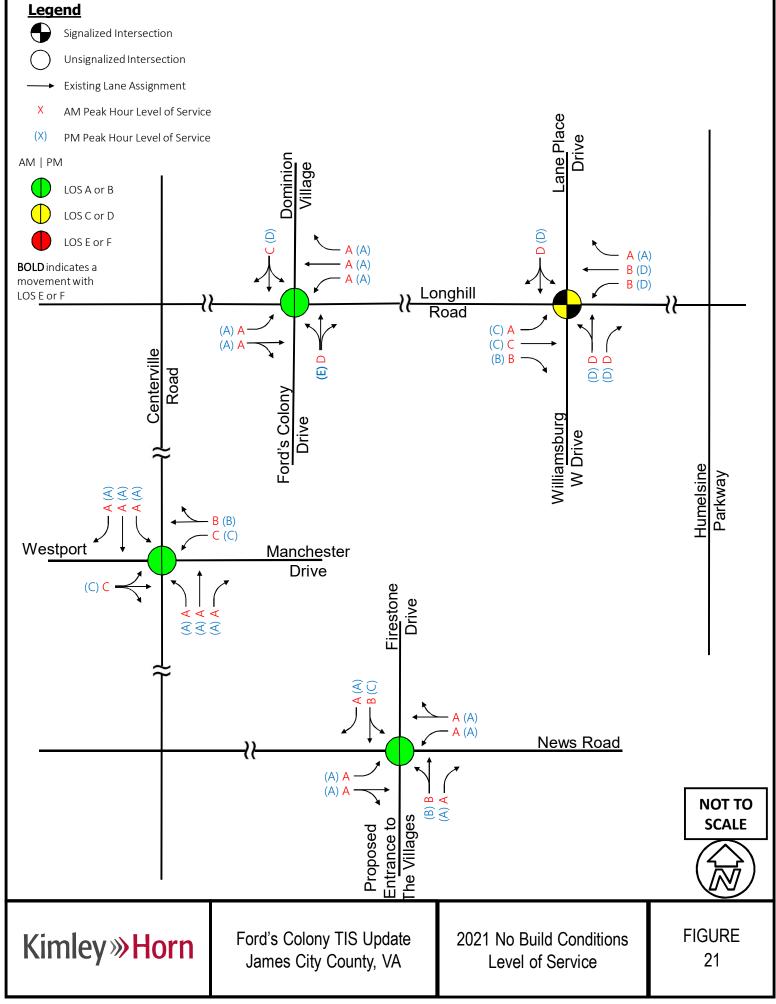
Table 19: News Road at Firestone Drive Maximum Queuing

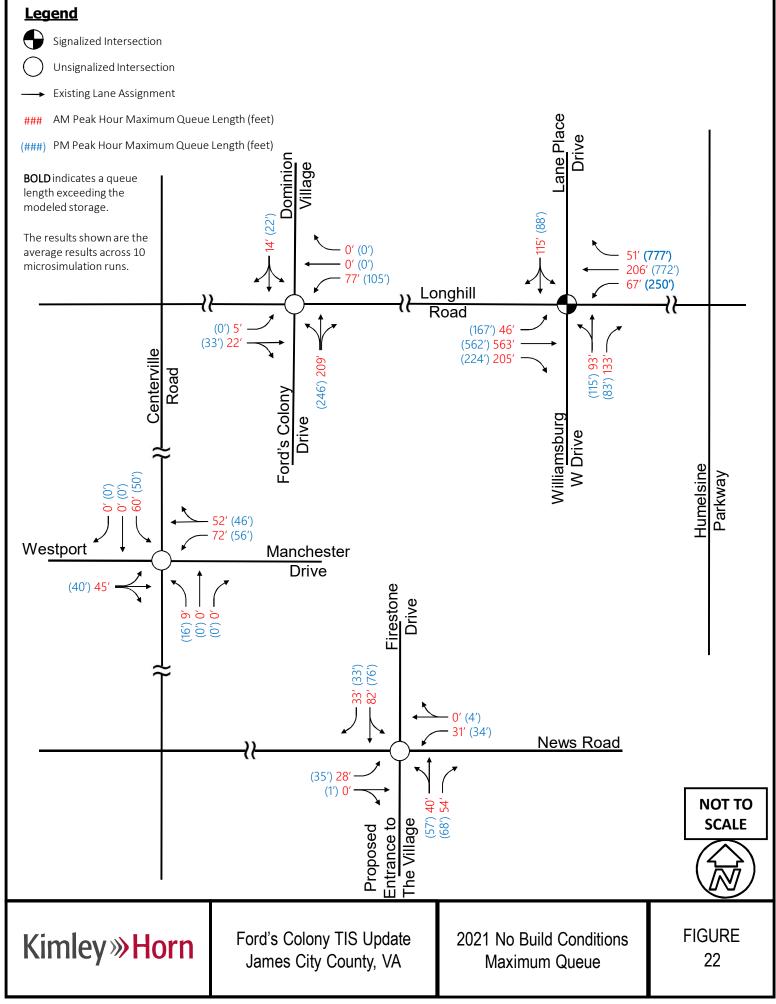
	Maximum Queue Length by Movement (feet)												
Scenario	Eastbound			Westbound			Northbound			Southbound			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Effective Storage Length	225	Cont.		225	Cont.	300	Cont.		150	Cont.		150	
				Al	M Peak H	lour							
2019 Existing	40	0	-	-	4 0		-		-	69	-	31	
2021 No Build	28	0		31	0		40		54	82		33	
2021 Build	30	0		28	0		40		54	71		33	
2027 No Build	28	0		26	0		38		54	79		33	
2027 Build	37	0	)	26	0		36		52	82		37	
				PI	M Peak H	lour							
2019 Existing	27	0	-	-	0	5	-		-	71	-	31	
2021 No Build	35	1		34	4		57		68	76		33	
2021 Build	33	1	1 34		0		49		59	87		32	
2027 No Build	37	0		32	0		52		67	99		33	
2027 Build	44	0	)	37	6		54		54	94		33	

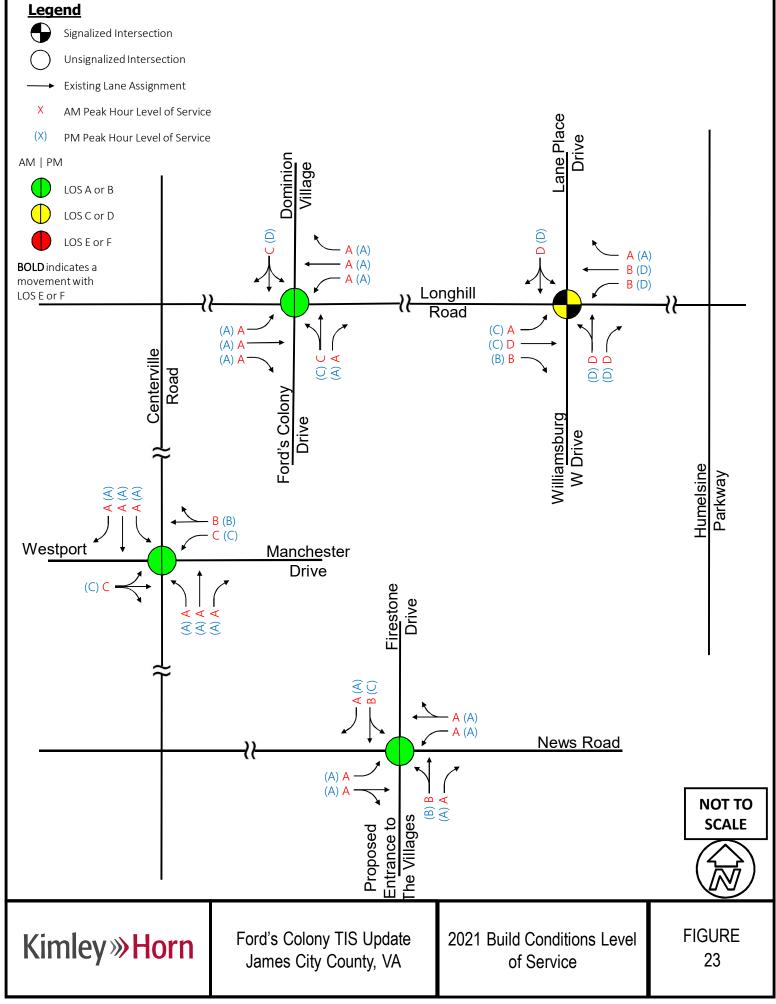
Notes: Results displayed are the average results across 10 microsimulation runs

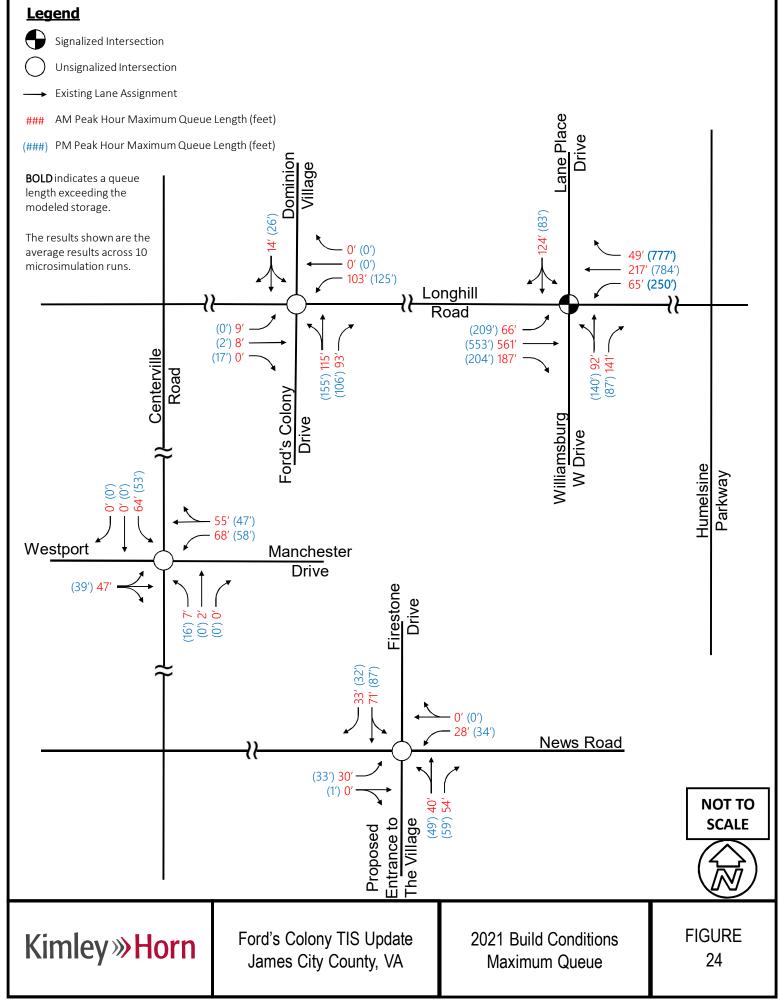


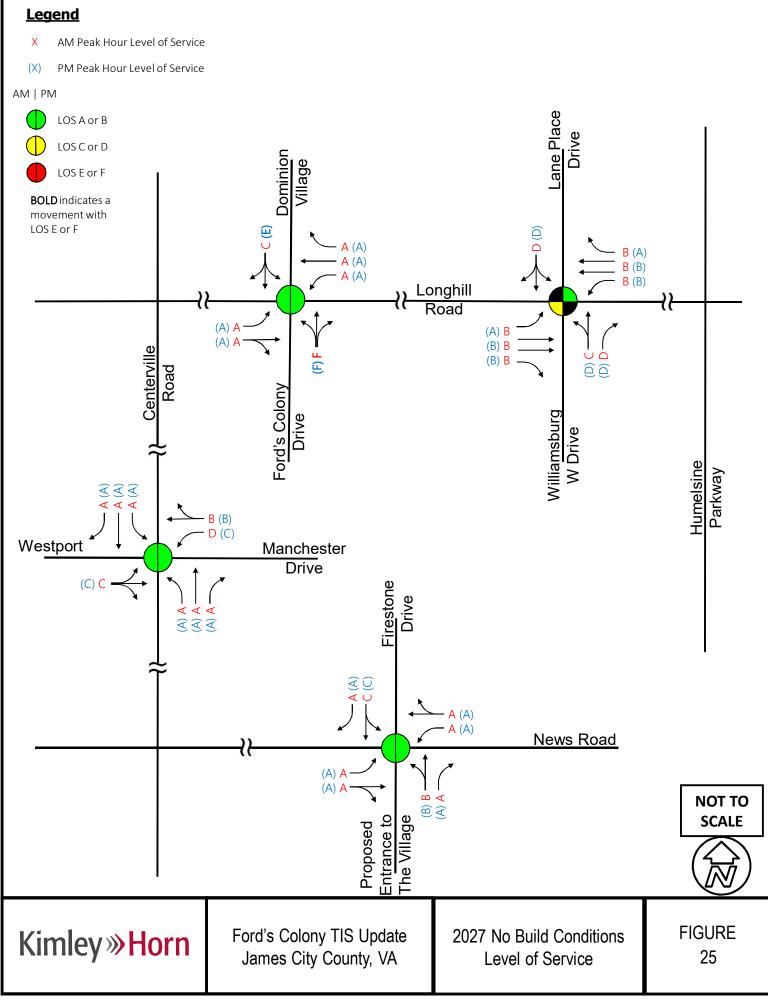


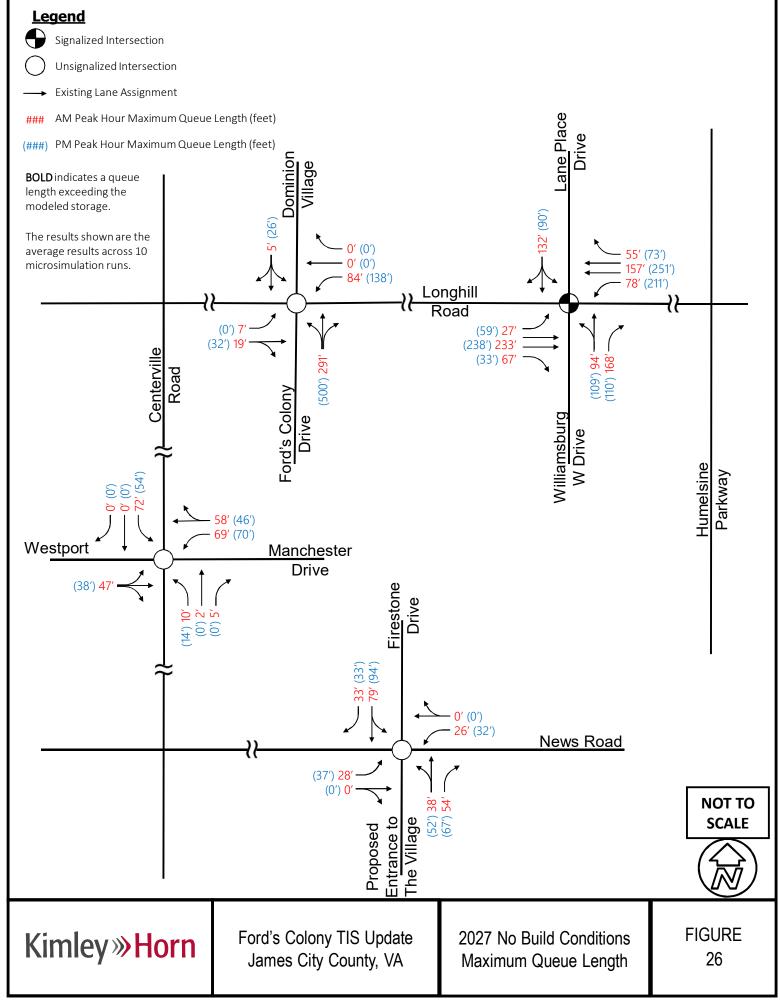


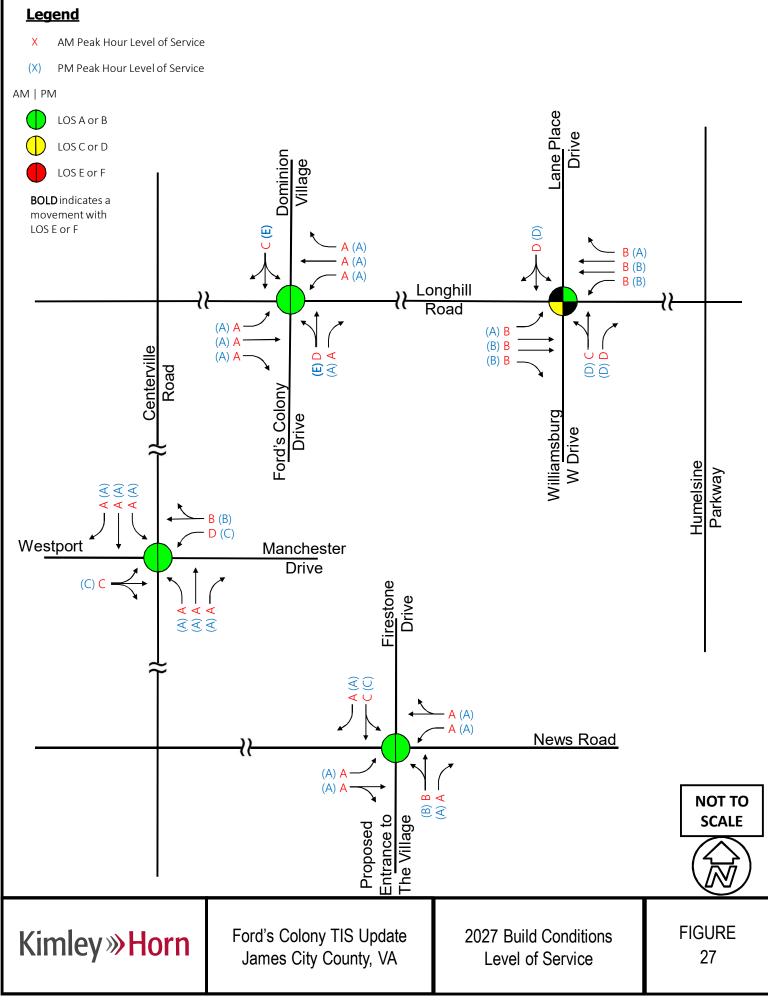


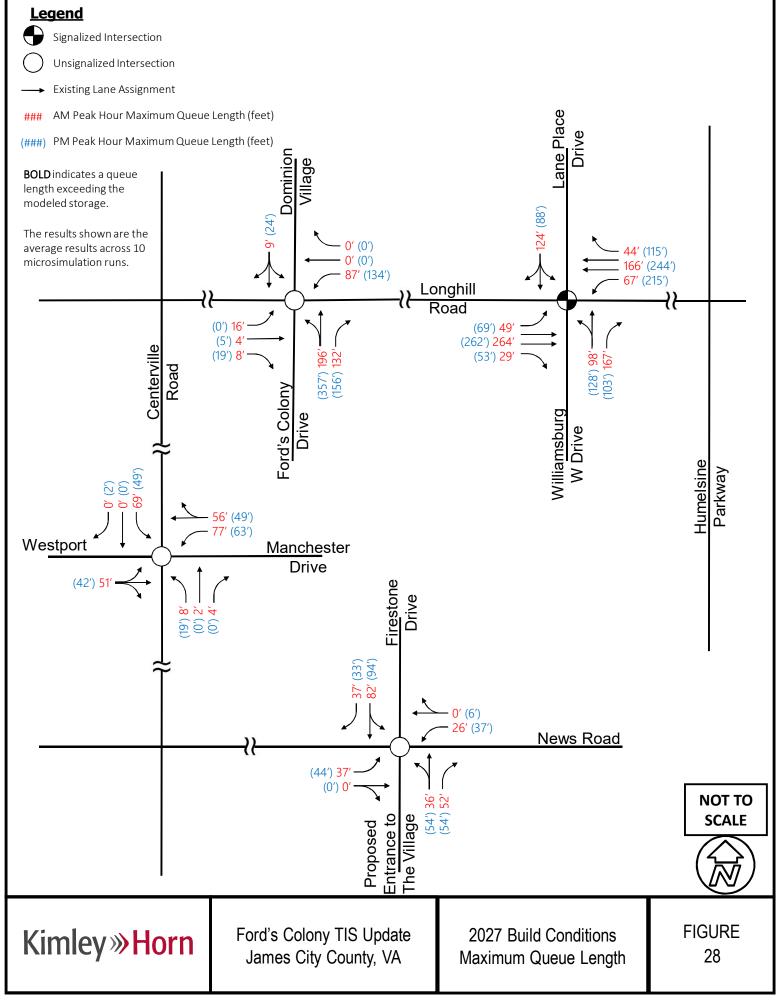












#### 8 CONCLUSIONS AND RECOMMENDATIONS

This traffic study examined the existing operational characteristics of the Ford's Colony study area intersections as well as the anticipated impacts associated with the proposed residential condominium/townhouse development located in Ford's Colony in James City County, Virginia. Additionally, this study was completed to meet the requirements of the original proffers (i.e., FCHOA to prepare and submit an updated Traffic Impact Study every five (5)), as well as determine if any of the identified proffered off-site roadway, intersection, or traffic control improvements have been triggered for construction and/or may require accelerated implementation. Based on the results of the No Build and Build traffic analysis, the future impacts of vehicular traffic associated with the background traffic and the proposed development are anticipated to be minimal, with conditions at the study area intersections expected to be maintained at levels comparable to that under existing conditions. Based on the analysis of the existing traffic volumes and operation findings provided in this traffic study, the following recommendations were identified and are summarized below for the Existing conditions:

#### Longhill Road at Williamsburg W. Drive/Lane Place Drive

- Maintain the existing geometric configuration and traffic control measures
- Continue to monitor and implement new timing and coordination plans as part of regular VDOT operations and maintenance
- It is noted that the Longhill Road Phase 1 Widening Project (VDOT UPC 100921) includes improvements that will enhance the capacity at this intersection, is fully funded, and currently under construction

#### Longhill Road at Fords Colony Drive

- Relocate and restripe the northbound approach STOP bar so driver sight distance is not impeded by the Ford's Colony monument sign and/or vegetation located in the median
- Restripe the 24-foot wide northbound approach to consist of a 12-foot shared through/left-turn lane and a 12-foot exclusive right-turn lane with 150 feet of storage
- Continue to monitor traffic volumes to identify when/if the full turn-lane warrant for the eastbound right-turn movement is satisfied
- Existing traffic volumes and the associated operational conditions (i.e., level of service (LOS)/side street delay) do not warrant or justify the installation of the traffic signal at this time.
- Although the installation of a traffic signal is specifically referenced in the Ford's Colony proffers, per VDOT policy and roadway design manual guidelines, should volumes warrant the consideration of a traffic signal the intersection will also need to be analyzed for the consideration of a roundabout.

#### Centerville Road at Manchester Drive

Maintain the existing geometric configuration and traffic control measures

#### News Road at Firestone Drive

o Maintain the existing geometric configuration and traffic control measures

From the analysis of the Build conditions which included the background traffic growth and approved developments, the following recommendations were identified and are summarized below for the Build conditions:

#### Longhill Road at Williamsburg W. Drive/Lane Place Drive

- Continue to monitor and implement new timing and coordination plans as part of regular VDOT operations and maintenance
- The Longhill Road Phase 1 Widening Project (UPC 100921) is currently construction.
   The widening project includes the following improvements to this intersection:
  - Widen Longhill Road to a four-lane divided typical section
  - Upgrade the traffic signal equipment to accommodate the additional through lanes
  - Pedestrian accommodations such as crosswalks, ADA ramps, and pedestrian signal displays for the crossing of select legs of the intersection

#### Eastbound Longhill Road

• Widen and construct an additional approach and receiving through lane

#### Westbound Longhill Road

- Widen and construct an additional approach and receiving through lane
- Improvements associated with Longhill Road Phase 1 Widening Project (UPC 100921) address several of the proffered improvements associated with the Ford's Colony Master Plan. Proffers should be updated/modified to account for/recognize these changes in responsibility.

#### Longhill Road at Fords Colony Drive

- Based on future traffic volume projections, construct a full width right-turn lane consisting of 200-feet of storage and 200-foot taper for the eastbound approach.
- Future traffic volumes and the associated future operational conditions (i.e., level of service (LOS)/side street delay) continue to reflect that a traffic signal is not warranted and do not justify the installation of a traffic signal at this intersection.
- It is noted that the installation of a traffic signal is specifically referenced in the Ford's Colony proffers. However, per VDOT policy and roadway design manual guidelines, if volumes warrant the consideration of a traffic signal then the intersection will also need to be analyzed for the consideration of a roundabout.
- Additionally, it is noted that the Longhill Road Corridor Study, completed in October 2014, did not recommended the installation of a traffic signal at this intersection as part of the long term (horizon year 2034) improvements. Therefore, it is recommended that a traffic signal should no longer be proffered as a means of traffic control for this intersection.

#### Centerville Road at Manchester Drive

Maintain the existing geometric configuration and traffic control measures

#### News Road at Firestone Drive

Maintain the existing geometric configuration and traffic control measures

Given the minimal residual development potential in Ford's Colony, no additional or proffered improvements are triggered beyond those that were identified under the Existing or Build operationa conditions.
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## TRAFFIC IMPACT STUDY (TIS) UPDATE

# Ford's Colony Master Plan - Phased Development

James City County, Virginia

# **Technical Appendices**

### Prepared for:

Ford's Colony Home Owners Association (FCHOA)

## Prepared by:

Kimley»Horn

January 2020

#### **Appendix A: Assumptions Document**

The following documentation outlines our proposed traffic impact study (TIS) assumptions for the Ford's Colony Master Plan development, located in James City County and bounded by Longhill Road (State Route 612) to the north, Centerville Road (State Route 614) to the west, News Road (State Route 613) to the south, and a combination of retail/commercial land uses, residential land uses, and Route 199 to the east. As part of this analysis, existing traffic data will be collected and future traffic volumes developed to identify if any of the proffered but unbuilt roadway, intersection, or traffic control improvements at the four (4) access points/study area intersections are experiencing or will experience traffic conditions that are or will trigger the need for construction. Proffered improvements are those described in the Ford's Colony original proffers dated March 11, 1987 and the associated Ford's Colony Phasing Plan for Roadway Improvements agreement approved by the County on June 20, 1988. This includes traffic signal and turn-lane warrant analyses that will be conducted at the defined study area intersections. Recommendations and opinions of probable cost for relevant improvements associated with the potential development will be described in the DRAFT and FINAL report.

#### **Study Area**

The study area for the TIS update and the associated proposed development site includes the following signalized and unsignalized intersections:

- County Club Drive/Williamsburg W. Drive at Longhill Road (signalized)
- Ford's Colony Drive at Longhill Road (unsignalized)
- Manchester Drive at Centerville Road (unsignalized)
- Firestone Drive at News Road (unsignalized)

#### **Data Collection**

Turning movement counts (TMC) were collected at the study area intersections on Thursday, June 8, 2017 which included vehicular, truck, and pedestrian volumes. Four-hour TMCs were conducted during the AM and PM peak periods (6:30 AM to 8:30 AM and 4:00 PM to 6:00 PM) at the following intersections:

- Manchester Drive at Centerville Road
- Country Club Drive/Williamsburg W. Drive at Longhill Road

In preparation for potential signal warrant analysis, 12-hour TMCs (i.e., 6:00 AM to 6:00 PM) were performed at the following intersections:

- Ford's Colony Drive at Longhill Road
- Firestone Drive at News Road

#### **Future Traffic**

The proposed development will have an opening year of 2019. Future analyses will coincide with this year. Growth rates will be determined by using rates developed as part of the *Longhill Road Corridor Study*, completed and adopted in October 2014, and historical traffic volume trends over the previous six (6) years (i.e., 2011 to 2016) from the Virginia Department of Transportation (VDOT) data.

- Longhill Road 2.0% per year (consistent with Longhill Road Corridor Study)
- Centerville Road 2.5% per year
- News Road 2.0% per year

Two additional developments adjacent to Ford's Colony have been approved for development and were provided by James City County: The Village's at Ford's Colony and Westport Subdivision at Ford's Colony. These two developments will be included in the background traffic projections in addition to the general traffic growth. For the Villages at Ford's Colony, Kimley-Horn will use *ITE Trip Generation 9<sup>th</sup> Edition* (2012) Trip Generation Rates and Land Use Code 251: Senior Adult Housing-Detached, Code 252: Senior Adult Housing-Attached, Code 253: Congregate Care Housing, Code 254: Assisted Living, and Code 620: Nursing Home. For the Westport Subdivision at Ford's Colony, Kimley-Horn will use Code 210: Single-Family Detached-Housing. This is consistent with the land use provided in the *Ford's Colony Traffic Impact Study 2003-2004 Update*. The trip distribution and assignment for these approved developments will be based on the previous study's trip distribution percentages. Trip generation calculations for the approved developments are shown in **Table 1 and Table 2**.

Table 1: Trip Generation for The Villages at Ford's Colony Development

ITE	ITE Description	Density	Unit	Daily	AM	Peak I	Hour	PM	Peak H	lour
Code	ITE Description	Density	Offic	Dally	In	Out	Total	ln	Out	Total
251	Senior Adult Housing - Detached	38	Dwelling Units	200	13	23	36	13	9	22
252	Senior Adult Housing - Attached	168	Dwelling Units	522	11	22	33	23	19	42
253	Congregate Care Housing	390	Dwelling Units	788	14	9	23	36	30	66
254	Assisted Living	83	Beds/Rooms	256	8	4	12	8	10	18
620	Nursing Home	60	Beds/Rooms	120	7	3	10	4	9	13
	Total	739		1,886	53	61	114	84	77	161

Note: It is assumed that there is one bed per room, and therefore each bed is considered one dwelling unit.

Table 2: Trip Generation for Westport Subdivision at Ford's Colony Development

ITE	ITE Description	Density	Unit	Daily	AM	Peak I	Hour	PM	Peak H	lour
Code	ITE Description	Density	Onit	Daily	ln	Out	Total	ln	Out	Total
210	Single-Family Detached Housing	43	Dwelling Units	483	10	30	40	31	18	49

#### **Proposed Land Use**

Kimley-Horn will use *ITE Trip Generation 9<sup>th</sup> Edition* (2012) Trip Generation Rates and Land Use Code 230: Residential Condominium/Townhouse. This is consistent with the land use provided in the *Ford's Colony Traffic Impact Study 2003-2004 Update*. Trip generation calculations for the proposed development are shown in **Table 3**. No pass-by or internal capture rate reductions will be included as part of this analysis.

**Table 3: Trip Generation for Residential Development** 

	Dwelling	Weekday		AM			PM	
Land Use (ITE Code)	Units	,	Total	Enter (17%)	Exit (83%)	Total	Enter (67%)	Exit (33%)
Residential Condominium/Townhouse (230)	60 units	412	34	6	28	40	27	13

To assign the hourly site traffic for the future traffic signal warrant analysis, hourly variations will be used for Residential Uses Combined – Excluding Senior-Oriented Facilities as provided in the *Hourly Variation in Trip Generation for Office and Residential Land Uses* article published in the ITE Journal January 2015, as shown in **Table 4** below. It is noted that the hourly trip generation variation for residential land uses is proposed since it is a similar land use and ITE does not provide an applicable hourly variation breakdown for Residential Condominium/Townhouse (230).

**Table 4: Hourly Trip Generation Variations for Residential Land Uses** 

	Average V	<b>Neekday</b>
Time	Percent of 24- Hour Entering Traffic	Percent of 24- Hour Exiting Traffic
6 AM – 7 AM	1.6	5.7
7 AM – 8 AM	2.5	9.0
8 AM – 9 AM	3.7	9.1
9 AM – 10 AM	3.7	6.5
10 AM – 11 AM	4.1	5.5
11 AM – 12 PM	4.5	5.7
12 PM – 1 PM	5.3	5.3
1 PM – 2 PM	5.4	5.7
2 PM – 3 PM	6.5	5.9
3 PM – 4 PM	8.1	6.3
4 PM – 5 PM	9.8	6.3
5 PM – 6 PM	10.8	6.5

Site traffic distributions will be determined from existing travel patterns, site location within Ford's Colony, access to/from the external adjacent street network, and employment/activity center destinations in the surrounding area. Based on this, we are assuming that the following distributions will be used for the proposed development:

- 65% of the trips generated will travel to/from the north on Ford's Colony Drive
- 20% of the trips generated will travel to/from the west on Manchester Drive
- 10% of the trips generated will travel to/from the east on Williamsburg W. Drive
- 5% of the trips generated will travel to/from the south on Firestone Drive

#### **Analysis Years**

The proposed development is anticipated to be completed in 2019. Therefore, the following analysis scenarios for the AM and PM peak hours will be studied as part of this TIS update.

- Scenario 1 Existing (2017) traffic conditions
- Scenario 2 Opening Year (2019) No-Build conditions Build-out year traffic conditions
   <u>with</u> only background development trips applied (i.e., approved adjacent development
   traffic)
- Scenario 3 Opening Year (2019) Build-out conditions Build-out year traffic conditions
   <u>with</u> background development trips applied <u>plus</u> traffic volumes generated by the
   proposed development
- Scenario 4 Opening Year +6 years (2025) No-Build conditions Build-out year traffic conditions <u>with</u> only background development trips applied (i.e., approved adjacent development traffic)
- Scenario 5 Opening Year +6 years (2025) Build-out conditions Build-out year traffic conditions <u>with</u> background development trips applied <u>plus</u> traffic volumes generated by the proposed development

#### **Traffic Operations Analysis**

Proposed inputs and analysis methodologies will be consistent with VDOT's Traffic Operations and Safety Analysis Manual (TOSAM). Operational analyses for the study area intersections will be conducted using traffic analysis tools (e.g., Synchro 9.1 Professional, SimTraffic 9.1) and Highway Capacity Manual (HCM) methodologies.

The following warrants will be analyzed for the study area intersections for future no-build and build conditions: *Warrant 1 – Eight Hour* and *Warrant 2 – Four Hour*. Kimley-Horn will conduct a traffic signal warrant analysis using the standards provided in the *Manual of Uniform Traffic Control Devices (MUTCD)*. The traffic signal warrant analysis will be performed for the following intersections:

- Ford's Colony Drive at Longhill Road
- Firestone Drive at News Road

Turn-lane warrant analyses will be prepared and evaluated for the intersection of Ford's Colony Drive at Longhill Road. The turn-lane warrant analysis will be consistent with methodologies shown in Appendix C of the VDOT Road Design Manual as well as guidelines provided in Appendix F of the VDOT Access Management Design Standards for Entrances and Intersections. Should a turn-lane be warranted, recommendations for storage length and taper length will be provided.

The future conditions analyses will confirm the need and define the geometric configurations necessary for the proposed roadway and intersection capacity improvements. Measures of effectiveness that will be reported for each scenario will consist of delay per vehicle, level of service (LOS), and maximum queue lengths. These measures of effectiveness will be presented in tabular format. Vehicle delay and LOS will be summarized by movement, approach, and overall intersection, while maximum queue lengths will be summarized for each movement.

#### Reporting

A TIS report with an accompanying appendix (including all analysis files) will be prepared that summarizes the analysis methodology and results. The report and associated analysis files will be provided in electronic format as a part of the FINAL traffic analysis submittal.

#### **Appendix B: Traffic Count Data**

File Name: Longhill and Country Club

Site Code:

Start Date : 6/8/2017

Page No : 1

**Groups Printed- Passenger Veh - Trucks** 

			TO 1							ed- Passeng	er ven - 1							T 1.00			I
			ane Plac					Longhill					ountry Cl					Longhill			
		F	rom Nor	th			F	rom Eas	st			F	rom Sout	h			F	rom Wes	st		
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	4	0	4	0	8	2	71	1	0	74	26	0	5	0	31	1	84	0	0	85	198
06:45 AM	3	0	9	0	12	3	123	4	0	130	35	1	11	0	47	1	107	0	0	108	297
Total	7	0	13	0	20	5	194	5	0	204	61	1	16	0	78	2	191	0	0	193	495
07:00 AM	1	1	10	0	14	2	147		0	155	57	0	1.5	0	72	4	164	0	0	168	409
07:00 AM 07:15 AM	3	0	12 8	0	14 11	2 4	100	6 7	0	155 111	57 52	0	15 6	0	72 58	4 4	164 158	0	0	163	343
	3	0	8 17		1	5		,	0	1	52 53	1	-	0			158	1	0	172	
07:30 AM	9	0	17 19	0	21	5 7	92	10 9		107		2	15		69	3	200	1	0		369
07:45 AM	17	- 0		0	28 74		121		0	137	239	3	10	0	89			1		210	464 1585
Total	1/	1	56	0	/4	18	460	32	0	510	239	3	46	0	288	20	690	3	0	713	1585
08:00 AM	5	1	11	0	17	4	125	10	0	139	50	0	11	0	61	4	182	1	0	187	404
08:15 AM	0	0	9	0	9	2	129	14	0	145	44	0	6	0	50	5	192	0	0	197	401
Total	5	1	20	0	26	6	254	24	0	284	94	0	17	0	111	9	374	1	0	384	805
04:00 PM	2	0	6	0	8	11	192	45	0	248	33	0	7	0	40	10	155	6	0	171	467
04:15 PM	2	0	4	0	6	7	227	61	0	295	33	0	9	0	42	13	174	4	0	191	534
04:30 PM	8	0	6	0	14	11	211	50	0	272	27	1	5	0	33	11	180	3	0	194	513
04:45 PM	4	0	7	0	11	6	239	61	0	306	33	0	12	0	45	10	181	3	0	194	556
Total	16	0	23	0	39	35	869	217	0	1121	126	1	33	0	160	44	690	16	0	750	2070
05:00 PM	2	0	4	0	6	10	237	49	0	296	34	0	10	0	44	8	198	9	0	215	561
05:15 PM	4	0	6	0	10	16	266	60	0	342	29	0	14	0	43	8	182	2	0	192	587
05:30 PM	4	0	6	0	10	6	235	36	0	277	40	0	14	0	54	9	174	3	0	186	527
05:45 PM	5	0	1	0	6	11	244	44	0	299	32	0	10	0	42	8	172	5	0	185	532
Total	15	0	17	0	32	43	982	189	0	1214	135	0	48	0	183	33	726	19	0	778	2207
					,																' 1
Grand Total	60	2	129	0	191	107	2759	467	0	3333	655	5	160	0	820	108	2671	39	0	2818	7162
Apprch %	31.4	1	67.5	0		3.2	82.8	14	0		79.9	0.6	19.5	0		3.8	94.8	1.4	0		
Total %	0.8	0_	1.8	0	2.7	1.5	38.5	6.5	0	46.5	9.1	0.1	2.2	0	11.4	1.5	37.3	0.5	0	39.3	
Passenger Veh	55	2	126	0	183	103	2688	464	0	3255	650	2	154	0	806	107	2602	37	0	2746	6990
% Passenger Veh	91.7	100	97.7	0	95.8	96.3	97.4	99.4	0	97.7	99.2	40	96.2	0	98.3	99.1	97.4	94.9	0	97.4	97.6
Trucks	5	0	3	0	8	4	71	3	0	78	5	3	6	0	14	1	69	2	0	72	172
% Trucks	8.3	0	2.3	0	4.2	3.7	2.6	0.6	0	2.3	0.8	60	3.8	0	1.7	0.9	2.6	5.1	0	2.6	2.4

File Name: Longhill and Country Club

Site Code:

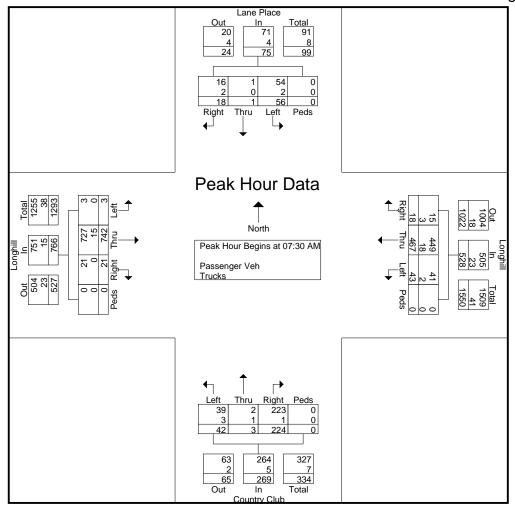
Start Date : 6/8/2017

			ane Plac rom Nor				]	Longhill From Eas					ountry Cl rom Sou					Longhill rom We			
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis					1 of 1										,						
Peak Hour for Entir	re Intersec	tion Begin	ns at 07:30	O AM																	
07:30 AM	4	0	17	0	21	5	92	10	0	107	53	1	15	0	69	3	168	1	0	172	369
07:45 AM	9	0	19	0	28	7	121	9	0	137	77	2	10	0	89	9	200	1	0	210	464
08:00 AM	5	1	11	0	17	4	125	10	0	139	50	0	11	0	61	4	182	1	0	187	404
08:15 AM	0	0	9	0	9	2	129	14	0	145	44	0	6	0	50	5	192	0	0	197	401
Total Volume	18	1	56	0	75	18	467	43	0	528	224	3	42	0	269	21	742	3	0	766	1638
% App. Total	24	1.3	74.7	0		3.4	88.4	8.1	0		83.3	1.1	15.6	0		2.7	96.9	0.4	0		
PHF	.500	.250	.737	.000	.670	.643	.905	.768	.000	.910	.727	.375	.700	.000	.756	.583	.928	.750	.000	.912	.883
Passenger Veh	16	1	54	0	71	15	449	41	0	505	223	2	39	0	264	21	727	3	0	751	1591
% Passenger Veh	88.9	100	96.4	0	94.7	83.3	96.1	95.3	0	95.6	99.6	66.7	92.9	0	98.1	100	98.0	100	0	98.0	97.1
Trucks	2	0	2	0	4	3	18	2	0	23	1	1	3	0	5	0	15	0	0	15	47
% Trucks	11.1	0	3.6	0	5.3	16.7	3.9	4.7	0	4.4	0.4	33.3	7.1	0	1.9	0	2.0	0	0	2.0	2.9

File Name: Longhill and Country Club

Site Code:

Start Date : 6/8/2017



File Name: Longhill and Country Club

Site Code:

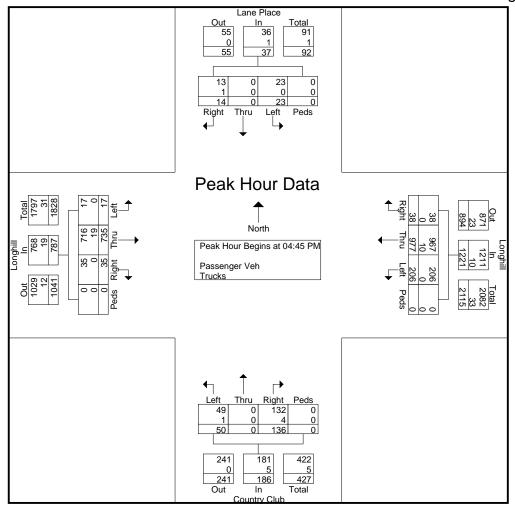
Start Date : 6/8/2017

			ane Place				Į	Longhill From Eas					ountry Cl rom Sou					Longhill rom We			
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis	s From 12:0	00 PM to	05:45 PM	- Peak 1	of 1																
Peak Hour for Entir	re Intersect	ion Begin	s at 04:45	PM																	
04:45 PM	4	0	7	0	11	6	239	61	0	306	33	0	12	0	45	10	181	3	0	194	556
05:00 PM	2	0	4	0	6	10	237	49	0	296	34	0	10	0	44	8	198	9	0	215	561
05:15 PM	4	0	6	0	10	16	266	60	0	342	29	0	14	0	43	8	182	2	0	192	587
05:30 PM	4	0	6	0	10	6	235	36	0	277	40	0	14	0	54	9	174	3	0	186	527
Total Volume	14	0	23	0	37	38	977	206	0	1221	136	0	50	0	186	35	735	17	0	787	2231
% App. Total	37.8	0	62.2	0		3.1	80	16.9	0		73.1	0	26.9	0		4.4	93.4	2.2	0		
PHF	.875	.000	.821	.000	.841	.594	.918	.844	.000	.893	.850	.000	.893	.000	.861	.875	.928	.472	.000	.915	.950
Passenger Veh	13	0	23	0	36	38	967	206	0	1211	132	0	49	0	181	35	716	17	0	768	2196
% Passenger Veh	92.9	0	100	0	97.3	100	99.0	100	0	99.2	97.1	0	98.0	0	97.3	100	97.4	100	0	97.6	98.4
Trucks	1	0	0	0	1	0	10	0	0	10	4	0	1	0	5	0	19	0	0	19	35
% Trucks	7.1	0	0	0	2.7	0	1.0	0	0	0.8	2.9	0	2.0	0	2.7	0	2.6	0	0	2.4	1.6

File Name: Longhill and Country Club

Site Code:

Start Date : 6/8/2017



File Name: Longhill and Fords Colony

Site Code : 13333333 Start Date : 6/8/2017

Page No : 1

Groups Printed- Passenger Veh - Trucks

										<u>ted- Passe</u>	<u>nger Veh</u>										
			Entrance					Longhil					rds Col					Longhill			
		F	rom Nor					From Ea	st			<u> </u>	rom Sou	uth			F	rom We			
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:00 AM	0	0	0	0	0	1	10	3	0	14	8	0	4	0	12	3	16	0	0	19	45
06:15 AM	1	0	1	0	2	1	13	1	0	15	6	0	2	0	8	2	21	1	0	24	49
06:30 AM	0	0	0	0	0	1	19	7	0	27	7	0	2	0	9	0	26	0	0	26	62
06:45 AM	0	0	0	0	0	1	36	9	0	46	25	0	6	0	31	2	55	1	0	58	135
Total	1	0	1	0	2	4	78	20	0	102	46	0	14	0	60	7	118	2	0	127	291
07:00 AM	0	0	1	0	1	1	46	11	0	58	39	1	3	0	43	2	51	0	0	53	155
07:15 AM	1	0	0	0	1	Ö	55	20	0	75	26	Ö	16	0	42	8	64	0	0	72	190
07:30 AM	Ö	0	0	0	Ö	0	68	19	0	87	28	0	15	0	43	4	56	0	0	60	190
07:45 AM	0	0	0	0	0	0	55	30	0	85	37	0	15	0	52	7	84	1	0	92	229
Total	1	0	1	0	2	1	224	80	0	305	130	1	49	0	180	21	255	<del></del>	0	277	764
	I				·	I															I
08:00 AM	0	0	0	0	0	1	53	28	0	82	36	0	15	0	51	10	69	2	0	81	214
08:15 AM	0	1	0	0	1	0	90	29	0	119	29	1	25	0	55	15	84	0	0	99	274
08:30 AM	0	0	0	0	0	0	63	39	0	102	42	0	10	0	52	14	80	0	0	94	248
08:45 AM	0	0	1	0	1	1	52	45	0	98	32	0	10	0	42	12	56	0	0	68	209
Total	0	1	1	0	2	2	258	141	0	401	139	1	60	0	200	51	289	2	0	342	945
09:00 AM	0	0	0	0	0	1	56	27	0	84	22	0	11	0	33	12	58	1	0	71	188
09:15 AM	0	0	0	0	0	0	48	25	0	73	25	0	9	0	34	10	66	0	0	76	183
09:30 AM	0	0	1	0	1	1	36	20	0	57	37	0	12	0	49	11	61	1	0	73	180
09:45 AM	0	0	0	0	0	0	38	48	0	86	43	0	10	0	53	12	63	0	0	75	214
Total	0	0	1	0	1	2	178	120	0	300	127	0	42	0	169	45	248	2	0	295	765
10:00 AM	1	0	0	0	1	0	53	30	0	83	44	0	17	0	61	9	36	0	0	45	190
10:15 AM	0	0	1	0	1	0	41	28	0	69	41	0	16	0	57	14	49	0	0	63	190
10:30 AM	1	0	0	0	1	1	41	20	0	62	34	0	14	0	48	5	39	1	0	45	156
10:45 AM	1	0	1	0	2	0	40	28	0	68	29	3	14	0	46	10	42	1	0	53	169
Total	3	0	2	0	5	1	175	106	0	282	148	3	61	0	212	38	166	2	0	206	705
11:00 AM	1	0	1	0	2	1	37	32	0	70	35	0	6	0	41	15	39	1	0	55	168
11:15 AM	Ö	0	0	0	0	2	38	30	0	70	24	0	9	0	33	11	48	Ö	0	59	162
11:30 AM	0	0	1	0	1	0	45	33	0	78	25	2	14	0	41	12	53	1	0	66	186
11:45 AM	0	0	3	0	3	0	49	41	0	90	33	0	12	0	45	17	49	0	0	66	204
Total	1	0	5	0	6	3	169	136	0	308	117	2	41	0	160	55	189	2	0	246	720
	' '	J	J	3	5		.00	.00	3	000		_	71	3	100	00	.00	_	3	2-10	20
12:00 PM	1	1	0	0	2	2	56	51	0	109	29	1	13	0	43	9	44	0	0	53	207
12:15 PM	2	0	0	0	2	3	48	33	0	84	30	0	5	0	35	18	34	2	0	54	175
12:30 PM	0	1	0	0	1	0	46	33	0	79	29	1	9	0	39	11	37	0	0	48	167
12:45 PM	0	0	0	0	0	0	46	34	0	80	36	0	19	0	55	21	52	0	0	73	208
Total	3	2	0	0	5	5	196	151	0	352	124	2	46	0	172	59	167	2	0	228	757

File Name: Longhill and Fords Colony

Site Code : 13333333 Start Date : 6/8/2017

Page No : 2

Groups Printed- Passenger Veh - Trucks

			_							<u>ed- Passe</u> i	nger Veh										
			Entrance					Longhil					rds Cold					Longhill			
		F	rom Nor				F	rom Ea	st			F	rom Sou	th			F	rom We	st		
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
01:00 PM	2	0	0	0	2	1	35	31	0	67	38	0	15	0	53	12	38	0	0	50	172
01:15 PM	0	0	1	0	1	4	62	40	0	106	28	0	10	0	38	11	59	0	0	70	215
01:30 PM	0	1	3	0	4	2	45	27	0	74	20	0	8	0	28	11	38	0	0	49	155
01:45 PM	2	0	3	0	5	2	32	20	0	54	28	0	9	0	37	8	59	1	0	68	164
Total	4	1	7	0	12	9	174	118	0	301	114	0	42	0	156	42	194	1	0	237	706
,																					
02:00 PM	0	0	0	0	0	1	64	42	0	107	42	1	18	0	61	12	51	3	0	66	234
02:15 PM	1	0	1	0	2	1	60	51	0	112	29	0	5	0	34	15	43	0	0	58	206
02:30 PM	2	0	2	0	4	1	83	37	0	121	29	0	10	0	39	16	55	1	0	72	236
02:45 PM	2	0	0	0	2	0	86	51	0	137	34	0	19	0	53	8	55	1_	0	64	256_
Total	5	0	3	0	8	3	293	181	0	477	134	1	52	0	187	51	204	5	0	260	932
1	1 .	_	_	_	- 1	_			_	1		_		_	1			_	_	1	
03:00 PM	1	0	2	0	3	0	58	41	0	99	31	0	15	0	46	16	45	0	0	61	209
03:15 PM	1	0	4	0	5	1	73	32	0	106	29	0	14	0	43	30	105	0	0	135	289
03:30 PM	3	0	1	0	4	1	77	45	0	123	30	0	14	0	44	20	75	1	0	96	267
03:45 PM	5	0	1	0	1	0	60	43	0	103	36	2	27	0	65	15	63	1	0	79	248
Total	5	0	8	0	13	2	268	161	0	431	126	2	70	0	198	81	288	2	0	371	1013
04:00 PM	0	1	0	0	1	0	68	31	0	99	32	0	16	0	48	12	77	0	0	89	237
04:00 PM	0	0	1	0	1	1	61	37	0	99	27	0	9	0	36	16	84	6	0	106	242
04:30 PM	1	0	Ó	0	1	Ö	74	38	0	112	27	1	13	0	41	9	77	1	0	87	241
04:45 PM	1	0	0	0	1	0	65	50	0	115	30	1	14	0	45	19	93	Ó	0	112	273
Total	2	1	1	0	4	1	268	156	0	425	116	2	52	0	170	56	331	7	0	394	993
Total	_	•	•	O	7.1		200	100	O	720	110	_	02	O	170	00	001	•	Ü	004	330
05:00 PM	3	0	0	0	3	1	63	39	0	103	31	2	4	0	37	11	78	0	0	89	232
05:15 PM	0	Ö	1	Ö	1	1	79	47	Ö	127	25	0	14	Ö	39	9	86	Ō	Ö	95	262
05:30 PM	1	0	3	0	4	0	75	56	0	131	35	0	13	0	48	14	83	0	0	97	280
05:45 PM	0	0	0	0	0	0	53	44	0	97	39	0	5	0	44	13	81	0	0	94	235
Total	4	0	4	0	8	2	270	186	0	458	130	2	36	0	168	47	328	0	0	375	1009
					·															·	
Grand Total	29	5	34	0	68	35	2551	1556	0	4142	1451	16	565	0	2032	553	2777	28	0	3358	9600
Apprch %	42.6	7.4	50	0		8.0	61.6	37.6	0		71.4	8.0	27.8	0		16.5	82.7	8.0	0		
Total %	0.3	0.1	0.4	0	0.7	0.4	26.6	16.2	0	43.1	15.1	0.2	5.9	0	21.2	5.8	28.9	0.3	0	35	
Passenger Veh	29	4	34	0	67	35	2433	1538	0	4006	1443	15	551	0	2009	537	2645	27	0	3209	9291
% Passenger Veh	100	80	100	0	98.5	100	95.4	98.8	0	96.7	99.4	93.8	97.5	0	98.9	97.1	95.2	96.4	0	95.6	96.8
Trucks	0	1	0	0	1	0	118	18	0	136	8	1	14	0	23	16	132	1	0	149	309
% Trucks	0	20	0	0	1.5	0	4.6	1.2	0	3.3	0.6	6.2	2.5	0	1.1	2.9	4.8	3.6	0	4.4	3.2

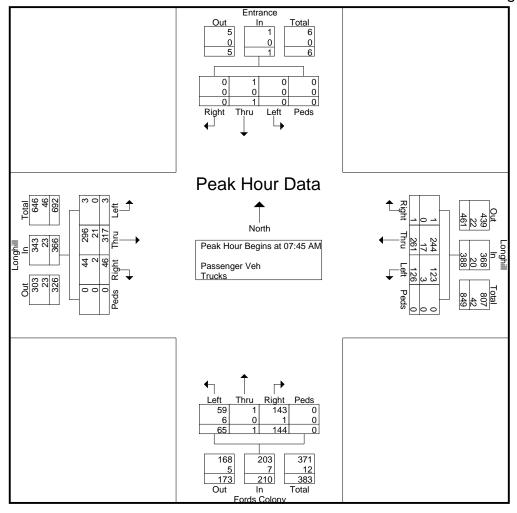
File Name: Longhill and Fords Colony

Site Code : 13333333 Start Date : 6/8/2017

			Entrance rom Nor				F	Longhill rom Ea					ords Col				F	Longhill rom We	st		
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analys																					
Peak Hour for Ent	tire Inters	ection Be	egins at C	)7:45 AN	1 .																
07:45 AM	0	0	0	0	0	0	55	30	0	85	37	0	15	0	52	7	84	1	0	92	229
08:00 AM	0	0	0	0	0	1	53	28	0	82	36	0	15	0	51	10	69	2	0	81	214
08:15 AM	0	1	0	0	1	0	90	29	0	119	29	1	25	0	55	15	84	0	0	99	274
08:30 AM	0	0	0	0	0	0	63	39	0	102	42	0	10	0	52	14	80	0	0	94	248
Total Volume	0	1	0	0	1	1	261	126	0	388	144	1	65	0	210	46	317	3	0	366	965
% App. Total	0	100	0	0		0.3	67.3	32.5	0		68.6	0.5	31	0		12.6	86.6	0.8	0		
PHF	.000	.250	.000	.000	.250	.250	.725	.808	.000	.815	.857	.250	.650	.000	.955	.767	.943	.375	.000	.924	.880
Passenger Veh	0	1	0	0	1	1	244	123	0	368	143	1	59	0	203	44	296	3	0	343	915
% Passenger Veh	0	100	0	0	100	100	93.5	97.6	0	94.8	99.3	100	90.8	0	96.7	95.7	93.4	100	0	93.7	94.8
Trucks	0	0	0	0	0	0	17	3	0	20	1	0	6	0	7	2	21	0	0	23	50
% Trucks	0	0	0	0	0	0	6.5	2.4	0	5.2	0.7	0	9.2	0	3.3	4.3	6.6	0	0	6.3	5.2

File Name: Longhill and Fords Colony

Site Code : 13333333 Start Date : 6/8/2017



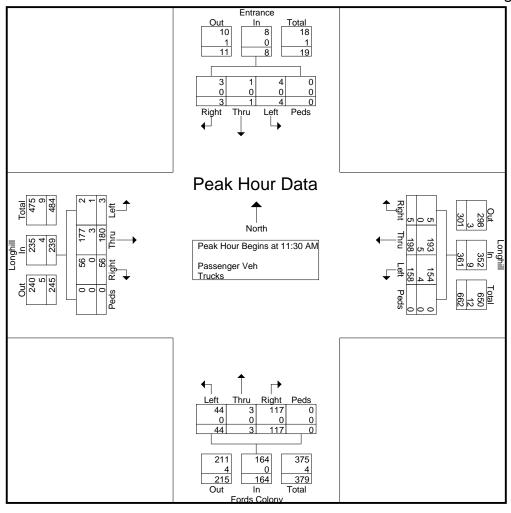
File Name: Longhill and Fords Colony

Site Code : 13333333 Start Date : 6/8/2017

			Entrance				F	Longhill rom Eas					ords Col	,			F	Longhill rom We	st		
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analys	is From 1	0:00 AM	to 01:45	PM - Pe	ak 1 of 1																
Peak Hour for Ent	ire Interse	ection Be	gins at 1	1:30 AM																	
11:30 AM	0	0	1	0	1	0	45	33	0	78	25	2	14	0	41	12	53	1	0	66	186
11:45 AM	0	0	3	0	3	0	49	41	0	90	33	0	12	0	45	17	49	0	0	66	204
12:00 PM	1	1	0	0	2	2	56	51	0	109	29	1	13	0	43	9	44	0	0	53	207
12:15 PM	2	0	0	0	2	3	48	33	0	84	30	0	5	0	35	18	34	2	0	54	175
Total Volume	3	1	4	0	8	5	198	158	0	361	117	3	44	0	164	56	180	3	0	239	772
% App. Total	37.5	12.5	50	0		1.4	54.8	43.8	0		71.3	1.8	26.8	0		23.4	75.3	1.3	0		
PHF	.375	.250	.333	.000	.667	.417	.884	.775	.000	.828	.886	.375	.786	.000	.911	.778	.849	.375	.000	.905	.932
Passenger Veh	3	1	4	0	8	5	193	154	0	352	117	3	44	0	164	56	177	2	0	235	759
% Passenger Veh	100	100	100	0	100	100	97.5	97.5	0	97.5	100	100	100	0	100	100	98.3	66.7	0	98.3	98.3
Trucks	0	0	0	0	0	0	5	4	0	9	0	0	0	0	0	0	3	1	0	4	13
% Trucks	0	0	0	0	0	0	2.5	2.5	0	2.5	0	0	0	0	0	0	1.7	33.3	0	1.7	1.7

File Name: Longhill and Fords Colony

Site Code : 13333333 Start Date : 6/8/2017



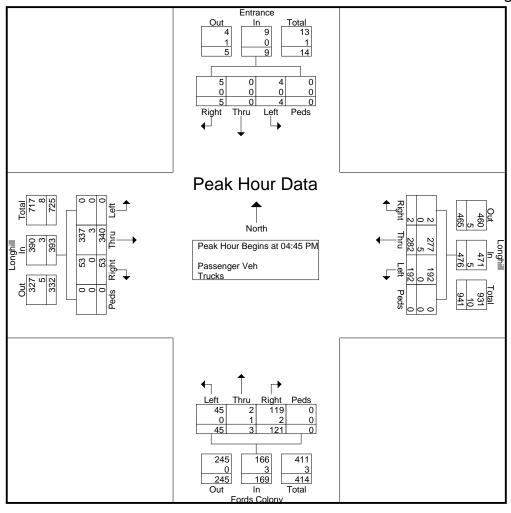
File Name: Longhill and Fords Colony

Site Code : 13333333 Start Date : 6/8/2017

			Entrance				ſ	Longhill rom Ea					ords Colo	,			F	Longhill rom We	st		
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analys	sis From 0	2:00 PM	to 05:45	PM - P	eak 1 of 1																
Peak Hour for Ent	tire Interse	ection Be	gins at 0	4:45 PN	1 .																
04:45 PM	1	0	0	0	1	0	65	50	0	115	30	1	14	0	45	19	93	0	0	112	273
05:00 PM	3	0	0	0	3	1	63	39	0	103	31	2	4	0	37	11	78	0	0	89	232
05:15 PM	0	0	1	0	1	1	79	47	0	127	25	0	14	0	39	9	86	0	0	95	262
05:30 PM	1	0	3	0	4	0	75	56	0	131	35	0	13	0	48	14	83	0	0	97	280
Total Volume	5	0	4	0	9	2	282	192	0	476	121	3	45	0	169	53	340	0	0	393	1047
% App. Total	55.6	0	44.4	0		0.4	59.2	40.3	0		71.6	1.8	26.6	0		13.5	86.5	0	0		
PHF	.417	.000	.333	.000	.563	.500	.892	.857	.000	.908	.864	.375	.804	.000	.880	.697	.914	.000	.000	.877	.935
Passenger Veh	5	0	4	0	9	2	277	192	0	471	119	2	45	0	166	53	337	0	0	390	1036
% Passenger Veh	100	0	100	0	100	100	98.2	100	0	98.9	98.3	66.7	100	0	98.2	100	99.1	0	0	99.2	98.9
Trucks	0	0	0	0	0	0	5	0	0	5	2	1	0	0	3	0	3	0	0	3	11
% Trucks	0	0	0	0	0	0	1.8	0	0	1.1	1.7	33.3	0	0	1.8	0	0.9	0	0	8.0	1.1

File Name: Longhill and Fords Colony

Site Code : 13333333 Start Date : 6/8/2017



File Name: Centerville and Manchester

Site Code:

Start Date : 6/8/2017

Page No : 1

**Groups Printed- Passenger Veh - Trucks** 

	1									ed- Passeng	er Veh - 🛚										
		(	Centerville	e			M	ancheste	er			C	entervill	e			7	Westport	t		
		F	rom Nort	h			F	rom Eas	t			Fı	om Sout	h			F	rom Wes	st		
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	0	19	6	0	25	3	0	4	0	7	2	31	1	0	34	1	0	0	0	1	67
06:45 AM	0	28	10	0	38	7	0	7	0	14	4	54	0	0	58	0	0	0	0	0	110
Total	0	47	16	0	63	10	0	11	0	21	6	85	1	0	92	1	0	0	0	1	177
07:00 AM	1	29	1	0	31	7	0	9	0	16	5	57	0	0	62	1	0	0	0	1	110
07:15 AM	0	52	7	0	59	10	0	13	0	23	6	77	2	0	85	0	0	0	0	0	167
07:30 AM	2	36	9	0	47	11	0	12	0	23	11	123	1	0	135	0	1	2	0	3	208
07:45 AM	0	58	10	0	68	10	0	15	0	25	10	85	1	0	96	0	0	1	0	1	190
Total	3	175	27	0	205	38	0	49	0	87	32	342	4	0	378	1	1	3	0	5	675
08:00 AM	0	55	14	0	69	8	0	16	0	24	10	61	0	0	71	0	0	1	0	1	165
08:15 AM	1	61	17	0	79	18	0	11	0	29	12	68	0	0	80	2	0	0	0	2	190
Total	1	116	31	0	148	26	0	27	0	53	22	129	0	0	151	2	0	1	0	3	355
04:00 PM	0	59	11	0	70	5	2	11	0	18	17	74	0	0	91	1	0	1	0	2	181
04:15 PM	0	58	4	0	62	1	0	9	0	10	16	65	0	0	81	0	0	1	0	1	154
04:30 PM	1	45	5	0	51	6	0	7	0	13	13	85	0	0	98	2	1	0	0	3	165
04:45 PM	0	61	5	0	66	7	0	15	0	22	21	71	0	0	92	1	1	2	0	4	184
Total	1	223	25	0	249	19	2	42	0	63	67	295	0	0	362	4	2	4	0	10	684
05:00 PM	0	60	6	0	66	9	0	12	0	21	16	66	0	0	82	0	0	0	0	0	169
05:15 PM	2	59	7	0	68	5	0	8	0	13	14	74	2	0	90	1	0	0	0	1	172
05:30 PM	0	57	5	0	62	7	0	12	0	19	13	79	0	0	92	0	0	1	0	1	174
05:45 PM	1	58	9	0	68	5	0	13	0	18	13	46	2	0	61	1	0	2	0	3	150
Total	3	234	27	0	264	26	0	45	0	71	56	265	4	0	325	2	0	3	0	5	665
Grand Total	8	795	126	0	929	119	2	174	0	295	183	1116	9	0	1308	10	3	11	0	24	2556
Apprch %	0.9	85.6	13.6	0		40.3	0.7	59	0		14	85.3	0.7	0		41.7	12.5	45.8	0		
Total %	0.3	31.1	4.9	0	36.3	4.7	0.1	6.8	0	11.5	7.2	43.7	0.4	0	51.2	0.4	0.1	0.4	0	0.9	
Passenger Veh	6	752	117	0	875	114	2	170	0	286	165	1050	8	0	1223	9	3	10	0	22	2406
% Passenger Veh	75	94.6	92.9	0	94.2	95.8	100	97.7	0	96.9	90.2	94.1	88.9	0	93.5	90	100	90.9	0	91.7	94.1
Trucks	2	43	9	0	54	5	0	4	0	9	18	66	1	0	85	1	0	1	0	2	150
% Trucks	25	5.4	7.1	0	5.8	4.2	0	2.3	0	3.1	9.8	5.9	11.1	0	6.5	10	0	9.1	0	8.3	5.9

File Name: Centerville and Manchester

Site Code:

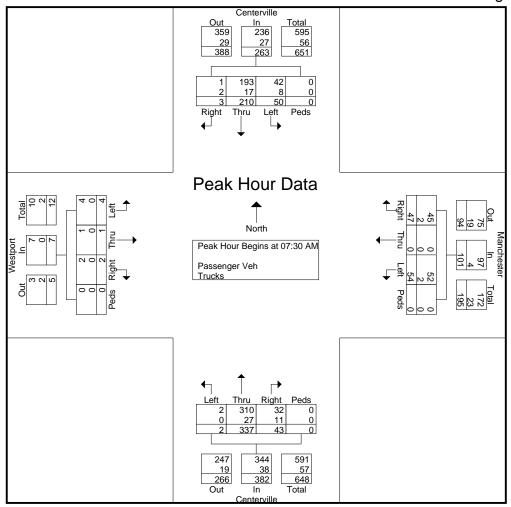
Start Date : 6/8/2017

			Centervill From Nor					Ianchesto From Eas					Centervill rom Sou					Westpor rom We			
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis	s From 06	:30 AM to	11:45 Al	M - Peak	1 of 1		'						'	'							
Peak Hour for Entir	re Intersec	tion Begin	ns at 07:30	) AM																	
07:30 AM	2	36	9	0	47	11	0	12	0	23	11	123	1	0	135	0	1	2	0	3	208
07:45 AM	0	58	10	0	68	10	0	15	0	25	10	85	1	0	96	0	0	1	0	1	190
08:00 AM	0	55	14	0	69	8	0	16	0	24	10	61	0	0	71	0	0	1	0	1	165
08:15 AM	1	61	17	0	79	18	0	11	0	29	12	68	0	0	80	2	0	0	0	2	190
Total Volume	3	210	50	0	263	47	0	54	0	101	43	337	2	0	382	2	1	4	0	7	753
% App. Total	1.1	79.8	19	0		46.5	0	53.5	0		11.3	88.2	0.5	0		28.6	14.3	57.1	0		
PHF	.375	.861	.735	.000	.832	.653	.000	.844	.000	.871	.896	.685	.500	.000	.707	.250	.250	.500	.000	.583	.905
Passenger Veh	1	193	42	0	236	45	0	52	0	97	32	310	2	0	344	2	1	4	0	7	684
% Passenger Veh	33.3	91.9	84.0	0	89.7	95.7	0	96.3	0	96.0	74.4	92.0	100	0	90.1	100	100	100	0	100	90.8
Trucks	2	17	8	0	27	2	0	2	0	4	11	27	0	0	38	0	0	0	0	0	69
% Trucks	66.7	8.1	16.0	0	10.3	4.3	0	3.7	0	4.0	25.6	8.0	0	0	9.9	0	0	0	0	0	9.2

File Name: Centerville and Manchester

Site Code:

Start Date : 6/8/2017



File Name: Centerville and Manchester

Site Code:

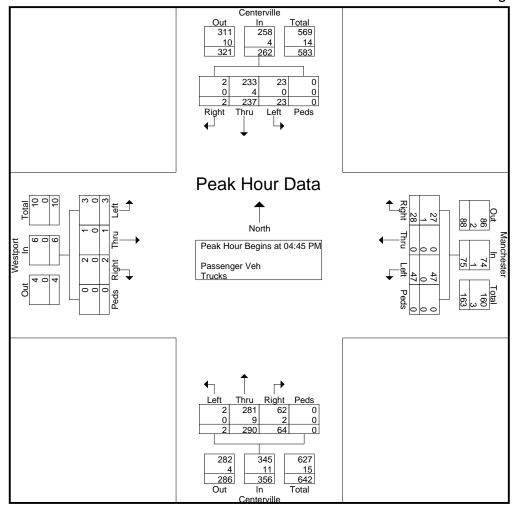
Start Date : 6/8/2017

		_	Centerville rom Nort					lancheste rom Eas					Centervill					Westpor rom We			
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis	From 12:0	00 PM to	05:45 PM	- Peak 1	of 1																
Peak Hour for Entir	e Intersect	ion Begin	s at 04:45	PM																	
04:45 PM	0	61	5	0	66	7	0	15	0	22	21	71	0	0	92	1	1	2	0	4	184
05:00 PM	0	60	6	0	66	9	0	12	0	21	16	66	0	0	82	0	0	0	0	0	169
05:15 PM	2	59	7	0	68	5	0	8	0	13	14	74	2	0	90	1	0	0	0	1	172
05:30 PM	0	57	5	0	62	7	0	12	0	19	13	79	0	0	92	0	0	1	0	1	174
Total Volume	2	237	23	0	262	28	0	47	0	75	64	290	2	0	356	2	1	3	0	6	699
% App. Total	0.8	90.5	8.8	0		37.3	0	62.7	0		18	81.5	0.6	0		33.3	16.7	50	0		
PHF	.250	.971	.821	.000	.963	.778	.000	.783	.000	.852	.762	.918	.250	.000	.967	.500	.250	.375	.000	.375	.950
Passenger Veh	2	233	23	0	258	27	0	47	0	74	62	281	2	0	345	2	1	3	0	6	683
% Passenger Veh	100	98.3	100	0	98.5	96.4	0	100	0	98.7	96.9	96.9	100	0	96.9	100	100	100	0	100	97.7
Trucks	0	4	0	0	4	1	0	0	0	1	2	9	0	0	11	0	0	0	0	0	16
% Trucks	0	1.7	0	0	1.5	3.6	0	0	0	1.3	3.1	3.1	0	0	3.1	0	0	0	0	0	2.3

File Name: Centerville and Manchester

Site Code:

Start Date : 6/8/2017



File Name: News and Firestone

Site Code : 00681114 Start Date : 6/8/2017

Groups Printed- Passenger Veh - Trucks	
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		]	Firestone	;				News	<u>аротти</u>	ea rassenge	, , , , , , ,	- GOILO						News			
			rom Nor					From Eas	st			I	rom Sout	h			I	From Wes	t		
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:00 AM	0	0	7	0	7	0	3	0	0	3	0	0	0	0	0	0	17	0	0	17	27
06:15 AM	0	0	5	0	5	1	6	0	0	7	0	0	0	0	0	0	21	0	0	21	33
06:30 AM	1	0	16	0	17	3	6	0	0	9	0	0	0	0	0	0	26	0	0	26	52
06:45 AM	1	0	14	0	15	1	14	0	0	15	0	0	0	0	0	0	27	0	0	27	57
Total	2	0	42	0	44	5	29	0	0	34	0	0	0	0	0	0	91	0	0	91	169
07:00 AM	2	0	18	0	20	2	23	0	0	25	0	0	0	0	0	0	36	0	0	36	81
07:15 AM	2	0	15	0	17	2	21	0	0	23	0	0	0	0	0	0	47	0	0	47	87
07:30 AM	1	0	24	0	25	9	30	0	0	39	0	0	0	0	0	0	49	0	0	49	113
07:45 AM	5	0	15	0	20	11	29	0	0	40	0	0	0	0	0	0	55	2	0	57	117
Total	10	0	72	0	82	24	103	0	0	127	0	0	0	0	0	0	187	2	0	189	398
08:00 AM	4	0	27	0	31	11	31	0	0	42	0	0	0	0	0	0	39	3	0	42	115
08:15 AM	7	0	19	0	26	12	35	0	0	47	0	0	0	0	0	0	45	5	0	50	123
08:30 AM	1	0	30	0	31	9	25	0	0	34	0	0	0	0	0	0	58	4	0	62	127
08:45 AM	2	0	18	0	20	11	40	0	0		0	0	0	0	0	0	61	1	0	62	133
Total	14	0	94	0	108	43	131	0	0	174	0	0	0	0	0	0	203	13	0	216	498
09:00 AM	3	0	25	0	28	13	46	0	0	59	0	0	0	0	0	0	66	0	0	66	153
09:15 AM	5	0	22	0	27	16	25	0	0	41	0	0	0	0	0	0	38	1	0	39	107
09:30 AM	4	0	18	0	22	13	29	0	0	42	0	0	0	0	0	0	36	1	0	37	101
09:45 AM	4	0	22	0	26	19	22	0	0	41	0	0	0	0	0	0	35	0	0	35	102
Total	16	0	87	0	103	61	122	0	0	183	0	0	0	0	0	0	175	2	0	177	463
10:00 AM	1	0	19	0	20	22	28	0	0	50	0	0	0	0	0	0	34	2	0	36	106
10:15 AM	4	0	29	0	33	10	32	0	0	42	0	0	0	0	0	0	37	0	0	37	112
10:30 AM	3	0	27	0	30	13	22	0	0	35	0	0	0	0	0	0	39	1	0	40	105
10:45 AM	3	0	35	0	38	33	35	0	0		0	0	0	0	0	0	43	1	0	44	150
Total	11	0	110	0	121	78	117	0	0	195	0	0	0	0	0	0	153	4	0	157	473
11:00 AM	3	0	22	0	25	31	30	0	0	61	0	0	0	0	0	0	31	2	0	33	119
11:15 AM	6	0	22	0	28	20	35	0	0		0	0	0	0	0	0	41	1	0	42	125
11:30 AM	0	0	31	0	31	21	52	0	0		0	0	0	0	0	0	43	0	0	43	147
11:45 AM	2	0	29	0	31	33	35	0	0	68	0	0	0	0	0	0	31	3	0	34	133
Total	11	0	104	0	115	105	152	0	0	257	0	0	0	0	0	0	146	6	0	152	524
12:00 PM	3	0	19	0	22	29	23	0	0	52	0	0	0	0	0	0	32	3	0	35	109
12:15 PM	3	0	26	0	29	33	40	0	0		0	0	0	0	0	0	36	2	0	38	140
12:30 PM	0	0	21	0	21	29	44	0	0	73	0	0	0	0	0	0	33	2	0	35	129
12:45 PM	6	0	17	0	23	35	65	0	0	100	0	0	0	0	0	0	41	4	0	45	168
Total	12	0	83	0	95	126	172	0	0	298	0	0	0	0	0	0	142	11	0	153	546

File Name: News and Firestone

Site Code : 00681114 Start Date : 6/8/2017

Groups Printed- P	assenger Ve	eh - Trucks
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			Firestone				1	News From Eas	•	d- I assenge	V CH 17		rom Sout	h			F	News From Wes	et .		
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
01:00 PM	6	0	32	0	38	28	39	0	0	67	0	0	0	0	0	0	47	0	0	47	152
01:15 PM	0	0	30	0	30	25	44	0	0	69	0	0	0	0	0	0	31	4	0	35	134
01:30 PM	1	0	27	0	28	21	34	0	0	55	0	0	0	0	0	0	40	0	0	40	123
01:45 PM	3	0	25	0	28	32	41	0	0	73	0	0	0	0	0	0	28	1	0	29	130
Total	10	0	114	0	124	106	158	0	0	264	0	0	0	0	0	0	146	5	0	151	539
02:00 PM	4	0	28	0	32	22	40	0	1	63	0	0	0	0	0	0	49	6	0	55	150
02:15 PM	2	0	32	0	34	29	46	0	0	75	0	0	0	0	0	0	29	0	0	29	138
02:30 PM	3	0	26	0	29	37	66	0	0	103	0	0	0	0	0	0	43	2	0	45	177
02:45 PM	8	0	26	0	34	30	59	0	0	89	0	0	0	0	0	0	37	2	0	39	162
Total	17	0	112	0	129	118	211	0	1	330	0	0	0	0	0	0	158	10	0	168	627
03:00 PM	2	0	18	0	20	27	48	0	0	75	0	0	0	0	0	0	30	5	0	35	130
03:15 PM	1	0	24	0	25	38	56	0	0	94	0	0	0	0	0	0	35	0	0	35	154
03:30 PM	2	0	19	0	21	34	60	0	0	94	0	0	0	0	0	0	64	8	0	72	187
03:45 PM	3	0	20	0	23	24	56	0	0	80	0	0	0	0	0	0	44	3	0	47	150
Total	8	0	81	0	89	123	220	0	0	343	0	0	0	0	0	0	173	16	0	189	621
04:00 PM	4	0	14	0	18	39	51	0	0	90	0	0	0	0	0	0	52	5	0	57	165
04:15 PM	1	0	20	0	21	36	52	0	0	88	0	0	0	0	0	0	37	4	0	41	150
04:30 PM	6	0	16	0	22	33	61	0	0	94	0	0	0	0	0	0	38	5	0	43	159
04:45 PM	3	0_	15	0	18	27	67	0	0	94	0	0	0	0	0	0	37	3	0	40_	152
Total	14	0	65	0	79	135	231	0	0	366	0	0	0	0	0	0	164	17	0	181	626
05:00 PM	0	0	17	0	17	39	60	0	0	99	0	0	0	0	0	0	34	2	0	36	152
05:15 PM	1	0	12	0	13	25	57	0	0	82	0	0	0	0	0	0	41	0	0	41	136
05:30 PM	3	0	21	0	24	21	63	0	0	84	0	0	0	0	0	0	35	3	0	38	146
05:45 PM	2	0	24	0	26	35	70	0	0	105	0	0	0	0	0	0	34	4	0	38	169
Total	6	0	74	0	80	120	250	0	0	370	0	0	0	0	0	0	144	9	0	153	603
Grand Total	131	0	1038	0	1169	1044	1896	0	1	2941	0	0	0	0	0	0	1882	95	0	1977	6087
Apprch %	11.2	0	88.8	0		35.5	64.5	0	0		0	0	0	0		0	95.2	4.8	0		
Total %	2.2	0	17.1	0	19.2	17.2	31.1	0	0	48.3	0	0	0	0	0	0	30.9	1.6	0	32.5	<b>504</b>
Passenger Veh	122	0	1024	0	1146	1034	1819	0	1	2854	0	0	0	0	0	0	1827	90	0	1917	5917
% Passenger Veh	93.1	0	98.7	0	98	99	95.9	0	100	97	0	0	0	0	0	0	97.1	94.7	0	97	97.2
Trucks	9	0	14	0	23	10	77	0	0	87	0	0	0	0	0	0	55	5	0	60	170
% Trucks	6.9	0	1.3	0	2	1	4.1	0	0	3	0	0	0	0	0	0	2.9	5.3	0	3	2.8

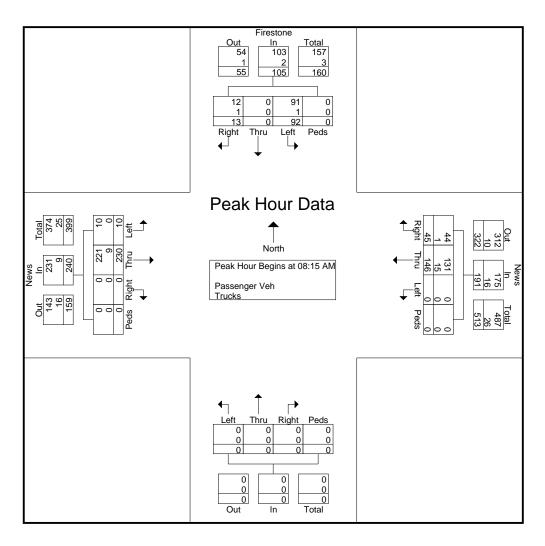
File Name: News and Firestone

Site Code : 00681114 Start Date : 6/8/2017

			Firestone from Nort				]	News From East	t			F	rom Sout	h			F	News From Wes	t		
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis					1 of 1		'		'				'		'						
Peak Hour for Entir	re Intersec	tion Begin	is at 08:15	5 AM																	
08:15 AM	7	0	19	0	26	12	35	0	0	47	0	0	0	0	0	0	45	5	0	50	123
08:30 AM	1	0	30	0	31	9	25	0	0	34	0	0	0	0	0	0	58	4	0	62	127
08:45 AM	2	0	18	0	20	11	40	0	0	51	0	0	0	0	0	0	61	1	0	62	133
09:00 AM	3	0	25	0	28	13	46	0	0	59	0	0	0	0	0	0	66	0	0	66	153
Total Volume	13	0	92	0	105	45	146	0	0	191	0	0	0	0	0	0	230	10	0	240	536
% App. Total	12.4	0	87.6	0		23.6	76.4	0	0		0	0	0	0		0	95.8	4.2	0		
PHF	.464	.000	.767	.000	.847	.865	.793	.000	.000	.809	.000	.000	.000	.000	.000	.000	.871	.500	.000	.909	.876
Passenger Veh	12	0	91	0	103	44	131	0	0	175	0	0	0	0	0	0	221	10	0	231	509
% Passenger Veh	92.3	0	98.9	0	98.1	97.8	89.7	0	0	91.6	0	0	0	0	0	0	96.1	100	0	96.3	95.0
Trucks	1	0	1	0	2	1	15	0	0	16	0	0	0	0	0	0	9	0	0	9	27
% Trucks	7.7	0	1.1	0	1.9	2.2	10.3	0	0	8.4	0	0	0	0	0	0	3.9	0	0	3.8	5.0

File Name: News and Firestone

Site Code : 00681114 Start Date : 6/8/2017



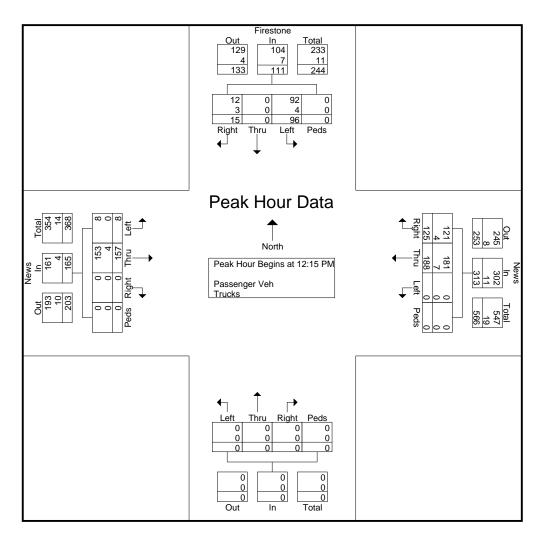
File Name: News and Firestone

Site Code : 00681114 Start Date : 6/8/2017

		]	Firestone					News										News			
		F	rom Nort	h			I	From East	<u> </u>			F	rom Sout	h			F	rom Wes	t		
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis	s From 10:0	00 AM to	01:45 PM	1 - Peak 1	of 1																
Peak Hour for Entir	re Intersect	ion Begin	s at 12:15	PM																	i
12:15 PM	3	0	26	0	29	33	40	0	0	73	0	0	0	0	0	0	36	2	0	38	140
12:30 PM	0	0	21	0	21	29	44	0	0	73	0	0	0	0	0	0	33	2	0	35	129
12:45 PM	6	0	17	0	23	35	65	0	0	100	0	0	0	0	0	0	41	4	0	45	168
01:00 PM	6	0	32	0	38	28	39	0	0	67	0	0	0	0	0	0	47	0	0	47	152
Total Volume	15	0	96	0	111	125	188	0	0	313	0	0	0	0	0	0	157	8	0	165	589
% App. Total	13.5	0	86.5	0		39.9	60.1	0	0		0	0	0	0		0	95.2	4.8	0		
PHF	.625	.000	.750	.000	.730	.893	.723	.000	.000	.783	.000	.000	.000	.000	.000	.000	.835	.500	.000	.878	.876
Passenger Veh	12	0	92	0	104	121	181	0	0	302	0	0	0	0	0	0	153	8	0	161	567
% Passenger Veh	80.0	0	95.8	0	93.7	96.8	96.3	0	0	96.5	0	0	0	0	0	0	97.5	100	0	97.6	96.3
Trucks	3	0	4	0	7	4	7	0	0	11	0	0	0	0	0	0	4	0	0	4	22
% Trucks	20.0	0	4.2	0	6.3	3.2	3.7	0	0	3.5	0	0	0	0	0	0	2.5	0	0	2.4	3.7

File Name: News and Firestone

Site Code : 00681114 Start Date : 6/8/2017



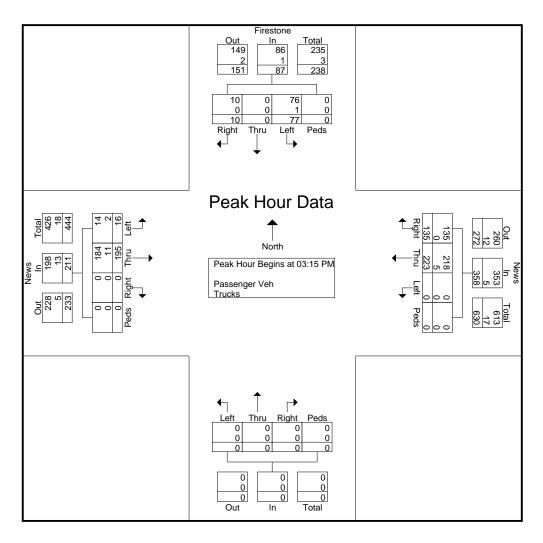
File Name: News and Firestone

Site Code : 00681114 Start Date : 6/8/2017

			Firestone					News					<b>a</b> .					News			
		F1	rom Nortl	h				From East				F:	rom Sout	<u>h</u>			F	rom Wes	<u>t                                      </u>		
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis	s From 02:0	00 PM to	05:45 PM	- Peak 1	of 1																
Peak Hour for Entir	re Intersect	ion Begin	s at 03:15	PM																	
03:15 PM	1	0	24	0	25	38	56	0	0	94	0	0	0	0	0	0	35	0	0	35	154
03:30 PM	2	0	19	0	21	34	60	0	0	94	0	0	0	0	0	0	64	8	0	72	187
03:45 PM	3	0	20	0	23	24	56	0	0	80	0	0	0	0	0	0	44	3	0	47	150
04:00 PM	4	0	14	0	18	39	51	0	0	90	0	0	0	0	0	0	52	5	0	57	165
Total Volume	10	0	77	0	87	135	223	0	0	358	0	0	0	0	0	0	195	16	0	211	656
% App. Total	11.5	0	88.5	0		37.7	62.3	0	0		0	0	0	0		0	92.4	7.6	0		
PHF	.625	.000	.802	.000	.870	.865	.929	.000	.000	.952	.000	.000	.000	.000	.000	.000	.762	.500	.000	.733	.877
Passenger Veh	10	0	76	0	86	135	218	0	0	353	0	0	0	0	0	0	184	14	0	198	637
% Passenger Veh	100	0	98.7	0	98.9	100	97.8	0	0	98.6	0	0	0	0	0	0	94.4	87.5	0	93.8	97.1
Trucks	0	0	1	0	1	0	5	0	0	5	0	0	0	0	0	0	11	2	0	13	19
% Trucks	0	0	1.3	0	1.1	0	2.2	0	0	1.4	0	0	0	0	0	0	5.6	12.5	0	6.2	2.9

File Name: News and Firestone

Site Code : 00681114 Start Date : 6/8/2017



#### **Appendix C: Volume Worksheets**

#### **VOLUME DEVELOPMENT SHEET**

# Longhill Road at Williamsburg W. Drive/Lane Place Drive AM Peak Hour (7:30 AM to 8:30 AM)

			Longhill Road			Longhill Road		Wi	lliamsburg W. D	rive		Lane Place Driv	е
Des	scription	I a A	Eastbound Through	Dialet	T	Westbound Through	Dialet	1.0	Northbound Through	Dialet	I aft	Southbound Through	Diolet
2017	Counts	Left	1 nrougn	Right	Left	1 nrougn	Right	Left	Through	Right	Left	1 nrougn	Right
2017	Cars	3	727	21	41	449	15	39	2	223	54	1	16
	Trucks	0	15	0	2	18	3	3	1	1	2	0	2
Total Exis	sting 2017 Traffic	3	742	21	43	467	18	42	3	224	56	1	18
	T 1.0/	00/	20/	00/	50/	407	170/	70/	220/	00/	40/	00/	110/
	Truck % PHF	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
	1111						0.						
	Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
	Existing												
2019 I	Existing	3	772	22	45	486	19	44	3	233	58	1	19
	Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Ba	ackground Traffic												
	Westport												
Ent	tering Distribution					26%							
	Exiting Distribution		<u>25%</u>										
	ntering Assignment					2							
	Exiting Assignment		<u>7</u>										
_			_										
	Windsor												
Ent	tering Distribution					60%							
	Exiting Distribution		60%										
	ntering Assignment					2							
	Exiting Assignment		<u>7</u>										
_	3 3		_										
	The Village												
Ent	tering Distribution					8%							
	Exiting Distribution		<u>4%</u>										
	ntering Assignment		_			4							
	Exiting Assignment		<u>2</u>			•							
_			=										
2021	No Build	3	819	23	47	514	20	46	3	242	60	1	20
	No Build	4	920	26	53	577	22	52	4	273	68	1	22
	Proposed Trips												
Ent	tering Distribution					60%							
	Exiting Distribution		<u>60%</u>										
	tering Assignment					4							
	Exiting Assignment		<u>13</u>										
Propos	sed + Background												
	2021 Total Traffic	3	832	23	47	518	20	46	3	242	60	1	20
	2027 Total Traffic	4	933	26	53	581	22	52	4	273	68	1	22

#### PM Peak Hour (4:45 PM to 5:45 PM)

		Longhill Road			Longhill Road	d	Willi	iamsburg W. l	Drive	I	ane Place Driv	ve
Description		<b>Eastbound</b>			Westbound			Northbound			Southbound	
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	17	716	35	206	967	38	49	0	132	23	0	13
Trucks	0 17	19 735	0	206	10	38	1	0	126	23	0	1 14
Total Existing 2017 Traffic	1 /	/33	35	206	977	38	50	U	136	23	0	14
Truck %	0%	3%	0%	0%	1%	0%	2%	_	3%	0%	_	7%
PHF			***	***			95					,,,,
Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Existing												
2019 Existing	18	765	36	214	1,016	40	52	0	141	24	0	15
Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Background Traffic												
***												
Westport  Entering Distribution					25%							
Exiting Distribution		28%			2370							
<del>-</del>		2070			7							
Entering Assignment		-			7							
Exiting Assignment		<u>5</u>										
Windsor												
					5.50/							
Entering Distribution		550/			55%							
Exiting Distribution		<u>55%</u>										
Entering Assignment					7							
Exiting Assignment		<u>4</u>										
The Village												
=					50/							
Entering Distribution		50/			5%							
Exiting Distribution		<u>5%</u>										
Entering Assignment					4							
Exiting Assignment		<u>4</u>		1			1					
2021 N. P. III	10	900	27	222	1.075	42	5.4	0	147	25	0	16
2021 No Build	19	909	37 42	223 251	1,075	42	54	0	147	25 28	0	16
2027 No Build	21	909	42	231	1,209	4/	61	0	165	28	0	18
Proposed Trips												
Entering Distribution					55%							
Exiting Distribution		55%			33/0							
Extens Distribution		<u>3370</u>			12							
Entanta - Australia				1	13							
Entering Assignment		6										
Exiting Assignment Exiting Assignment		<u>8</u>										
Exiting Assignment		<u>8</u>										
0 0	19	817	37	223	1,088	42	54	0	147	25	0	16

#### **VOLUME DEVELOPMENT SHEET**

#### Longhill Road at Ford's Colony Drive AM Peak Hour (7:30 AM to 8:30 AM)

Description		Longhill Road			Longhill Road			Fords Colony Drive			Dominion Village Entrance		
		Left	Eastbound Through	Right	Left	Westbound Through	Right	Left	Northbound Through	Right	Left	Southbound Through	Right
2017	Counts	LCII	Tillough	Right	Lett	Tillough	Kigitt	Len	Tillough	Right	Len	Tillough	Right
	Cars	3	277	34	103	247	1	63	1	130	0	1	0
	Trucks	0	16	2	3	19	0	7	0	0	0	0	0
Total Exi	sting 2017 Traffic	3	293	36	106	266	1	70	1	130	0	1	0
	TI- 0/	00/	<i>5</i> 0/	60/	20/	70/	00/	100/	00/	00/		00/	
	Truck % PHF	0%	5%	6%	3%	7%	0%	10%	0%	0%	-	0%	-
PHF							0.	.03					
	Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
	Existing												
2019	Existing	3	305	37	110	277	1	73	1	135	0	1	0
	Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
B	ackground Traffic												
	Westport												
Ent	tering Distribution					26%							
	Exiting Distribution		25%										
En	tering Assignment					2							
]	Exiting Assignment		<u>7</u>										
	Windsor												
Ent	tering Distribution			20%	60%								
1	Exiting Distribution							20%		60%			
En	tering Assignment			1	2								
]	Exiting Assignment							<u>2</u>		7			
	The Village												
Ent	tering Distribution					8%							
1	Exiting Distribution		<u>4%</u>										
En	tering Assignment					4							
]	Exiting Assignment		<u>2</u>										
2021	No Build	3	326	39	116	294	1	78	1	148	0	1	0
2027	No Build	4	366	44	131	331	1	88	1	165	0	1	0
	Proposed Trips												
	Entering Distribution			20%	60%								
1	Exiting Distribution							<u>20%</u>		<u>60%</u>			
En	Entering Assignment			1	4								
]	Exiting Assignment							<u>4</u>		<u>13</u>			
Propo	sed + Background												
2021 Total Traffic		3	326	40	120	294	1	82	1	161	0	1	0
	2027 Total Traffic	4	366	45	135	331	1	92	1	178	0	1	0

#### PM Peak Hour (4:45 PM to 5:45 PM)

1		Longhill Road			Longhill Road			Fo	rds Colony Di	rive	Dominion Village Entrance		
Description		<b>Eastbound</b>			Westbound				Northbound		Southbound		
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017	Counts												
	Cars	0	337	53	192	277	2	45	2	119	4	0	5
Trucks		0	3	0	0	5	0	0	1	2	0	0	0
Total Existing 2017 Traffic		0	340	53	192	282	2	45	3	121	4	0	5
	Tensols 0/	_	1%	0%	0%	2%	0%	0%	33%	2%	0%	-	0%
Truck % PHF			1 / 0	070	070	2/0		94	3370	2/0	070	-	070
rnr							0.	7-					
	Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
	Existing												
2019	Existing	0	354	55	200	293	2	47	3	126	4	0	5
	Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
В	ackground Traffic												
	Westport												
	tering Distribution					25%							
	Exiting Distribution		<u>28%</u>										
	ntering Assignment					7							
-	Exiting Assignment		<u>5</u>										
	Windsor												
En	tering Distribution			15%	55%								
]	Exiting Distribution							<u>15%</u>		<u>55%</u>			
En	ntering Assignment			2	7								
	Exiting Assignment							<u>1</u>		<u>4</u>			
	The Village												
Entering Distribution						5%							
Exiting Distribution  Exiting Distribution			<u>5%</u>			270							
Entering Assignment			<u>570</u>			4							
Exiting Assignment  Exiting Assignment			4			4							
	Extens Assignment		<u>4</u>										
2021	No Build	0	377	59	215	316	2	50	3	135	4	0	5
2021	No Build	0	424	66	242	354	2	56	4	152	5	0	6
2027	140 Duild	0	724	- 00	∠+∠	JJ4		30	+	132	3	0	U
	D 170 *												
Proposed Trips				1507	5507								
Entering Distribution				15%	55%								
Exiting Distribution								<u>15%</u>		<u>55%</u>			
Entering Assignment				4	13								
Exiting Assignment								2		<u>8</u>			
	sed + Background												
2021 Total Traffic		0	377	63	228	316	2	52	3	143	4	0	5
2027 Total Traffic		0	424	70	255	354	2	58	4	160	5	0	6

### **VOLUME DEVELOPMENT SHEET**

#### Centerville Road at Manchester Drive AM Peak Hour (7:30 AM to 8:30 AM)

		Westport		]	Manchester Driv	e		Centerville Road			Centerville Road	
Description	Left	Eastbound Through	Right	Left	Westbound Through	Right	Left	Northbound Through	Right	Left	Sout hbound Through	Right
2017 Counts												
Cars	4	1	2	52	0	45	2	310	32	42	193	1
Trucks	0	0	0	2	0	2	0	27	11	8	17	2
otal Existing 2017 Traffic	4	1	2	54	0	47	2	337	43	50	210	3
Truck%	0%	0%	0%	4%		4%	0%	8%	26%	16%	8%	67%
PHF	070	070	070	470	-		.91	870	2070	1070	670	0770
•						-						
Growth Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Existing					•	10		251			***	•
2019 Existing	2.50/	2.5%	2 50/	57	0	49	2 50/	354	45	53	221	3
Growth Rate  Background Traffic	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Dacigi oulid ITallic												
Westport												
Entering Distribution							25%					75%
Exiting Distribution	72%		<u>28%</u>									
Entering Assignment							2					7
Exiting Assignment	<u>19</u>		7									
Windsor												
Entering Distribution									15%	5%		
Exiting Distribution				<u>15%</u>		<u>5%</u>						
Entering Assignment									1	0		
Exiting Assignment				2		<u>1</u>						
The Village												
Entering Distribution											22%	
Exiting Distribution								12%				
Entering Assignment											11	
Exiting Assignment								<u>6</u>				
2021 N. D. W.	22	1	0	(2)	0	52	4	270	40	56	242	10
2021 No Build 2027 No Build	23	1	9	62 71	0	52 61	4	378 437	48 55	56 65	243	10
2027 NO Build	24	1	10	71		01	4	43/	- 33	63	280	11
Proposed Trips												
Entering Distribution									15%	5%		
Exiting Distribution				15%		50/_			1370	370		
Entering Assignment				1370		<u>5%</u>			1	0		
Exiting Assignment				<u>3</u>		<u>1</u>			1	V		
LAIGHI ASSIGNMENT				2		±						
Proposed + Background												
2021 Total Traffic	23	1	9	65	0	53	4	378	49	56	243	10
2027 Total Traffic	24	1	10	74	0	62	4	437	56	65	280	11

#### PM Peak Hour (4:45 PM to 5:45 PM)

			Westport		N	fanchester Driv	/e	(	Centerville Roa	d	(	Centerville Road	d
Desc	cription		Eastbound			Westbound			Northbound			Sout hbound	
2017	Counts	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017	Counts	3	1	2	47	0	27	2	281	62	23	233	2
	Trucks	0	0	0	0	0	1	0	9	2	0	4	0
otal Existin	g 2017 Traffic	3	1	2	47	0	28	2	290	64	23	237	2
	_												
	Truck%	0%	0%	0%	0%	-	4%	0%	3%	3%	0%	2%	0%
	PHF				T		0.	.95			·		
	C I D I	2.50/	2.50/	2.50/	2.50/	2.50/	2.50/	2.50/	2.50/	2.50/	2.50/	2.50/	0.50/
	Growth Rate Existing	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
2019	Existing	3	1	2	49	0	29	2	305	67	24	249	2
	Growth Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Back	ground Traffic												
	Westport												
	ing Distribution	700/		2107				29%					71%
-	ing Distribution	<u>79%</u>		21%									• •
	ing Assignment	4.0						8					20
Exiti	ing Assignment	<u>13</u>		4									
	****												
	Windsor												
	ing Distribution									30%			
	ing Distribution				<u>30%</u>								
	ing Assignment									4			
Exiti	ing Assignment				<u>5</u>								
	The Village											****	
	ing Distribution											13%	
	ing Distribution								14%				
	ing Assignment											11	
Exiti	ing Assignment								<u>11</u>				
2021	No Build	16			56	0	20	10	221	7.1	25	272	22
2021	No Build	16 17	1	6	64	0	30	10	331	74 86	29	273 314	22
2027	NO Dalla	1/	ı	0	04	U	33	10	383	00	29	314	LL
,	Proposed Trips												
	ing Distribution									30%			
	ing Distribution				30%					50/0			
	ing Distribution				3070					7			
					4					/			
EXIU	ing Assignment				4								
Proposed	+ Background												
	+ Background 1 Total Traffic	16	1	6	60	0	30	10	331	81	25	273	22
	7 Total Traffic	17	1	6	68	0	35	10	383	93	29	314	22
202	/ Total Traffic	17	ı	0	08	U	33	10	383	93	29	314	LL

### **VOLUME DEVELOPMENT SHEET**

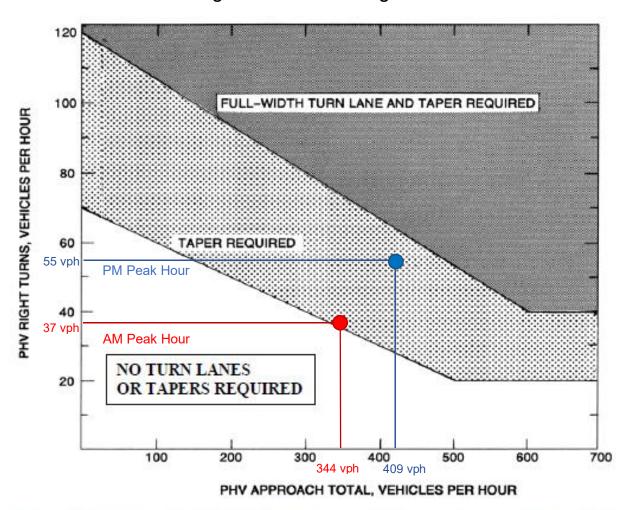
#### Firestone Drive at News Road AM Peak Hour (7:30 AM to 8:30 AM)

D.	News Road Pescription Eastbound					News Road Westbound		F	Proposed Entrance	2		Firestone Drive	:
De	escription	Left	Through	Right	Left	Through	Right	Left	Northbound Through	Right	Left	Southbound Through	Right
2017	Counts	2011	rmougn	rugiii	Den	Tinough	rugui		1110491	rugui	2011	rmougn	rugin
	Cars	8	182	0	0	109	42	-	-	-	85	0	17
	Trucks	2	6	0	0	16	1	-	-	-	0	0	0
Total Ex	isting 2017 Traffic	10	188	0	0	125	43	0	0	0	85	0	17
	Truck %	20%	3%	_	-	13%	2%	_	_	_	0%	-	0%
	PHF	2070	370	-	-	1370		95			070		070
	Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
	Existing												
2019	Existing	10	196	0	0	130	45	0	0	0	88	0	18
	Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
B	Sackground Traffic										-		
	Westport										1		
En	tering Distribution					20%							
	Exiting Distribution		<u>25%</u>										
E	ntering Assignment					2							
	Exiting Assignment		<u>7</u>										
	Windsor												
En	tering Distribution					10%							
	Exiting Distribution		<u>10%</u>										
E	ntering Assignment					0							
	Exiting Assignment		<u>1</u>										
	The Village												
En	tering Distribution			37%	63%								
	Exiting Distribution							<u>27%</u>		<u>73%</u>			
E	ntering Assignment			18	31								
	Exiting Assignment							<u>14</u>		<u>38</u>	1		
2021	No Build	10	212	18	31	137	47	14	0	38	92	0	19
2027	No Build	12	237	18	31	154	53	14	0	38	103	0	21
											1		
_	Proposed Trips					1007							
	tering Distribution		100/			10%					1		
	Exiting Distribution		<u>10%</u>								1		
	ntering Assignment					1					1		
	Exiting Assignment		2								1		
_	1. 5.												
	osed + Background	10	214	10	21	120	47	1.4	^	20	02	^	10
	2021 Total Traffic	10	214	18	31	138	47	14	0	38	92	0	19
	2027 Total Traffic	12	239	18	31	155	53	14	0	38	103	0	21

#### PM Peak Hour (4:45 PM to 5:45 PM)

			News Road			News Road		I	Proposed Entranc	e		Firestone Drive	;
Des	cription		Eastbound			Westbound			Northbound			Southbound	
	•	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017	Counts			_			_			-			
	Cars	8	144	0	0	243	112	-	-	-	64	0	7
	Trucks	0	3	0	0	4	0	-	-	-	1	0	0
Total Exis	sting 2017 Traffic	8	147	0	0	247	112	0	0	0	65	0	7
	Tensols 9/	00/	20/			20/	00/				20/		00/
	Truck % PHF	0%	2%	-	-	2%	0%	96	-	-	2%	-	0%
	Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
	Existing												
2019	Existing	8	153	0	0	257	117	0	0	0	68	0	7
	Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Ba	ekground Traffic												
	***												
End	Westport ering Distribution					25%							
	Exiting Distribution		20%			23%							
			2070			_							
	tering Assignment					7							
Ī	Exiting Assignment		<u>3</u>										
	Windsor												
End	ering Distribution					30%							
	Exiting Distribution		200/			30%							
_	_		<u>30%</u>										
	tering Assignment					4							
<u>I</u>	Exiting Assignment		<u>2</u>										
	The Village												
Ent	ering Distribution			28%	72%								
				2070	7270			200/		710/			
	Exiting Distribution							<u>29%</u>		<u>71%</u>			
	tering Assignment			23	59								
<u>I</u>	Exiting Assignment							<u>23</u>		<u>56</u>			
2021	No Build	8	164	23	59	278	122	23	0	56	71	0	7
2027	No Build	9	182	23	59	308	137	23	0	56	80	0	8
												<u> </u>	
	Proposed Trips												
Ent	ering Distribution					30%							
	Exiting Distribution		30%										
	tering Assignment					7							
	Exiting Assignment		4			/							
1	Extung Assignment		<u>4</u>										
Propos	sed + Background												
TIODOS	9												
	2021 Total Traffic	8	168	23	59	285	122	23	0	56	71	0	7

# **Appendix D: Turn Lane and Signal Warrant Worksheets**



#### LEGEND

PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

### Adjustment for Right Turns

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.

Adjusted right turns = PHV Right Turns - 20
If PHV is not known use formula: PHV = ADT x K x D

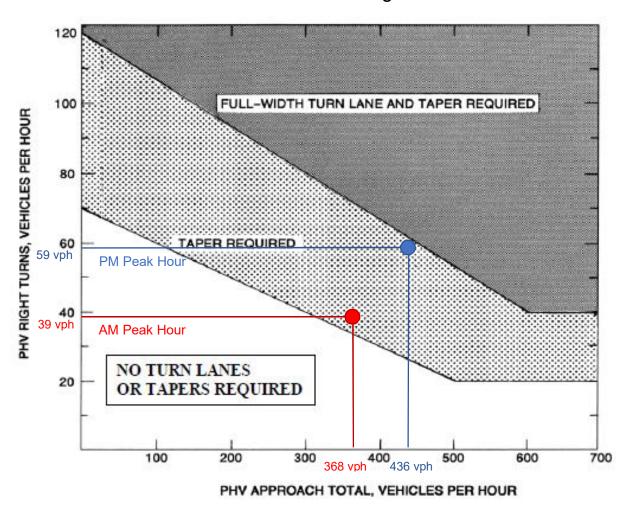
K = the percent of AADT occurring in the peak hour

D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria.

Rev. 1/15



#### LEGEND

PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

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For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.

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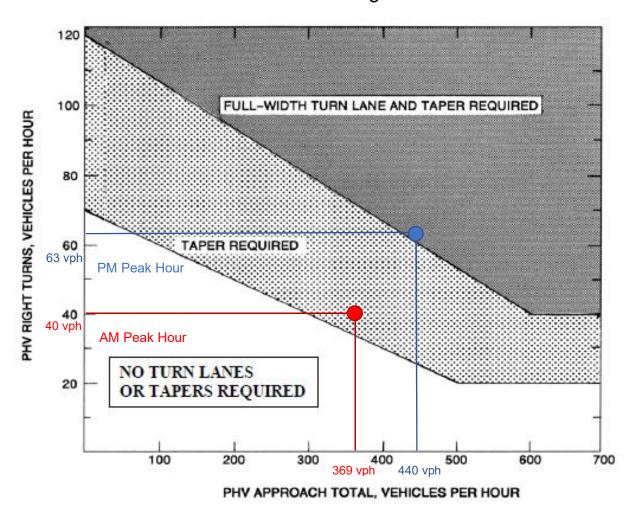
K = the percent of AADT occurring in the peak hour

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Rev 1/15



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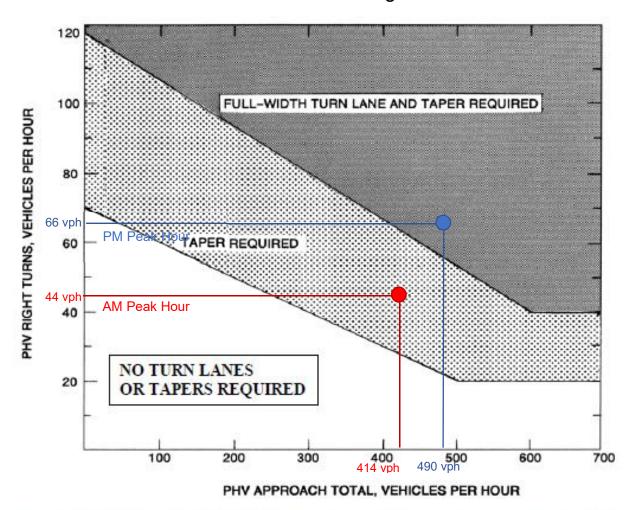
K = the percent of AADT occurring in the peak hour

D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria."

Rev 1/15



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PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

### Adjustment for Right Turns

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.

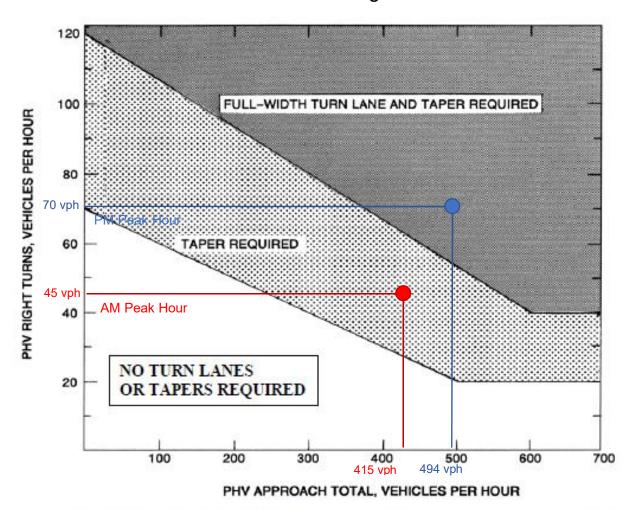
Adjusted right turns = PHV Right Turns - 20
If PHV is not known use formula: PHV = ADT x K x D

K = the percent of AADT occurring in the peak hour D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria."

Rev 1/15



#### LEGEND

PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

### Adjustment for Right Turns

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.

Adjusted right turns = PHV Right Turns - 20
If PHV is not known use formula: PHV = ADT x K x D

K = the percent of AADT occurring in the peak hour D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria."

Rev 1/15

### **Firestone Drive at News Road**

INTERSECTION NAME:	Firestone Drive at News Road	COUNT DATE:	6/8/2017
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INTERSECTION CONDITION: 2019 Existing (No SBR or WBR)

> # OF APPROACH LANES: MAJOR STREET: News Road # OF APPROACH LANES: MINOR STREET: Firestone Drive

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

	•				WARRA	NT 1, Cond	ition A	WARR	ANT 1, Cond	lition B		WARR	ANT 1, Co	mbination V	Varrant			
		MAJOR ST	MINO	R ST							С	ONDITION	A	C	CONDITION	В	WARRANT 2	WARRANT 3
		BOTH APPROACHES	HIGHEST A	APPROACH	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VA	LUES	EB/WB	SB	NB	420	105		630	53		336	84		504	42			
06:00 AM TO	07:00 AM	125	42	0											Υ			
07:00 AM TO	08:00 AM	304	72	0					Υ						Υ			
08:00 AM TO	09:00 AM	360	94	0					Υ		Υ	Υ	Υ		Υ			
09:00 AM TO	10:00 AM	311	87	0					Υ			Υ			Υ			
10:00 AM TO	11:00 AM	285	110	0		Υ			Υ			Υ			Υ			
11:00 AM TO	12:00 AM	316	104	0					Υ			Υ			Υ			
12:00 PM TO	01:00 PM	338	83	0					Υ		Υ				Υ			
01:00 PM TO	02:00 PM	321	114	0		Υ			Υ			Υ			Υ			
02:00 PM TO	03:00 PM	394	112	0		Υ			Υ		Y	Y	Υ		Υ			
03:00 PM TO	04:00 PM	425	81	0	Υ				Υ		Υ				Υ			
04:00 PM TO	05:00 PM	428	65	0	Υ				Υ		Y				Υ			
05:00 PM TO	06:00 PM	419	74	0					Y		Y				Υ			
		0	0	0														
		0	0	0														
		0	0	0														
		0	0	0														
		4,026	1,038	0	0					0			2			0	0	0
					8 HOURS NEEDED 8 HOURS NEEDED					ED	8 HO	URS OF BO	TH COND	. A AND CO	OND. B NEE	DED	4 HRS NEEDED	1 HR NEEDED
					NOT SATISFIED NOT SATISFIED NOT SATISFIED							NOT SATISFIED	NOT SATISFIED					

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant Condition A: Minimum Vehicular Volume Condition B: Interruption of Continuous Traffic

Combination: Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

INTERSECTION NAME:	Firestone Drive at News Road	COUNT DATE:	6/8/2017
--------------------	------------------------------	-------------	----------

INTERSECTION CONDITION: 2021 No Build (No SBR, WBR, or NBR)

> MAJOR STREET: MINOR STREET: Firestone Drive/The Villages Driveway

# OF APPROACH LANES: # OF APPROACH LANES:

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

						WARRA	NT 1, Cond	lition A	WARR	ANT 1, Cond	lition B		WARR	ANT 1, Co	mbination W	/arrant			
			MAJOR ST	MINO	R ST							C	ONDITION	A	С	ONDITION E	3	WARRANT 2	WARRANT 3
			BOTH APPROACHES	HIGHEST A	APPROACH	MAJOR STREET	MINOR STREET	BOTH MET											
THRESHOLD \	VALUE	S	EB/WB	SB	NB	420	105		630	53		336	84		504	42			
06:00 AM	TO	07:00 AM	151	42	32											Υ			
07:00 AM 1	TO	08:00 AM	348	72	50					Υ		Υ				Υ			
08:00 AM 1	TO	09:00 AM	417	94	51					Υ		Υ	Υ	Υ		Υ			
09:00 AM 1	TO	10:00 AM	363	87	36					Υ		Υ	Υ	Υ		Υ			
10:00 AM 7	TO	11:00 AM	338	110	31		Υ			Υ		Υ	Υ	Υ		Υ			
11:00 AM T	TO	12:00 AM	374	104	32					Υ		Υ	Υ	Υ		Υ			
12:00 PM 1	TO	01:00 PM	393	83	32					Υ		Y				Υ			
01:00 PM 1	TO	02:00 PM	377	114	34		Υ			Υ		Υ	Υ	Υ		Υ			
02:00 PM 1	TO	03:00 PM	462	112	36	Υ	Υ	Υ		Υ		Υ	Υ	Υ		Υ			
03:00 PM 1	TO	04:00 PM	504	81	38	Y				Υ		Υ			Υ	Υ	Υ		
04:00 PM 1	TO	05:00 PM	520	65	38	Υ				Υ		Υ			Υ	Υ	Υ		
05:00 PM 1	TO	06:00 PM	518	74	39	Y				Υ		Y			Υ	Υ	Υ		
			0	0	0														
			0	0	0														
			0	0	0														
			0	0	0														
			4,765	1,038	449	1				0			6			3	0	0	
							URS NEED		OURS NEED		8 HO	URS OF BO		. A AND CO	ND. B NEE	DED	4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIE	

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant Condition A: Minimum Vehicular Volume Condition B: Interruption of Continuous Traffic

Combination: Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

INTERSECTION NAME:	Firestone Drive at News Road	COUNT DATE:	6/8/201

INTERSECTION CONDITION: 2021 Build (No SBR, WBR, or NBR)

> MAJOR STREET: News Road MINOR STREET: Firestone Drive/The Villages Driveway

# OF APPROACH LANES: # OF APPROACH LANES:

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

					WARRA	ANT 1, Cond	lition A	WARR	ANT 1, Cond	lition B		WARR	ANT 1, Co	mbination W	/arrant			
		MAJOR ST	MINO	R ST						,	С	ONDITION	A	С	ONDITION	В	WARRANT 2	WARRANT 3
		BOTH APPROACHES	HIGHEST A	APPROACH	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALU	IES	EB/WB	SB	NB	420	105		630	53		336	84		504	42			
06:00 AM TO	07:00 AM	151	43	32											Υ			
07:00 AM TO	08:00 AM	348	74	50					Υ		Υ				Υ			
08:00 AM TO	09:00 AM	417	96	51					Υ		Υ	Υ	Υ		Υ			
09:00 AM TO	10:00 AM	363	88	36					Υ		Υ	Υ	Υ		Υ			
10:00 AM TO	11:00 AM	338	111	31		Υ			Υ		Υ	Υ	Υ		Υ			
11:00 AM TO	12:00 AM	374	105	32		Υ			Υ		Υ	Υ	Υ		Υ			
12:00 PM TO	01:00 PM	393	84	32					Υ		Υ	Υ	Υ		Υ			
01:00 PM TO	02:00 PM	377	115	34		Υ			Υ		Υ	Y	Υ		Υ			
02:00 PM TO	03:00 PM	462	113	36	Υ	Υ	Υ		Υ		Υ	Y	Υ		Υ			
03:00 PM TO	04:00 PM	504	82	38	Υ				Υ		Υ			Υ	Υ	Υ		
04:00 PM TO	05:00 PM	520	66	38	Υ				Υ		Υ			Υ	Υ	Υ		
05:00 PM TO	06:00 PM	518	75	39	Υ				Υ		Υ			Υ	Υ	Υ		
		0	0	0														
		0	0	0														
		0	0	0														
		0	0	0														
		4,765	1,052	449		1				0			7			3	0	0
					8 HC	URS NEED	JRS NEEDED 8 HOURS NEEDED			8 HO	URS OF BO	TH COND	. A AND CO	ND. B NEE	DED	4 HRS NEEDED	1 HR NEEDED	
					NO.	T SATISFIE	ED	NO	T SATISFII	ED	NOT SATISFIED				NOT SATISFIED	NOT SATISFIED		

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant Condition A: Minimum Vehicular Volume

Condition B: Interruption of Continuous Traffic

Combination: Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

INTERSECTION NAME:	Firestone Drive at News Road	COUNT DATE:	6/8/2017

INTERSECTION CONDITION: 2027 No Build (No SBR, WBR, or NBR)

> MAJOR STREET: MINOR STREET: Firestone Drive/The Villages Driveway

# OF APPROACH LANES: # OF APPROACH LANES:

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

				·	WARRA	ANT 1, Cond	lition A	WARR	ANT 1, Cond	dition B		WARR	ANT 1, Co	mbination W	/arrant			
		MAJOR ST	MINO	R ST							С	CONDITION	A	С	ONDITION I	В	WARRANT 2	WARRANT 3
		BOTH APPROACHES	HIGHEST A	PPROACH	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUE	ES .	EB/WB	SB	NB	420	105		630	53		336	84		504	42			
06:00 AM TO	07:00 AM	188	42	32											Υ			
07:00 AM TO	08:00 AM	420	72	50	Υ				Υ		Υ				Υ			
08:00 AM TO	09:00 AM	511	94	51	Υ				Υ		Υ	Υ	Υ	Υ	Υ	Υ		
09:00 AM TO	10:00 AM	453	87	36	Υ				Υ		Υ	Υ	Υ		Υ			
10:00 AM TO	11:00 AM	429	110	31	Υ	Υ	Υ		Υ		Υ	Υ	Υ		Υ			
11:00 AM TO	12:00 AM	474	104	32	Υ				Υ		Υ	Υ	Υ		Υ			
12:00 PM TO	01:00 PM	515	83	32	Υ				Υ		Υ			Υ	Υ	Υ		
01:00 PM TO	02:00 PM	499	114	34	Υ	Υ	Υ		Υ		Υ	Υ	Υ		Υ			
02:00 PM TO	03:00 PM	609	112	36	Υ	Υ	Υ		Υ		Υ	Υ	Υ	Υ	Υ	Υ		
03:00 PM TO	04:00 PM	679	81	38	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
04:00 PM TO	05:00 PM	720	65	38	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
05:00 PM TO	06:00 PM	733	74	39	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
		0	0	0														
		0	0	0														
		0	0	0														
		0	0	0														
		6,230	1,038	449		3				3			6			6	0	0
						OURS NEEDED 8 HOURS NEEDED NOT SATISFIED			8 HO	URS OF BO		. A AND CO	ND. B NEE	DED	4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIED		

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant Condition A: Minimum Vehicular Volume Condition B: Interruption of Continuous Traffic

Combination: Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

INTERSECTION NAME:	Firestone Drive at News Road	COUNT DATE:	6/8/2017

INTERSECTION CONDITION: 2027 Build (No SBR, WBR, or NBR)

> MAJOR STREET: News Road # OF APPROACH LANES: # OF APPROACH LANES: MINOR STREET: Firestone Drive/The Villages Driveway

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

					WARRA	ANT 1, Cond	lition A	WARR	ANT 1, Cond	lition B		WARR	RANT 1, Co	mbination V	/arrant			
		MAJOR ST	MINO	R ST							C	CONDITION	A	С	ONDITION	В	WARRANT 2	WARRANT 3
		BOTH APPROACHES	HIGHEST A	APPROACH	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VA	LUES	EB/WB	SB	NB	420	105		630	53		336	84		504	42			
06:00 AM TO	07:00 AM	188	43	32											Υ			
07:00 AM TO	08:00 AM	420	74	50	Υ				Υ		Υ				Υ			
08:00 AM TO	09:00 AM	511	96	51	Υ				Υ		Υ	Υ	Υ	Υ	Υ	Υ		
09:00 AM TO	10:00 AM	453	88	36	Υ				Υ		Υ	Υ	Υ		Υ			
10:00 AM TO	11:00 AM	429	111	31	Υ	Υ	Υ		Υ		Υ	Υ	Υ		Υ			
11:00 AM TO	12:00 AM	474	105	32	Υ	Υ	Υ		Υ		Υ	Υ	Υ		Υ			
12:00 PM TO	01:00 PM	515	84	32	Υ				Υ		Y	Y	Υ	Υ	Υ	Υ		
01:00 PM TO	02:00 PM	499	115	34	Υ	Υ	Υ		Υ		Υ	Υ	Υ		Υ			
02:00 PM TO	03:00 PM	609	113	36	Υ	Υ	Υ		Υ		Υ	Υ	Υ	Υ	Υ	Υ		
03:00 PM TO	04:00 PM	679	82	38	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
04:00 PM TO	05:00 PM	720	66	38	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
05:00 PM TO	06:00 PM	733	75	39	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
		0	0	0														
		0	0	0														
		0	0	0														
		0	0	0														
		6,230	1,052	449			4			3			7			6	0	0
					8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED  NOT SATISFIED			8 HOURS OF BOTH COND. A AND COND. B NEEDED  NOT SATISFIED					DED	4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIE

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant Condition A: Minimum Vehicular Volume Condition B: Interruption of Continuous Traffic

Combination: Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

## Fords Colony Drive at Longhill Road

#### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME:	Fords Colony Drive at Longhill Road	COUNT DATE:	6/8/2017
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INTERSECTION CONDITION: 2019 Existing (No WBR or NBR)

 MAJOR STREET:
 Longhill Road
 # OF APPROACH LANES:
 2

 MINOR STREET:
 Fords Colony Drive
 # OF APPROACH LANES:
 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

N Y

					lition A	WADD	ANT 1. Cond	lition D		WADD	ANT 1 Co	mbination W	/orront					
		MAJOR ST	MINO	D QT	VVARRY	TIVE I, CONC	IIIOII A	WARK	TINI I, CONC	nuOII D	0	ONDITION			ONDITION E	3	WARRANT 2	WARRANT 3
		BOTH	IVIIIVO	NOI	MAJOR	MINOR	вотн	MAJOR	MINOR	вотн	MAJOR	MINOR	вотн	MAJOR	MINOR	вотн		
		APPROACHES	HIGHEST A	PPROACH	STREET	STREET	MET	STREET	STREET	MET	STREET	STREET	MET	STREET	STREET	MET		
THRESHOLD VALUE	ES	EB/WB	NB	SB	420	105		630	53		336	84		504	42			
06:00 AM TO	07:00 AM	234	15	2														
07:00 AM TO	08:00 AM	604	52	2	Υ						Υ			Υ	Υ	Υ		
08:00 AM TO	09:00 AM	771	63	2	Y			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
09:00 AM TO	10:00 AM	617	44	1	Υ						Υ			Υ	Υ	Υ		
10:00 AM TO	11:00 AM	507	66	5	Υ				Υ		Υ			Υ	Υ	Υ		
11:00 AM TO	12:00 AM	573	45	6	Υ						Υ			Υ	Υ	Υ		
12:00 PM TO	01:00 PM	598	50	5	Υ						Υ			Υ	Υ	Υ		
01:00 PM TO	02:00 PM	551	44	12	Υ						Υ			Υ	Υ	Υ		
02:00 PM TO	03:00 PM	763	55	8	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
03:00 PM TO	04:00 PM	833	75	13	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ	Υ	
04:00 PM TO	05:00 PM	850	56	4	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
05:00 PM TO	06:00 PM	865	39	8	Υ			Υ			Υ			Υ				
		0	0	0														
		0	0	0														
		0	0	0														
		0	0	0														
		7,766	604	68			0			4			0			10	1	0
											·							
					8 HOURS NEEDED			8 HOURS NEEDED		8 HOURS OF BOTH COND. A AND COND. B NEEDED						4 HRS NEEDED	1 HR NEEDED	
					NOT SATISFIED				NOT SATISFIED			NOT SATISFIED					NOT SATISFIED	NOT SATISFIED

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

#### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME:	Fords Colony Drive at Longhill Road	COUNT DATE:	6/8/2017
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INTERSECTION CONDITION: 2021 No Build (No WBR or NBR)

 MAJOR STREET:
 Longhill Road
 # OF APPROACH LANES:
 2

 MINOR STREET:
 Fords Colony Drive
 # OF APPROACH LANES:
 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

N Y

					WARRA	ANT 1, Cond	lition A	WARR	ANT 1, Cond	lition B		WARR	ANT 1, Co	mbination W	/arrant			
		MAJOR ST	MINO	R ST							С	CONDITION	A	С	ONDITION	В	WARRANT 2	WARRANT 3
		BOTH			MAJOR	MINOR	вотн	MAJOR	MINOR	вотн	MAJOR	MINOR	BOTH	MAJOR	MINOR	вотн		
		APPROACHES	HIGHEST A		STREET	STREET	MET	STREET	STREET	MET	STREET	STREET	MET	STREET	STREET	MET		
THRESHOLD VALU	ES	EB/WB	NB	SB	420	105		630	53		336	84		504	42			
06:00 AM TO	07:00 AM	268	18	2														
07:00 AM TO	08:00 AM	665	57	2	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
08:00 AM TO	09:00 AM	843	69	2	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
09:00 AM TO	10:00 AM	674	48	1	Υ			Υ			Υ			Υ	Υ	Υ		
10:00 AM TO	11:00 AM	560	71	5	Υ				Υ		Υ			Υ	Υ	Υ		
11:00 AM TO	12:00 AM	631	49	6	Υ			Υ			Υ			Υ	Υ	Υ		
12:00 PM TO	01:00 PM	656	54	5	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
01:00 PM TO	02:00 PM	608	48	12	Υ						Υ			Υ	Υ	Υ		
02:00 PM TO	03:00 PM	831	59	8	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
03:00 PM TO	04:00 PM	909	80	14	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ	Υ	
04:00 PM TO	05:00 PM	932	60	4	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ	Y	
05:00 PM TO	06:00 PM	950	43	8	Υ			Υ			Υ			Υ	Υ	Υ		
		0	0	0														
		0	0	0														
		0	0	0														
		0	0	0														
,		8,527	656	69		•	0		•	6		•	0		•	11	2	0
											·							
					8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS OF BOTH COND. A AND COND. B NEEDED						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED				NOT SATISFIED					NOT SA	TISFIED			NOT SATISFIED	NOT SATISFIED

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

#### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME:	Fords Colony Drive at Longhill Road	COUNT DATE:	6/8/2017
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INTERSECTION CONDITION: 2021 Build (No WBR or NBR)

 MAJOR STREET:
 Longhill Road
 # OF APPROACH LANES:
 2

 MINOR STREET:
 Fords Colony Drive
 # OF APPROACH LANES:
 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

N Y

					WARD.	ANT 1. Cond	ition A	WARR	ANT 1. Cond	lition B		WADD	ANT 1 Co	mbination W	/arrant			
		MAJOR ST	MINO	R ST	WANTER	1, CONG	IIIOII A	WAININ	11 1, CONG	III D	С	ONDITION			ONDITION E	3	WARRANT 2	WARRANT 3
		BOTH APPROACHES	HIGHEST A		MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALU	ES	EB/WB	NB	SB	420	105		630	53		336	84		504	42			
06:00 AM TO	07:00 AM	273	23	2														
07:00 AM TO	08:00 AM	673	64	2	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Y		
08:00 AM TO	09:00 AM	855	77	2	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ	Υ	
09:00 AM TO	10:00 AM	686	53	1	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
10:00 AM TO	11:00 AM	573	76	5	Υ				Υ		Υ			Υ	Υ	Υ		
11:00 AM TO	12:00 AM	646	54	6	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
12:00 PM TO	01:00 PM	671	57	5	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
01:00 PM TO	02:00 PM	623	52	12	Υ						Υ			Υ	Υ	Υ		
02:00 PM TO	03:00 PM	850	63	8	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
03:00 PM TO	04:00 PM	932	84	14	Υ			Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	
04:00 PM TO	05:00 PM	960	64	4	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ	Υ	
05:00 PM TO	06:00 PM	982	47	8	Υ			Υ			Υ			Υ	Υ	Υ		
		0	0	0														
		0	0	0														
		0	0	0														
		0	0	0														
		8,724	714	69			0			8			1			11	3	0
					8 HC	URS NEED	ED	8 HOURS NEEDED		8 HOURS OF BOTH COND. A AND COND. B NEEDED					DED	4 HRS NEEDED	1 HR NEEDED	
					NOT SATISFIED				SATISFIED				NOT SA	TISFIED			NOT SATISFIED	NOT SATISFIED

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

#### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME:	Fords Colony Drive at Longhill Road	COUNT DATE:	6/8/2017
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INTERSECTION CONDITION: 2027 No Build (No WBR or NBR)

 MAJOR STREET:
 Longhill Road
 # OF APPROACH LANES:
 2

 MINOR STREET:
 Fords Colony Drive
 # OF APPROACH LANES:
 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

N Y

				WARRANT 1, Condition A					ANT 1. Cond	lition P		WADD	ANT 1 Co	mbination W	/orront			
		MAJOR ST	MINO	D QT	WARRA	TIVE I, CONC	IIIOH A	WARK	TIVE I, COMO	iiuOII D	0	ONDITION			ONDITION E	3	WARRANT 2	WARRANT 3
		BOTH	WIINO	N 31	MAJOR	MINOR	вотн	MAJOR	MINOR	вотн	MAJOR	MINOR	вотн	MAJOR	MINOR	вотн		
		APPROACHES	HIGHEST A	PPROACH	STREET	STREET	MET	STREET	STREET	MET	STREET	STREET	MET	STREET	STREET	MET		
THRESHOLD VALU	ES	EB/WB	NB	SB	420	105		630	53		336	84		504	42			
06:00 AM TO	07:00 AM	300	20	2														
07:00 AM TO	08:00 AM	743	64	2	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
08:00 AM TO	09:00 AM	944	77	2	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ	Υ	
09:00 AM TO	10:00 AM	755	54	1	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
10:00 AM TO	11:00 AM	626	79	6	Υ				Υ		Υ			Υ	Υ	Υ		
11:00 AM TO	12:00 AM	706	55	7	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
12:00 PM TO	01:00 PM	734	61	6	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
01:00 PM TO	02:00 PM	680	54	14	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
02:00 PM TO	03:00 PM	931	66	9	Y			Υ	Υ	Υ	Υ			Υ	Υ	Υ	Y	
03:00 PM TO	04:00 PM	1,018	90	15	Y			Υ	Υ	Υ	Υ	Y	Υ	Y	Υ	Υ	Y	
04:00 PM TO	05:00 PM	1,043	68	5	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ	Y	
05:00 PM TO	06:00 PM	1,064	48	9	Υ			Υ			Υ			Υ	Υ	Υ		
		0																
		0	0	0														
		0	0	0														
		0	0	0														
		9,544	736	78	_		0			9			1			11	4	0
					8 HOURS NEEDED			8 HOURS NEEDED		8 HOURS OF BOTH COND. A AND COND. B NEEDED						4 HRS NEEDED	1 HR NEEDED	
					NOT SATISFIED				SATISFIED				NOT SA	TISFIED			SATISFIED	NOT SATISFIED

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

#### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME:	Fords Colony Drive at Longhill Road	COUNT DATE:	6/8/2017
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INTERSECTION CONDITION: 2027 Build (No WBR or NBR)

 MAJOR STREET:
 Longhill Road
 # OF APPROACH LANES:
 2

 MINOR STREET:
 Fords Colony Drive
 # OF APPROACH LANES:
 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

N Y

							1			1							
				WARRA	ANT 1, Cond	lition A	WARR	ANT 1, Cond	lition B								
	MAJOR ST	MINO	R ST							С	ONDITION	A	C	ONDITION I	3	WARRANT 2	WARRANT 3
	BOTH			MAJOR	MINOR	вотн	MAJOR	MINOR	вотн	MAJOR	MINOR	вотн	MAJOR	MINOR	вотн		
	APPROACHES	HIGHEST A	PPROACH	STREET	STREET	MET	STREET	STREET	MET	STREET	STREET	MET	STREET	STREET	MET		
S	EB/WB	NB	SB	420	105		630	53		336	84		504	42			
07:00 AM	305	25	2														
08:00 AM	751	71	2	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
09:00 AM	956	85	2	Υ			Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	
10:00 AM	767	59	1	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
11:00 AM	639	84	6	Υ			Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ		
12:00 AM	721	60	7	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
01:00 PM	749	64	6	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
02:00 PM	695	58	14	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ		
03:00 PM	950	70	9	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ	Υ	
04:00 PM	1,041	94	15	Υ			Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	
05:00 PM	1,071	72	5	Υ			Υ	Υ	Υ	Υ			Υ	Υ	Υ	Υ	
06:00 PM	1,096	52	9	Υ			Υ			Υ			Υ	Υ	Υ		
	0	0	0														
	0	0	0														
	0	0	0														
	0	0	0														
	9,741	794	78			0			10			3			11	4	0
•																	
				8 HC	URS NEED	ED	8 HOURS NEEDED		8 HOURS OF BOTH COND. A AND COND. B NEEDED						4 HRS NEEDED	1 HR NEEDED	
				NOT SATISFIED				ATISFIED								SATISFIED	NOT SATISFIED
	07:00 AM 08:00 AM 09:00 AM 10:00 AM 11:00 AM 12:00 AM 01:00 PM 02:00 PM 03:00 PM 04:00 PM 05:00 PM	BOTH APPROACHES  S EB/WB  07:00 AM 305  08:00 AM 751  09:00 AM 956  10:00 AM 639  12:00 AM 721  01:00 PM 749  02:00 PM 695  03:00 PM 950  04:00 PM 1,041  05:00 PM 1,071  06:00 PM 1,096  0 0	BOTH APPROACHES HIGHEST A  SE EB/WB NB  07:00 AM 305 25  08:00 AM 751 71  09:00 AM 956 85  10:00 AM 639 84  12:00 AM 721 60  01:00 PM 749 64  02:00 PM 695 58  03:00 PM 950 70  04:00 PM 1,041 94  05:00 PM 1,041 94  05:00 PM 1,071 72  06:00 PM 1,096 52  0 0  0 0  0 0	BOTH APPROACHES HIGHEST APPROACH  SE EB/WB NB SB  07:00 AM 305 25 2 08:00 AM 751 71 2 09:00 AM 956 85 2 11:00 AM 767 59 1 11:00 AM 639 84 6 12:00 AM 721 60 7 01:00 PM 749 64 6 02:00 PM 695 58 14 03:00 PM 950 70 9 04:00 PM 1,041 94 15 05:00 PM 1,071 72 5 06:00 PM 1,096 52 9 0 0 0 0	MAJOR ST BOTH HIGHEST APPROACH STREET  SE EBWB NB SB 420  07:00 AM 305 25 2  08:00 AM 751 71 2 Y  09:00 AM 956 85 2 Y  10:00 AM 639 84 6 Y  11:00 AM 639 84 6 Y  12:00 AM 721 60 7 Y  01:00 PM 749 64 6 Y  02:00 PM 695 58 14 Y  03:00 PM 950 70 9 Y  04:00 PM 1,041 94 15 Y  05:00 PM 1,071 72 5 Y  06:00 PM 1,096 52 9 Y  0 0 0 0  0 0 0  0 0 0  9,741 794 78	MAJOR ST BOTH APPROACHES  RES BEWB NB SB 420 105 07:00 AM 305 25 2 08:00 AM 751 71 2 Y 09:00 AM 956 85 2 Y 10:00 AM 12:00 AM 767 59 1 Y 11:00 AM 639 84 6 Y 12:00 AM 721 60 7 7 7 9:00 PM 12:00 PM 10:00	BOTH APPROACHES HIGHEST APPROACH STREET STREET STREET OF STREET S	MAJOR ST BOTH APPROACHES  RES BBWB NB SB 420 105 630 07:00 AM 305 25 2 08:00 AM 751 71 2 Y 99:00 AM 956 85 2 Y 10:00 AM 767 59 1 Y 11:00 AM 639 84 6 Y 12:00 AM 721 600 7 Y 12:00 AM 721 600 7 Y 12:00 AM 749 64 6 Y 14 Y 15 14 Y 15 15 Y 15 16 16 16 16 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18	MAJOR ST BOTH APPROACH STREET	MAJOR ST BOTH APPROACHES HIGHEST APPROACH STREET STREET STREET STREET MET MET MET MET MET MET MET MET MET	MAJOR ST BOTH APPROACHES NB SB 420 105 630 53 336  07:00 AM 305 25 2  08:00 AM 751 71 2 Y Y Y Y Y Y  10:00 AM 956 85 2 Y Y Y Y Y Y Y  11:00 AM 639 84 6 Y Y Y Y Y Y Y  11:00 AM 721 60 7 Y Y Y Y Y Y  11:00 AM 749 64 6 Y Y Y Y Y Y Y  02:00 PM 695 58 114 Y Y Y Y Y Y  03:00 PM 950 70 9 Y Y Y Y Y Y  04:00 PM 1,041 94 15 Y Y Y Y Y  06:00 PM 1,071 72 5 Y Y Y Y Y Y  06:00 PM 1,096 52 9 Y Y Y Y Y Y  08:00 PM 1,096 52 9 Y Y Y Y Y Y Y  09:00 PM 1,096 52 9 Y Y Y Y Y Y Y  09:00 PM 1,096 52 9 Y Y Y Y Y Y Y  09:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y Y Y Y  00:00 PM 1,096 52 9 Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	MAJOR ST BOTH   APPROACHES   HIGHEST APPROACH   STREET   STREET	MAJOR ST BOTH APPROACHES HIGHEST APPROACH STREET MET STREET MET STREET MET MET STREET STREET STREET STREET STREET STREET STREET STREET MET MET STREET STREET STREET STREET STREET STREET STREET STREET MET MET STREET STREET STREET STREET STREET STREET STREET STREET MET MET STREET STREET STREET STREET STREET STREET STREET STREET MET STREET	MAJOR ST   BOTH   APPROACH   HIGHEST APPROACH   STREET   STREET	MAJOR ST BOTH APPROACHS HIGHEST APPROACH STREET STR	MAJOR ST   BOTH   HIGHEST APPROACH   HIGHEST APPROACH   STREET   STREET	MAJOR ST   ABOTH   ABOTH

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

## **Appendix E: Synchro and SimTraffic Reports**

1: Williamsburg W Drive/Lane Pl Drive & Longhill Road

Fords Colony TIS Update 2019 Existing

	•	<b>→</b>	$\rightarrow$	•	<b>←</b>	•	1	<b>†</b>		-	<b>↓</b>	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ		7	*		7		ની	7		4	
Traffic Volume (vph)	3	772	22	45	486	19	44	3	233	58	1	19
Future Volume (vph)	3	772	22	45	486	19	44	3	233	58	1	19
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.967	
Flt Protected	0.950			0.950				0.955			0.964	
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380	0	1673	1615	0	1676	0
Flt Permitted	0.346			0.084				0.955			0.964	
Satd. Flow (perm)	657	1863	1615	152	1827	1380	0	1673	1615	0	1676	0
Satd. Flow (RTOR)			156			156			265		13	
Adj. Flow (vph)	3	877	25	51	552	22	50	3	265	66	1	22
Lane Group Flow (vph)	3	877	25	51	552	22	0	53	265	0	89	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	15.0	50.0	50.0	15.0	50.0	50.0	20.0	20.0	20.0	20.0	20.0	
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Act Effct Green (s)	51.1	45.5	45.5	47.9	50.8	50.8		9.2	9.2		9.9	
Actuated g/C Ratio	0.59	0.53	0.53	0.56	0.59	0.59		0.11	0.11		0.12	
v/c Ratio	0.01	0.89	0.03	0.27	0.51	0.03		0.30	0.65		0.44	
Control Delay	9.3	35.7	0.0	13.1	15.4	0.1		43.8	13.5		41.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay	9.3	35.7	0.0	13.1	15.4	0.1		43.8	13.5		41.3	
LOS	Α	D	Α	В	В	Α		D	В		D	
Approach Delay		34.6			14.7			18.5			41.3	
Approach LOS		С			В			В			D	

Intersection Summary

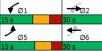
Cycle Length: 105

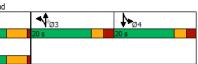
Actuated Cycle Length: 85.9
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89 Intersection Signal Delay: 25.8

Intersection LOS: C ICU Level of Service D

Intersection Capacity Utilization 75.1% Analysis Period (min) 15

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road





**HCM Signalized Intersection Capacity Analysis** 1: Williamsburg W Drive/Lane Pl Drive & Longhill Road Fords Colony TIS Update 2019 Existing

	٠	<b>→</b>	$\rightarrow$	•	<b>←</b>	•	4	<b>†</b>	/	-	<b>↓</b>	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	<b>†</b>	7	Ţ	<b>†</b>	7		ર્ન	7		4	
Traffic Volume (vph)	3	772	22	45	486	19	44	3	233	58	1	19
Future Volume (vph)	3	772	22	45	486	19	44	3	233	58	1	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.96	
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380		1673	1615		1676	
Flt Permitted	0.35	1.00	1.00	0.08	1.00	1.00		0.95	1.00		0.96	
Satd. Flow (perm)	658	1863	1615	152	1827	1380		1673	1615		1676	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	3	877	25	51	552	22	50	3	265	66	1	22
RTOR Reduction (vph)	0	0	12	0	0	10	0	0	239	0	12	0
Lane Group Flow (vph)	3	877	13	51	552	12	0	53	26	0	77	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Actuated Green, G (s)	51.5	47.6	47.6	51.0	50.7	50.7		9.2	9.2		8.0	
Effective Green, g (s)	51.5	47.6	47.6	51.0	50.7	50.7		9.2	9.2		8.0	
Actuated g/C Ratio	0.56	0.52	0.52	0.55	0.55	0.55		0.10	0.10		0.09	
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	377	961	833	141	1004	758		166	161		145	
v/s Ratio Prot	0.00	c0.47		c0.01	c0.30			c0.03			c0.05	
v/s Ratio Perm	0.00		0.01	0.19		0.01			0.02			
v/c Ratio	0.01	0.91	0.02	0.36	0.55	0.02		0.32	0.16		0.53	
Uniform Delay, d1	9.8	20.4	10.9	17.3	13.4	9.4		38.6	38.0		40.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	0.0	13.3	0.0	0.6	1.1	0.0		1.1	0.5		3.7	
Delay (s)	9.8	33.7	10.9	17.9	14.5	9.4		39.7	38.5		44.0	
Level of Service	Α	С	В	В	В	Α		D	D		D	
Approach Delay (s)		33.0			14.6			38.7			44.0	
Approach LOS		С			В			D			D	
Intersection Summary												
HCM 2000 Control Delay			28.5	Н	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capa	city ratio		0.76									
Actuated Cycle Length (s)			92.2		um of los				24.0			
Intersection Capacity Utiliza	ation		75.1%	IC	U Level	of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 9 Report - 11/11/2019 Page 1 Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 9 Report - 11/11/2019 Page 2

Lanes, Volumes, Timings

Fords Colony TIS Update 2019 Existing

Page 3

2: Fords Colony Drive/Dominon Village & Longhill Road

	•	-	•	•	•	•	•	_ ↑	-	-	Ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	₽				7		4			4	
Traffic Volume (vph)	3	305	37	110	277	1	73	1	135	0	1	0
Future Volume (vph)	3	305	37	110	277	1	73	1	135	0	1	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984				0.850		0.913				
Flt Protected	0.950			0.950				0.983				
Satd. Flow (prot)	1805	1779	0	1752	1776	1615	0	1648	0	0	1900	0
Flt Permitted	0.950			0.950				0.983				
Satd. Flow (perm)	1805	1779	0	1752	1776	1615	0	1648	0	0	1900	0
Adj. Flow (vph)	4	367	45	133	334	1	88	1	163	0	1	0
Lane Group Flow (vph)	4	412	0	133	334	1	0	252	0	0	1	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 53.5%
Analysis Period (min) 15

ICU Level of Service A

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 9 Report - 11/11/2019 HCM Unsignalized Intersection Capacity Analysis 2: Fords Colony Drive/Dominon Village & Longhill Road

Fords Colony TIS Update 2019 Existing

	•	<b>→</b>	•	•	<b>←</b>	•	1	<b>†</b>	~	<b>/</b>	<b>↓</b>	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	f)		,	<b>^</b>	7		4			4	
Traffic Volume (veh/h)	3	305	37	110	277	1	73	1	135	0	1	0
Future Volume (Veh/h)	3	305	37	110	277	1	73	1	135	0	1	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	4	367	45	133	334	1	88	1	163	0	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)		110110										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	335			412			998	998	390	1138	1020	334
vC1, stage 1 conf vol	000			712			330	330	000	1100	1020	004
vC2, stage 2 conf vol												
vCu, unblocked vol	335			412			998	998	390	1138	1020	334
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)	7.1			7.1			1.2	0.0	0.2	7.1	0.0	0.2
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			88			55	100	75	100	100	100
cM capacity (veh/h)	1236			1142			195	216	663	123	210	712
. , , ,								210	003	123	210	/ 12
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	4	412	133	334	1	252	1					
Volume Left	4	0	133	0	0	88	0					
Volume Right	0	45	0	0	1	163	0					
cSH	1236	1700	1142	1700	1700	359	210					
Volume to Capacity	0.00	0.24	0.12	0.20	0.00	0.70	0.00					
Queue Length 95th (ft)	0	0	10	0	0	128	0					
Control Delay (s)	7.9	0.0	8.6	0.0	0.0	35.5	22.2					
Lane LOS	Α		Α			Е	С					
Approach Delay (s)	0.1		2.4			35.5	22.2					
Approach LOS						Е	С					
Intersection Summary												
Average Delay			8.9									
Intersection Capacity Utiliza	ation		53.5%	IC	U Level	of Service			Α			
Analysis Period (min)			15									

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 9 Report - 11/11/2019 Page 4 Lanes, Volumes, Timings

Fords Colony TIS Update 2019 Existing

Page 5

3: Centerville Road & Westport/Manchester Drive

	ၨ	-	•	•	-	•	4	<b>†</b>	/	-	<b>↓</b>	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		*	î,		Ţ	<b>†</b>	7	٦	<b>†</b>	7
Traffic Volume (vph)	4	1	2	57	0	49	2	354	45	53	221	3
Future Volume (vph)	4	1	2	57	0	49	2	354	45	53	221	3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.850				0.850			0.850
Flt Protected		0.972		0.950			0.950			0.950		
Satd. Flow (prot)	0	1775	0	1736	1553	0	1805	1759	1282	1556	1759	967
Flt Permitted		0.972		0.950			0.950			0.950		
Satd. Flow (perm)	0	1775	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	4	1	2	63	0	54	2	389	49	58	243	3
Lane Group Flow (vph)	0	7	0	63	54	0	2	389	49	58	243	3
Sign Control		Stop			Stop			Free			Free	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 36.9%
Analysis Period (min) 15

ICU Level of Service A

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 9 Report - 11/11/2019 HCM Unsignalized Intersection Capacity Analysis 3: Centerville Road & Westport/Manchester Drive Fords Colony TIS Update 2019 Existing

	٠	<b>→</b>	$\rightarrow$	•	<b>←</b>	•	4	<b>†</b>	<i>&gt;</i>	-	ļ	1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		ሻ	1>		ሻ	<b>†</b>	7	ሻ	<b>↑</b>	7
Traffic Volume (veh/h)	4	1	2	57	0	49	2	354	45	53	221	3
Future Volume (Veh/h)	4	1	2	57	0	49	2	354	45	53	221	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	4	1	2	63	0	54	2	389	49	58	243	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	806	801	243	754	755	389	246			438		
vC1, stage 1 conf vol	000					000				.00		
vC2, stage 2 conf vol												
vCu, unblocked vol	806	801	243	754	755	389	246			438		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.3		
tC, 2 stage (s)		0.0	0.2		0.0	0.2						
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	98	100	100	79	100	92	100			94		
cM capacity (veh/h)	266	302	801	307	321	655	1332			1051		
. , ,								00.0	00.0	1001		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2 389	NB 3	SB 1	SB 2 243	SB 3			
Volume Total	7	63		2			58		3			
Volume Left	4	63	0	2	0	0	58	0	0			
Volume Right	2	0	54	0	0	49	0	0	3			
cSH	336	307	655	1332	1700	1700	1051	1700	1700			
Volume to Capacity	0.02	0.21	0.08	0.00	0.23	0.03	0.06	0.14	0.00			
Queue Length 95th (ft)	2	19	7	0	0	0	4	0	0			
Control Delay (s)	16.0	19.7	11.0	7.7	0.0	0.0	8.6	0.0	0.0			
Lane LOS	С	С	В	Α			Α					
Approach Delay (s)	16.0	15.7		0.0			1.6					
Approach LOS	С	С										
Intersection Summary												
Average Delay			2.8									
Intersection Capacity Utiliza	ation		36.9%	IC	U Level	of Service			Α			
Analysis Period (min)			15									
, , ,												

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 9 Report - 11/11/2019 Page 6 Lanes, Volumes, Timings 4: News Road & Firestone Drive

Fords	Colony	HS	Update
		201	19 Existing

Page 7

	•	-	-	•	<b>&gt;</b>	4
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	7	<b>↑</b>	<b>↑</b>	7	7	7
Traffic Volume (vph)	10	196	130	45	88	18
Future Volume (vph)	10	196	130	45	88	18
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1504	1845	1681	1583	1805	1615
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1504	1845	1681	1583	1805	1615
Adj. Flow (vph)	11	206	137	47	93	19
Lane Group Flow (vph)	11	206	137	47	93	19
Sign Control		Free	Free		Stop	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 21.9%
Analysis Period (min) 15

ICU Level of Service A

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 9 Report - 11/11/2019

#### HCM Unsignalized Intersection Capacity Analysis 4: News Road & Firestone Drive

Fords Colony TIS Update 2019 Existing

	٠	<b>→</b>	<b>←</b>	•	<b>/</b>	4	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	7	<b>↑</b>	<b>†</b>	7	ሻ	7	
Traffic Volume (veh/h)	10	196	130	45	88	18	
Future Volume (Veh/h)	10	196	130	45	88	18	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	11	206	137	47	93	19	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)						6	
Median type		None	None				
Median storage veh)							
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	184				365	137	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	184				365	137	
tC, single (s)	4.3				6.4	6.2	
tC, 2 stage (s)							
tF (s)	2.4				3.5	3.3	
p0 queue free %	99				85	98	
cM capacity (veh/h)	1290				633	917	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1		
Volume Total	11	206	137	47	112		
Volume Left	11	0	0	0	93		
Volume Right	0	0	0	47	19		
cSH	1290	1700	1700	1700	762		
Volume to Capacity	0.01	0.12	0.08	0.03	0.15		
Queue Length 95th (ft)	1	0	0	0	13		
Control Delay (s)	7.8	0.0	0.0	0.0	11.2		
Lane LOS	A				В		
Approach Delay (s)	0.4		0.0		11.2		
Approach LOS					В		
Intersection Summary							
Average Delay			2.6				
Intersection Capacity Utilization	ation		21.9%	IC	U Level	of Service	
Analysis Period (min)			15	10	2 23 701 1	J. 55. 1100	
raidiyolo i cilod (iliili)			10				

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 9 Report - 11/11/2019 Page 8

#### Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	Т	R	L	Т	R	LT	R	LTR
Maximum Queue (ft)	69	479	164	81	230	41	92	120	112
Average Queue (ft)	3	197	13	24	93	6	35	61	43
95th Queue (ft)	39	398	82	62	182	26	76	101	88
Link Distance (ft)		1007			741	741	405		475
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	250		225	250				225	
Storage Blk Time (%)	0	6	0	0	0				
Queuing Penalty (veh)	0	1	0	0	0				

#### Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	L	LTR	LTR
Maximum Queue (ft)	14	10	70	192	6
Average Queue (ft)	1	0	21	69	0
95th Queue (ft)	7	6	51	148	4
Link Distance (ft)		2032		736	278
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	200		225		
Storage Blk Time (%)					
Queuing Penalty (veh)					

#### Intersection: 3: Centerville Road & Westport/Manchester Drive

Movement	EB	WB	WB	NB	SB	
Directions Served	LTR	L	TR	L	L	
Maximum Queue (ft)	30	60	54	8	64	
Average Queue (ft)	5	23	19	0	14	
95th Queue (ft)	22	48	41	5	45	
Link Distance (ft)	247	762				
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			140	190	190	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection:	4.	Maria	Daad	0	Circotono	Deixa
miersection.	4.	News	Roau	α	riiestone	DIIVE

Queuing and Blocking Report

Movement EB	WB		
iviovernent	WB	SB	SB
Directions Served L	T	L	R
Maximum Queue (ft) 40	4	69	31
Average Queue (ft) 2	0	34	14
95th Queue (ft) 18	4	57	39
Link Distance (ft)	493	375	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft) 225			150
Storage Blk Time (%)			
Queuing Penalty (veh)			

#### Network Summary

Network wide Queuing Penalty: 2

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

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	2021 No Build

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*5	<b>↑</b>	7	ሻ	<b>↑</b>	7		4	7		4	
Traffic Volume (vph)	3	819	23	47	514	20	46	3	242	60	1	20
Future Volume (vph)	3	819	23	47	514	20	46	3	242	60	1	20
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.966	
Flt Protected	0.950			0.950				0.955			0.964	
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380	0	1673	1615	0	1674	0
Flt Permitted	0.342			0.088				0.955			0.964	
Satd. Flow (perm)	650	1863	1615	159	1827	1380	0	1673	1615	0	1674	0
Satd. Flow (RTOR)			182			182			244		15	
Adj. Flow (vph)	3	890	25	51	559	22	50	3	263	65	1	22
Lane Group Flow (vph)	3	890	25	51	559	22	0	53	263	0	88	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	12.0	48.0	48.0	12.0	48.0	48.0	15.0	15.0	15.0	15.0	15.0	
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Act Effct Green (s)	47.8	43.0	43.0	44.7	47.5	47.5		8.3	8.3		8.5	
Actuated g/C Ratio	0.59	0.53	0.53	0.56	0.59	0.59		0.10	0.10		0.11	
v/c Ratio	0.01	0.89	0.03	0.27	0.52	0.02		0.31	0.68		0.46	
Control Delay	7.7	34.1	0.0	12.0	14.1	0.1		41.9	17.0		40.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay	7.7	34.1	0.0	12.0	14.1	0.1		41.9	17.0		40.3	
LOS	Α	С	Α	В	В	Α		D	В		D	
Approach Delay		33.1			13.4			21.2			40.3	
Approach LOS		С			В			С			D	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 80.4
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89

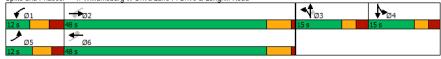
Intersection Signal Delay: 25.1 Intersection Capacity Utilization 78.1%

ICU Level of Service D

Intersection LOS: C

Analysis Period (min) 15

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis 1: Williamsburg W Drive/Lane Pl Drive & Longhill Road Fords Colony TIS Update 2021 No Build

	•	-	•	•	←	*	1	<b>†</b>	~	-	<b>↓</b>	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	<b>*</b>	7	7	<b>†</b>	7		4	7		4	
Traffic Volume (vph)	3	819	23	47	514	20	46	3	242	60	1	20
Future Volume (vph)	3	819	23	47	514	20	46	3	242	60	1	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.96	
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380		1673	1615		1675	
Flt Permitted	0.34	1.00	1.00	0.09	1.00	1.00		0.95	1.00		0.96	
Satd. Flow (perm)	650	1863	1615	160	1827	1380		1673	1615		1675	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	890	25	51	559	22	50	3	263	65	1	22
RTOR Reduction (vph)	0	0	12	0	0	10	0	0	221	0	14	0
Lane Group Flow (vph)	3	890	13	51	559	12	0	53	42	0	74	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Actuated Green, G (s)	48.4	45.2	45.2	47.9	47.5	47.5		8.3	8.3		6.7	
Effective Green, q (s)	48.4	45.2	45.2	47.9	47.5	47.5		8.3	8.3		6.7	
Actuated g/C Ratio	0.56	0.52	0.52	0.55	0.55	0.55		0.10	0.10		0.08	
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	373	969	840	136	998	754		159	154		129	
v/s Ratio Prot	0.00	c0.48		c0.01	0.31			c0.03			c0.04	
v/s Ratio Perm	0.00		0.01	0.19		0.01			0.03			
v/c Ratio	0.01	0.92	0.02	0.38	0.56	0.02		0.33	0.27		0.57	
Uniform Delay, d1	9.3	19.2	10.1	16.5	12.9	9.0		36.7	36.5		38.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	0.0	13.8	0.0	0.6	1.2	0.0		1.2	1.0		6.1	
Delay (s)	9.3	33.0	10.1	17.2	14.1	9.0		38.0	37.5		44.8	
Level of Service	Α	С	В	В	В	Α		D	D		D	
Approach Delay (s)		32.3			14.1			37.6			44.8	
Approach LOS		С			В			D			D	
Intersection Summary												
HCM 2000 Control Delay			27.8	Н	CM 2000	Level of	Service		С			
HCM 2000 Volume to Cap	acity ratio		0.78									
Actuated Cycle Length (s)			86.9	Si	um of los	t time (s)			24.0			
Intersection Capacity Utiliz	ation		78.1%	IC	U Level	of Service	<b>:</b>		D			
Analysis Period (min)			15									
c Critical Lane Group												
-												

Lanes, Volumes, Timings

Fords Colony TIS Update 2021 No Build

2: Fords Colony Drive/Dominon Village & Longhill Road

	•	<b>→</b>	`	6	-	•	•	<b>†</b>	-	-	Ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ħ	1	LDIN	WDL 1	<u>₩</u>	7	INDL	4	NUN	JUL	4	JUIN
Traffic Volume (vph)	3	326	39	116	294	1	78	1	148	0	1	0
Future Volume (vph)	3	326	39	116	294	1	78	1	148	0	1	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984				0.850		0.912				
Flt Protected	0.950			0.950				0.983				
Satd. Flow (prot)	1805	1779	0	1752	1776	1615	0	1647	0	0	1900	0
Flt Permitted	0.950			0.950				0.983				
Satd. Flow (perm)	1805	1779	0	1752	1776	1615	0	1647	0	0	1900	0
Adj. Flow (vph)	3	354	42	126	320	1	85	1	161	0	1	0
Lane Group Flow (vph)	3	396	0	126	320	1	0	247	0	0	1	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 56.1%
Analysis Period (min) 15

ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis 2: Fords Colony Drive/Dominon Village & Longhill Road

Fords Colony TIS Update 2021 No Build

Lane Configurations		•	-	•	•	<b>—</b>	•	•	<b>†</b>	~	<b>&gt;</b>	ļ	4
Traffic Volume (vehrh) 3 326 39 116 294 1 78 1 148 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Future Volume (Veh/h) 3 3 326 39 116 294 1 78 1 148 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lane Configurations	ሻ	ĵ»		7	<b>†</b>	7		4			4	
Sign Control   Free	Traffic Volume (veh/h)	3	326	39	116	294	1	78	1	148	0	1	0
Grade 0,9% 0,9% 0,9% 0,9% 0,9% 0,9% 0,9% 0,9%	Future Volume (Veh/h)	3	326	39	116	294	1	78	1	148	0	1	0
Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Sign Control		Free			Free			Stop			Stop	
Hourly flow rate (vph) 3 354 42 126 320 1 85 1 161 0 1 0 Pedestrians Lane Width (ft)  Walking Speed (ft/s) Percent Blockage Right turn flare (veh) Median type None None  Median storage veh) Upstream signal (ft) Px, platon unblocked vC, conflicting volume 321 396 954 954 375 1094 974 320 vC1, stage 1 conf vol vC2, stage 2 conf vol vC2, stage 2 conf vol vC2, stage (s) Ff (s) 2.2 2.2 3.6 4.0 3.3 3.5 4.0 3.3 p0 queue free % 100 889 60 100 76 100 100 cM capacity (veh/h) 1250 1157 1250 210 232 676 134 226 725  Direction, Lane # EB 1 EB 2 WB 1 WB 2 WB 3 NB 1 SB 1  Volume Total 3 396 126 320 1 247 1 Volume Right 0 42 0 0 1 161 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Grade		0%			0%			0%			0%	
Pedestrians   Lane Width (ff)   Walking Speed (fl/s)   Percent Blockage   Right turn flare (veh)   Median type   None   None   Median storage veh)   Upstream signal (ft)   PyX, platoon unblocked   VC, conflicting volume   321   396   954   954   375   1094   974   320   VC1, stage 1 conf vol   VC2, stage 2 conf vol   VC2, stage 2 conf vol   VC2, stage 1 conf vol   VC3, stage 1 conf vol   VC4, stage 1 conf vol   VC2, stage 2 conf vol   VC3, stage 1 conf vol   VC4, stage 1 conf vol   VC4, stage 1 conf vol   VC5, stage 1 conf vol   VC4, stage 1 conf vol   VC4, stage 1 conf vol   VC5, stage (solid to the stage of the	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Lane Width (ft)  Walking Speed (ft/s)  Percent Blockage Right turn flare (veh)  Median type None None  None	Hourly flow rate (vph)	3	354	42	126	320	1	85	1	161	0	1	0
Walking Speed (It/s) Percent Blockage Right turn flare (veh) Median type	Pedestrians												
Regnet flore (who)           Median type         None         None           Median storage veh)         Upstream signal (ft)         yX         yX         yY	Lane Width (ft)												
Right turn flare (veh)  Median type	Walking Speed (ft/s)												
Median type         None         None           Median storage veh)         Upstream signal (ft)           pX, platoon unblocked         vC, conflicting volume         321         396         954         954         375         1094         974         320           vC1, stage 1 conf vol         vC2, stage 2 conf vol         vCu, unblocked vol         321         396         954         954         375         1094         974         320           vC2, stage (s)         tF (s)         4.1         4.1         7.2         6.5         6.2         7.1         6.5         6.2           tF (s)         2.2         2.2         3.6         4.0         3.3         3.5         4.0         3.3           p0 queue free %         100         89         60         100         76         100         100           cM capacity (veh/h)         1250         1157         210         232         676         134         226         725           Direction, Lane # EB 1 EB 2 WB 1 WB 2 WB 3 NB 1 SB 1         VB 1         VB 2 WB 3 NB 1 SB 1         VB 1         VOlume 1 SB	Percent Blockage												
Median storage veh)       Upstream signal (ft)         pX, platoon unblocked       vC, conflicting volume       321       396       954       954       375       1094       974       320         vC1, stage 1 conf vol       vC2, stage 2 conf vol       vCu, unblocked vol       321       396       954       954       375       1094       974       320         vC2, stage (s)       4.1       4.1       7.2       6.5       6.2       7.1       6.5       6.2         IC, 2 stage (s)       16       2.2       2.2       3.6       4.0       3.3       3.5       4.0       3.3         p0 queue free %       100       89       60       100       76       100       100         cM capacity (veh/h)       1250       1157       210       232       676       134       226       725         Direction, Lane # EB1 EB 2 WB 1 WB 2 WB 3 NB 1 SB 1         Volume Total       3       396       126       320       1       247       1         Volume Right       0       42       0       0       161       0       0       0       0       0       0       0       0       0       0       0       0       <	Right turn flare (veh)												
Upstream signal (ft) pX, platoon unblocked vCc, conflicting volume	Median type		None			None							
pX, platoon unblocked vc. conflicting volume vc. vc. stage 1 conf vol vc. vc. stage 2 conf vol vc.	Median storage veh)												
vC, conflicting volume 321 396 954 954 375 1094 974 320 vC1, stage 1 conf vol vC2, stage 2 conf vol vC2, stage (s) 4.1 396 954 954 375 1094 974 320 10, single (s) 4.1 7.2 6.5 6.2 7.1 6.5 6.2 10, 2 stage (s) 100 89 60 100 76 100 100 100 100 100 100 100 100 100 10	Upstream signal (ft)												
vC1, stage 1 conf vol vC2, stage 2 conf vol vC2, unblocked vol 321 396 954 954 375 1094 974 320 tC, single (s) 4.1 4.1 7.2 6.5 6.2 7.1 6.5 6.2 tC, 2 stage (s)  IF (s) 2.2 2.2 3.6 4.0 3.3 3.5 4.0 3.3 p0 queue free % 100 89 60 100 76 100 100 100 cM capacity (veh/h) 1250 1157 210 232 676 134 226 725  Direction, Lane # EB 1 EB 2 WB 1 WB 2 WB 3 NB 1 SB 1  Volume Total 3 396 126 320 1 247 1  Volume Total 3 396 126 0 0 85 0  Volume Right 0 42 0 0 1 161 0 cSH 1250 1700 1157 1700 1700 382 226  Volume to Capacity 0.00 0.23 0.11 0.19 0.00 0.65 0.00  Cueue Length 95th (ft) 0 0 9 0 0 109 0  Control Delay (s) 7.9 0.0 8.5 0.0 0.0 30.1 21.0  Lane LOS A A A D C C Approach Delay (s) 0.1 2.4 30.1 21.0  Approach LOS D C  ILC J Stage 2 Soft 375 1094 974 320  ICU Level of Service B	pX, platoon unblocked												
VCQ, stage 2 conf vol  VCQ, unblocked vol 321 396 954 954 375 1094 974 320  (C, single (s) 4.1 4.1 7.2 6.5 6.2 7.1 6.5 6.2  (C, 2 stage (s)  IF (s) 2.2 2.2 3.6 4.0 3.3 3.5 4.0 3.3  p0 queue free % 100 89 60 100 76 100 100  CM capacity (veh/h) 1250 1157 210 232 676 134 226 725  Direction, Lane # EB 1 EB 2 WB 1 WB 2 WB 3 NB 1 SB 1  Volume Total 3 396 126 320 1 247 1  Volume Right 0 42 0 0 1 161 0  CSH 1250 1700 1157 1700 1700 382 226  Volume to Capacity 0.00 0.23 0.11 0.19 0.00 0.65 0.00  Course Length 95th (ft) 0 0 9 0 0 109 0  Control Delay (s) 7.9 0.0 8.5 0.0 0.0 30.1 21.0  Lane LOS A A A B D C  Approach Delay (s) 0.1 2.4 30.1 21.0  Approach LOS D C  Intersection Summary  Average Delay  T.8  Intersection Capacity Utilization 56.1% ICU Level of Service B	vC, conflicting volume	321			396			954	954	375	1094	974	320
VCQ, stage 2 conf vol  VCQ, unblocked vol 321 396 954 954 375 1094 974 320  (C, single (s) 4.1 4.1 7.2 6.5 6.2 7.1 6.5 6.2  (C, 2 stage (s)  IF (s) 2.2 2.2 3.6 4.0 3.3 3.5 4.0 3.3  p0 queue free % 100 89 60 100 76 100 100  CM capacity (veh/h) 1250 1157 210 232 676 134 226 725  Direction, Lane # EB 1 EB 2 WB 1 WB 2 WB 3 NB 1 SB 1  Volume Total 3 396 126 320 1 247 1  Volume Right 0 42 0 0 1 161 0  CSH 1250 1700 1157 1700 1700 382 226  Volume to Capacity 0.00 0.23 0.11 0.19 0.00 0.65 0.00  Course Length 95th (ft) 0 0 9 0 0 109 0  Control Delay (s) 7.9 0.0 8.5 0.0 0.0 30.1 21.0  Lane LOS A A A B D C  Approach Delay (s) 0.1 2.4 30.1 21.0  Approach LOS D C  Intersection Summary  Average Delay  T.8  Intersection Capacity Utilization 56.1% ICU Level of Service B													
tC, single (s) 4.1 4.1 7.2 6.5 6.2 7.1 6.5 6.2 (C, 2 stage (s))  IF (s) 2.2 2.3 3.6 4.0 3.3 3.5 4.0 3.3 90 queue free % 100 89 60 100 76 100 100 100 cM capacity (veh/h) 1250 1157 210 232 676 134 226 725  Direction, Lane # EB 1 EB 2 WB 1 WB 2 WB 3 NB 1 SB 1  Volume Total 3 396 126 320 1 247 1 Volume Left 3 0 126 0 0 85 0 Volume Right 0 42 0 0 1 161 0 cSH 1250 1700 1157 1700 382 226 Volume to Capacity 0 0.00 0.23 0.11 0.19 0.00 0.65 0.00 Queue Length 95th (ft) 0 0 9 0 0 109 0 Control Delay (s) 7.9 0.0 8.5 0.0 0.0 30.1 21.0 Lane LOS A A A D C C Approach Delay (s) 0.1 2.4 30.1 21.0 Approach Delay (s) 0.1 2.4 30.1 21.0 Approach LOS Delay (s) 7.8 Intersection Summary  Average Delay 7.8 Intersection Capacity Utilization 56.1% ICU Level of Service B	vC2, stage 2 conf vol												
tC, 2 stage (s)  IF (s) 2.2 2.2 3.6 4.0 3.3 3.5 4.0 3.3  D0 queue free % 100 89 60 100 76 100 100 100  CM capacity (veh/h) 1250 1157 210 232 676 134 226 725  Direction, Lane # EB 1 EB 2 WB 1 WB 2 WB 3 NB 1 SB 1  Volume Total 3 396 126 320 1 247 1  Volume Right 0 42 0 0 85 0  Volume Right 0 42 0 0 1 161 0  CSH 1250 1700 1157 1700 1700 382 226  Volume to Capacity 0.00 0.23 0.11 0.19 0.00 0.65 0.00  Queue Length 95th (ft) 0 0 9 0 0 109 0  Control Delay (s) 7.9 0.0 8.5 0.0 0.0 30.1 21.0  Lane LOS A A A D C C  Approach Delay (s) 0.1 2.4 30.1 21.0  Approach LOS D C  Intersection Summary  Average Delay  Intersection Capacity Utilization 56.1% ICU Level of Service B	vCu, unblocked vol	321			396			954	954	375	1094	974	320
tC, 2 stage (s)  IF (s) 2.2 2.2 3.6 4.0 3.3 3.5 4.0 3.3  D0 queue free % 100 89 60 100 76 100 100 100  CM capacity (veh/h) 1250 1157 210 232 676 134 226 725  Direction, Lane # EB 1 EB 2 WB 1 WB 2 WB 3 NB 1 SB 1  Volume Total 3 396 126 320 1 247 1  Volume Right 0 42 0 0 85 0  Volume Right 0 42 0 0 1 161 0  CSH 1250 1700 1157 1700 1700 382 226  Volume to Capacity 0.00 0.23 0.11 0.19 0.00 0.65 0.00  Queue Length 95th (ft) 0 0 9 0 0 109 0  Control Delay (s) 7.9 0.0 8.5 0.0 0.0 30.1 21.0  Lane LOS A A A D C C  Approach Delay (s) 0.1 2.4 30.1 21.0  Approach LOS D C  Intersection Summary  Average Delay  Intersection Capacity Utilization 56.1% ICU Level of Service B	tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
IF (s)       2.2       2.2       3.6       4.0       3.3       3.5       4.0       3.3         p0 queue free %       100       89       60       100       76       100       100       100         cM capacity (veh/h)       1250       1157       210       232       676       134       226       725         Direction, Lane # EB 1 EB 2 WB 1 WB 2 WB 3 NB 1 SB 1         Volume Total       3       396       126       320       1       247       1         Volume Left       3       0       126       0       0       85       0       0       Volume Right       0       42       0       0       1       161       0       0       0       55       0													
CM capacity (veh/h) 1250 1157 210 232 676 134 226 725    Direction, Lane # EB 1 EB 2 WB 1 WB 2 WB 3 NB 1 SB 1	tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
Direction, Lane #         EB 1         EB 2         WB 1         WB 2         WB 3         NB 1         SB 1           Volume Total         3         396         126         320         1         247         1           Volume Left         3         0         126         0         0         85         0           Volume Right         0         42         0         0         1         161         0           cSH         1250         1700         1157         1700         1700         382         226           Volume to Capacity         0.00         0.23         0.11         0.19         0.00         0.65         0.00           Queue Length 95th (ft)         0         0         9         0         0         109         0           Control Delay (s)         7.9         0.0         8.5         0.0         0.0         30.1         21.0           Lane LOS         A         A         A         D         C           Approach Delay (s)         0.1         2.4         30.1         21.0           Approach LOS         D         C    Intersection Summary  Average Delay  Intersection Capacity Utilization  Telephone Sumary  Average Del	p0 queue free %	100			89			60	100	76	100	100	100
Volume Total         3         396         126         320         1         247         1           Volume Left         3         0         126         0         0         85         0           Volume Right         0         42         0         0         1         161         0           SH         1250         1700         1157         1700         382         226           Volume to Capacity         0.00         0.23         0.11         0.19         0.00         0.65         0.00           Queue Length 95th (ft)         0         0         9         0         0         109         0           Control Delay (s)         7.9         0.0         8.5         0.0         0.0         30.1         21.0           Lane LOS         A         A         A         D         C           Approach Delay (s)         0.1         2.4         30.1         21.0           Approach LOS         D         C           Intersection Summary           Average Delay         7.8           Intersection Capacity Utilization         56.1%         ICU Level of Service         B	cM capacity (veh/h)	1250			1157			210	232	676	134	226	725
Volume Left         3         0         126         0         0         85         0           Volume Right         0         42         0         0         1         161         0           cSH         1250         1700         1157         1700         382         226           Volume to Capacity         0.00         0.23         0.11         0.19         0.00         0.65         0.00           Queue Length 95th (ft)         0         0         9         0         0         109         0           Control Delay (s)         7.9         0.0         8.5         0.0         0.0         30.1         21.0           Lane LOS         A         A         A         D         C           Approach Delay (s)         0.1         2.4         30.1         21.0           Approach LOS         D         C           Intersection Summary           Average Delay         7.8           Intersection Capacity Utilization         56.1%         ICU Level of Service         B	Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Right         0         42         0         0         1         161         0           cSH         1250         1700         1157         1700         1700         382         226           Volume to Capacity         0.00         0.23         0.11         0.19         0.00         0.65         0.00           Oueue Length 95th (ft)         0         0         9         0         0         109         0           Control Delay (s)         7.9         0.0         8.5         0.0         0.0         30.1         21.0           Lane LOS         A         A         A         D         C           Approach LOS         0.1         2.4         30.1         21.0           Approach LOS         D         C           Intersection Summary           Average Delay         7.8         Intersection Capacity Utilization         56.1%         ICU Level of Service         B	Volume Total	3	396	126	320	1	247	1					
CSH 1250 1700 1157 1700 1700 382 226  Volume to Capacity 0.00 0.23 0.11 0.19 0.00 0.65 0.00  Queue Length 95th (ft) 0 0 9 0 0 109 0  Control Delay (s) 7.9 0.0 8.5 0.0 0.0 30.1 21.0  Lane LOS A A A D C  Approach Delay (s) 0.1 2.4 30.1 21.0  Approach LOS D C  Intersection Summary  Average Delay 7.8  Intersection Capacity Utilization 56.1% ICU Level of Service B	Volume Left	3	0	126	0	0	85	0					
Volume to Capacity         0.00         0.23         0.11         0.19         0.00         0.65         0.00           Queue Length 95th (ft)         0         0         9         0         0         109         0           Control Delay (s)         7.9         0.0         8.5         0.0         0.0         30.1         21.0           Lane LOS         A         A         D         C           Approach Delay (s)         0.1         2.4         30.1         21.0           Approach LOS         D         C           Intersection Summary           Average Delay         7.8           Intersection Capacity Utilization         56.1%         ICU Level of Service         B	Volume Right	0	42	0	0	1	161	0					
Volume to Capacity         0.00         0.23         0.11         0.19         0.00         0.65         0.00           Queue Length 95th (ft)         0         0         9         0         0         109         0           Control Delay (s)         7.9         0.0         8.5         0.0         0.0         30.1         21.0           Lane LOS         A         A         D         C           Approach Delay (s)         0.1         2.4         30.1         21.0           Approach LOS         D         C           Intersection Summary           Average Delay         7.8           Intersection Capacity Utilization         56.1%         ICU Level of Service         B	cSH	1250	1700	1157	1700	1700	382	226					
Queue Length 95th (ft)       0       0       9       0       0       109       0         Control Delay (s)       7.9       0.0       8.5       0.0       0.0       30.1       21.0         Lane LOS       A       A       D       C         Approach Delay (s)       0.1       2.4       30.1       21.0         Approach LOS       D       C         Intersection Summary         Average Delay       7.8         Intersection Capacity Utilization       56.1%       ICU Level of Service       B	Volume to Capacity	0.00	0.23	0.11	0.19	0.00	0.65	0.00					
Control Delay (s) 7.9 0.0 8.5 0.0 0.0 30.1 21.0  Lane LOS A A D C Approach Delay (s) 0.1 2.4 30.1 21.0  Approach LOS D C  Intersection Summary  Average Delay 7.8 Intersection Capacity Utilization 56.1% ICU Level of Service B		0	0	9	0	0	109	0					
Lane LOS         A         A         D         C           Approach Delay (s)         0.1         2.4         30.1         21.0           Approach LOS         D         C           Intersection Summary           Average Delay         7.8           Intersection Capacity Utilization         56.1%         ICU Level of Service         B		7.9	0.0	8.5	0.0	0.0		21.0					
Approach Delay (s)         0.1         2.4         30.1         21.0           Approach LOS         D         C           Intersection Summary           Average Delay         7.8           Intersection Capacity Utilization         56.1%         ICU Level of Service         B	Lane LOS												
Approach LOS         D         C           Intersection Summary         Average Delay         7.8           Intersection Capacity Utilization         56.1%         ICU Level of Service         B													
Average Delay 7.8 Intersection Capacity Utilization 56.1% ICU Level of Service B	Approach LOS												
Average Delay 7.8 Intersection Capacity Utilization 56.1% ICU Level of Service B	Intersection Summary												
Intersection Capacity Utilization 56.1% ICU Level of Service B	Average Delay			7.8									
		ation			IC	CU Level	of Service			В			
	Analysis Period (min)												

Lanes, Volumes, Timings

Fords Colony TIS Update 2021 No Build

#### 3: Centerville Road & Westport/Manchester Drive

	ၨ	-	•	•	←	•	4	<b>†</b>	~	-	<b>↓</b>	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		Ť	ĵ.		٦	<b>†</b>	7	Ţ	<b>†</b>	7
Traffic Volume (vph)	23	1	9	62	0	52	4	378	48	56	243	10
Future Volume (vph)	23	1	9	62	0	52	4	378	48	56	243	10
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.850				0.850			0.850
Flt Protected		0.966		0.950			0.950			0.950		
Satd. Flow (prot)	0	1766	0	1736	1553	0	1805	1759	1282	1556	1759	967
Flt Permitted		0.966		0.950			0.950			0.950		
Satd. Flow (perm)	0	1766	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	25	1	10	67	0	57	4	411	52	61	264	11
Lane Group Flow (vph)	0	36	0	67	57	0	4	411	52	61	264	11
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

ICU Level of Service A

Control Type: Unsignalized Intersection Capacity Utilization 41.8% Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis 3: Centerville Road & Westport/Manchester Drive Fords Colony TIS Update 2021 No Build

	۶	<b>→</b>	*	•	<b>—</b>	•	1	<b>†</b>	~	<b>/</b>	<b>↓</b>	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		ň	ĵ.		Ţ	<b>^</b>	7	, N	<b>†</b>	7
Traffic Volume (veh/h)	23	1	9	62	0	52	4	378	48	56	243	10
Future Volume (Veh/h)	23	1	9	62	0	52	4	378	48	56	243	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	1	10	67	0	57	4	411	52	61	264	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	862	857	264	816	816	411	275			463		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	862	857	264	816	816	411	275			463		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	90	100	99	76	100	91	100			94		
cM capacity (veh/h)	241	279	780	275	294	636	1300			1029		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	36	67	57	4	411	52	61	264	11			
Volume Left	25	67	0	4	0	0	61	0	0			
Volume Right	10	0	57	0	0	52	0	0	11			
cSH	299	275	636	1300	1700	1700	1029	1700	1700			
Volume to Capacity	0.12	0.24	0.09	0.00	0.24	0.03	0.06	0.16	0.01			
Queue Length 95th (ft)	10	23	0.09	0.00	0.24	0.03	5	0.10	0.01			
	18.7	22.2	11.2	7.8	0.0	0.0	8.7		0.0			
Control Delay (s) Lane LOS	18.7 C	22.2 C			0.0	0.0	8.7 A	0.0	0.0			
			В	Α								
Approach Delay (s)	18.7	17.2		0.1			1.6					
Approach LOS	С	С										
Intersection Summary												
Average Delay			3.5									
Intersection Capacity Utiliza	ation		41.8%	IC	U Level	of Service			Α			
Analysis Period (min)			15									

Lanes, Volumes, Timings 4: News Road & Firestone Drive Fords Colony TIS Update 2021 No Build

	•	-	•	•	←	•	•	<b>†</b>	~	<b>\</b>	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	4		7	<b>1</b>			4	7		ર્ન	7
Traffic Volume (vph)	10	212	18	31	137	47	14	Ö	38	92	Ö	19
Future Volume (vph)	10	212	18	31	137	47	14	0	38	92	0	19
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.962				0.850			0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1504	1824	0	1770	1659	0	0	1770	1583	0	1805	1615
Flt Permitted	0.950			0.950				0.950			0.950	
Satd. Flow (perm)	1504	1824	0	1770	1659	0	0	1770	1583	0	1805	1615
Adj. Flow (vph)	11	223	19	33	144	49	15	0	40	97	0	20
Lane Group Flow (vph)	11	242	0	33	193	0	0	15	40	0	97	20
Sign Control		Free			Free			Stop			Stop	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 37.3%
Analysis Period (min) 15

ICU Level of Service A

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 7

#### HCM Unsignalized Intersection Capacity Analysis 4: News Road & Firestone Drive

Fords Colony TIS Update 2021 No Build

	•	-	•	•	•	•	•	<b>†</b>	<i>&gt;</i>	<b>/</b>	ļ	1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	, j	f)		ř	ĵ»			4	7		4	1
Traffic Volume (veh/h)	10	212	18	31	137	47	14	Ö	38	92	Ö	19
Future Volume (Veh/h)	10	212	18	31	137	47	14	0	38	92	0	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	223	19	33	144	49	15	0	40	97	0	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									6			6
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	193			242			474	514	232	500	498	168
vC1, stage 1 conf vol	.,,							0.1	LUL	000	170	100
vC2, stage 2 conf vol												
vCu, unblocked vol	193			242			474	514	232	500	498	168
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			97	100	95	78	100	98
cM capacity (veh/h)	1279			1324			477	449	807	449	458	881
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	11	242	33	193	55	117						
Volume Left	11	0	33	0	15	97						
Volume Right	0	19	0	49	40	20						
cSH	1279	1700	1324	1700	1109	542						
Volume to Capacity	0.01	0.14	0.02	0.11	0.05	0.22						
Queue Length 95th (ft)	1	0.14	0.02	0.11	0.03	20						
Control Delay (s)	7.8	0.0	7.8	0.0	10.5	14.2						
Lane LOS		0.0		0.0	10.5 B	14.2 B						
	A		A									
Approach LOS	0.3		1.1		10.5	14.2						
Approach LOS					В	В						
Intersection Summary												
Average Delay			4.0									
Intersection Capacity Utiliza	ation		37.3%	IC	:U Level	of Service			Α			
Analysis Period (min)			15									

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 8

### Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	
Directions Served	L	Т	R	L	Т	R	LT	R	LTR	
Maximum Queue (ft)	46	563	205	67	206	51	93	133	115	
Average Queue (ft)	2	241	18	30	94	7	38	63	46	
95th Queue (ft)	28	465	106	58	179	30	80	105	94	
Link Distance (ft)		1007			741	741	405		475	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		225	250				225		
Storage Blk Time (%)		10	0		0					
Queuing Penalty (veh)		3	0		0					

#### Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	L	LTR	LTR
Maximum Queue (ft)	5	22	77	209	14
Average Queue (ft)	0	1	23	72	1
95th Queue (ft)	4	9	56	151	6
Link Distance (ft)		2032		736	278
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	200		225		
Storage Blk Time (%)					
Queuing Penalty (veh)					

#### Intersection: 3: Centerville Road & Westport/Manchester Drive

Directions Served LTR L TR L L  Maximum Queue (ft) 45 72 52 9 60
Maximum Quaua (ft) 45 72 52 0 60
Maximum Queue (II) 45 72 32 7 00
Average Queue (ft) 19 25 19 0 15
95th Queue (ft) 41 50 40 4 45
Link Distance (ft) 247 762
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft) 140 190 190
Storage Blk Time (%)
Queuing Penalty (veh)

#### Intersection: 4: News Road & Firestone Drive

Movement	EB	WB	NB	NB	SB	SB
Directions Served	L	L	LT	R	LT	R
Maximum Queue (ft)	28	31	40	54	82	33
Average Queue (ft)	2	6	12	24	35	14
95th Queue (ft)	15	23	37	49	63	39
Link Distance (ft)			372		374	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225	225		150		150
Storage Blk Time (%)					0	
Queuing Penalty (veh)					0	

#### **Network Summary**

Network wide Queuing Penalty: 3

Fords Colony TIS Update 2021 Build

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

	۶	<b>→</b>	$\rightarrow$	•	<b>—</b>	•	1	<b>†</b>	<b>/</b>	-	<b>↓</b>	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	<b>↑</b>	7	Ť	<b>†</b>	7		4	7		4	
Traffic Volume (vph)	3	832	23	47	518	20	46	3	242	60	1	20
Future Volume (vph)	3	832	23	47	518	20	46	3	242	60	1	20
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.966	
Flt Protected	0.950			0.950				0.955			0.964	
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380	0	1673	1615	0	1674	0
Flt Permitted	0.339			0.088				0.955			0.964	
Satd. Flow (perm)	644	1863	1615	159	1827	1380	0	1673	1615	0	1674	0
Satd. Flow (RTOR)			182			182			241		15	
Adj. Flow (vph)	3	904	25	51	563	22	50	3	263	65	1	22
Lane Group Flow (vph)	3	904	25	51	563	22	0	53	263	0	88	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	12.0	48.0	48.0	12.0	48.0	48.0	15.0	15.0	15.0	15.0	15.0	
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Act Effct Green (s)	47.8	43.0	43.0	44.7	47.5	47.5		8.3	8.3		8.5	
Actuated g/C Ratio	0.59	0.53	0.53	0.56	0.59	0.59		0.10	0.10		0.11	
v/c Ratio	0.01	0.91	0.03	0.27	0.52	0.02		0.31	0.69		0.46	
Control Delay	7.7	35.8	0.0	12.0	14.1	0.1		41.9	17.5		40.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay	7.7	35.8	0.0	12.0	14.1	0.1		41.9	17.5		40.3	
LOS	Α	D	Α	В	В	Α		D	В		D	
Approach Delay		34.7			13.5			21.6			40.3	
Approach LOS		С			В			С			D	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 80.4
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.91

Intersection Signal Delay: 26.0
Intersection Capacity Utilization 78.8%

Intersection LOS: C ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis 1: Williamsburg W Drive/Lane Pl Drive & Longhill Road Fords Colony TIS Update 2021 Build

	•	-	$\rightarrow$	•	<b>←</b>	•	1	<b>†</b>	<i>&gt;</i>	-	ţ	1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	J.	<b>†</b>	7	Į.	<b>†</b>	7		ર્ન	7		4	
Traffic Volume (vph)	3	832	23	47	518	20	46	3	242	60	1	20
Future Volume (vph)	3	832	23	47	518	20	46	3	242	60	1	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.96	
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380		1673	1615		1675	
Flt Permitted	0.34	1.00	1.00	0.09	1.00	1.00		0.95	1.00		0.96	
Satd. Flow (perm)	645	1863	1615	160	1827	1380		1673	1615		1675	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	904	25	51	563	22	50	3	263	65	1	22
RTOR Reduction (vph)	0	0	12	0	0	10	0	0	218	0	14	0
Lane Group Flow (vph)	3	904	13	51	563	12	0	53	45	0	74	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Actuated Green, G (s)	48.4	45.2	45.2	47.9	47.5	47.5		8.3	8.3		6.7	
Effective Green, g (s)	48.4	45.2	45.2	47.9	47.5	47.5		8.3	8.3		6.7	
Actuated g/C Ratio	0.56	0.52	0.52	0.55	0.55	0.55		0.10	0.10		0.08	
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	371	969	840	136	998	754		159	154		129	
v/s Ratio Prot	0.00	c0.49		c0.01	0.31			c0.03			c0.04	
v/s Ratio Perm	0.00		0.01	0.19		0.01			0.03			
v/c Ratio	0.01	0.93	0.02	0.38	0.56	0.02		0.33	0.29		0.57	
Uniform Delay, d1	9.4	19.4	10.1	17.0	12.9	9.0		36.7	36.6		38.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	0.0	15.8	0.0	0.6	1.2	0.0		1.2	1.1		6.1	
Delay (s)	9.4	35.2	10.1	17.7	14.1	9.0		38.0	37.6		44.8	
Level of Service	Α	D	В	В	В	Α		D	D		D	
Approach Delay (s)		34.5			14.2			37.7			44.8	
Approach LOS		С			В			D			D	
Intersection Summary												
HCM 2000 Control Delay			28.9	H	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capa	acity ratio		0.79									
Actuated Cycle Length (s)			86.9		um of los				24.0			
Intersection Capacity Utilization	ation		78.8%	IC	U Level	of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 1 Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020

Page 2

Lanes, Volumes, Timings

Fords Colony TIS Update 2021 Build

2: Fords Colony Drive/Dominon Village & Longhill Road

	•	_	`		←	•	•	<b>†</b>	<b>/</b>	<b>_</b>	Ι	4
			•	•			,	'	′		•	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	<b>↑</b>	7	ሻ		7		ન	7		4	
Traffic Volume (vph)	3	326	40	120	294	1	82	1	161	0	1	0
Future Volume (vph)	3	326	40	120	294	1	82	1	161	0	1	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950				0.953				
Satd. Flow (prot)	1805	1810	1524	1752	1776	1615	0	1648	1615	0	1900	0
FIt Permitted	0.950			0.950				0.953				
Satd. Flow (perm)	1805	1810	1524	1752	1776	1615	0	1648	1615	0	1900	0
Adj. Flow (vph)	3	354	43	130	320	1	89	1	175	0	1	0
Lane Group Flow (vph)	3	354	43	130	320	1	0	90	175	0	1	0
Sign Control		Free			Free			Stop			Stop	
Lane Util. Factor Frt Fit Protected Satd. Flow (prot) Fit Permitted Satd. Flow (perm) Adj. Flow (vph) Lane Group Flow (vph)	1.00 0.950 1805 0.950 1805 3	1.00 1810 1810 354 354	1.00 0.850 1524 1524 43	1.00 0.950 1752 0.950 1752 130	1.00 1776 1776 320 320	0.850	0 0 89	0.953 1648 0.953 1648 1	1.00 0.850 1615 1615 175	0 0	1900 1900 1 1	1.0

Intersection Summary

Control Type: Unsignalized Intersection Capacity Utilization 45.1% Analysis Period (min) 15

ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis 2: Fords Colony Drive/Dominon Village & Longhill Road

Fords Colony TIS Update 2021 Build

	•	-	$\rightarrow$	•	•	•	•	<b>†</b>	/	-	ţ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*		7	"		7		र्स	7		4	
Traffic Volume (veh/h)	3	326	40	120	294	1	82	1	161	0	1	0
Future Volume (Veh/h)	3	326	40	120	294	1	82	1	161	0	1	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	354	43	130	320	1	89	1	175	0	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									7			
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	321			397			940	941	354	1028	983	320
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	321			397			940	941	354	1028	983	320
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			58	100	75	100	100	100
cM capacity (veh/h)	1250			1156			214	235	694	146	222	725
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	3	354	43	130	320	1	265	1				
Volume Left	3	0	0	130	0	0	89	0				
Volume Right	0	0	43	0	0	1	175	0				
cSH	1250	1700	1700	1156	1700	1700	631	222				
Volume to Capacity	0.00	0.21	0.03	0.11	0.19	0.00	0.42	0.00				
Queue Length 95th (ft)	0	0	0	9	0	0	52	0				
Control Delay (s)	7.9	0.0	0.0	8.5	0.0	0.0	19.2	21.3				
Lane LOS	Α			Α			С	С				
Approach Delay (s)	0.1			2.5			19.2	21.3				
Approach LOS							С	С				
Intersection Summary												
Average Delay			5.6									
Intersection Capacity Utiliz	ation		45.1%	IC	CU Level	of Service			Α			
Analysis Period (min)			15									

Lanes, Volumes, Timings

Fords Colony TIS Update 2021 Build

3: Centerville Road & Westport/Manchester Drive

	ၨ	<b>→</b>	$\rightarrow$	•	-	•	•	<b>†</b>	-	<b>\</b>	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		ሻ	f.		ሻ	<b>†</b>	7	ሻ	<b>†</b>	7
Traffic Volume (vph)	23	1	9	65	0	53	4	378	49	56	243	10
Future Volume (vph)	23	1	9	65	0	53	4	378	49	56	243	10
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.850				0.850			0.850
Flt Protected		0.966		0.950			0.950			0.950		
Satd. Flow (prot)	0	1766	0	1736	1553	0	1805	1759	1282	1556	1759	967
Flt Permitted		0.966		0.950			0.950			0.950		
Satd. Flow (perm)	0	1766	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	25	1	10	71	0	58	4	411	53	61	264	11
Lane Group Flow (vph)	0	36	0	71	58	0	4	411	53	61	264	11
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Control Type: Unsignalized Intersection Capacity Utilization 41.8% Analysis Period (min) 15

ICU Level of Service A

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc.

Synchro 10 Report - 01/13/2020 Page 5 HCM Unsignalized Intersection Capacity Analysis 3: Centerville Road & Westport/Manchester Drive Fords Colony TIS Update 2021 Build

	۶	<b>→</b>	•	•	<b>—</b>	•	1	<b>†</b>	~	<b>/</b>	<b>↓</b>	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		ሻ	1>		ሻ	<b>†</b>	7	Ť	<b>†</b>	7
Traffic Volume (veh/h)	23	1	9	65	0	53	4	378	49	56	243	10
Future Volume (Veh/h)	23	1	9	65	0	53	4	378	49	56	243	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	1	10	71	0	58	4	411	53	61	264	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	863	858	264	816	816	411	275			464		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	863	858	264	816	816	411	275			464		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	90	100	99	74	100	91	100			94		
cM capacity (veh/h)	240	278	780	275	294	636	1300			1028		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	36	71	58	4	411	53	61	264	11			
Volume Left	25	71	0	4	0	0	61	0	0			
Volume Right	10	0	58	0	0	53	0	0	11			
cSH	298	275	636	1300	1700	1700	1028	1700	1700			
Volume to Capacity	0.12	0.26	0.09	0.00	0.24	0.03	0.06	0.16	0.01			
Queue Length 95th (ft)	10	25	7	0.00	0.21	0.00	5	0.10	0.01			
Control Delay (s)	18.7	22.6	11.2	7.8	0.0	0.0	8.7	0.0	0.0			
Lane LOS	C	C	В	Α.	0.0	0.0	Α.	0.0	0.0			
Approach Delay (s)	18.7	17.5	Б	0.1			1.6					
Approach LOS	C	C		0.1			1.0					
Intersection Summary												
Average Delay			3.6									
Intersection Capacity Utiliza	ation		41.8%	IC	ULevel	of Service			Α			
Analysis Period (min)			15	10					- '			
randigolo i criod (iliili)			13									

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 6 Lanes, Volumes, Timings 4: News Road & Firestone Drive Fords Colony TIS Update 2021 Build

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	1€		7	1}			ર્ન	7		4	7
Traffic Volume (vph)	10	214	18	31	138	47	14	0	38	92	0	19
Future Volume (vph)	10	214	18	31	138	47	14	0	38	92	0	19
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.962				0.850			0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1504	1824	0	1770	1658	0	0	1770	1583	0	1805	1615
Flt Permitted	0.950			0.950				0.950			0.950	
Satd. Flow (perm)	1504	1824	0	1770	1658	0	0	1770	1583	0	1805	1615
Adj. Flow (vph)	11	225	19	33	145	49	15	0	40	97	0	20
Lane Group Flow (vph)	11	244	0	33	194	0	0	15	40	0	97	20
Sign Control		Free			Free			Stop			Stop	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 37.5%
Analysis Period (min) 15

ICU Level of Service A

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc.

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Fords Colony TIS Update 2021 Build

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBI
Lane Configurations	7	<b>1</b>	LDIN	ሻ	1	WDIX	IVDL	4	7	JDL	4	700
Fraffic Volume (veh/h)	10	214	18	31	138	47	14	0	38	92	0	1
Future Volume (Veh/h)	10	214	18	31	138	47	14	0	38	92	0	1
Sign Control	10	Free	10	01	Free	- 17		Stop	50	,,	Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.9
Hourly flow rate (vph)	11	225	19	33	145	49	15	0.70	40	97	0.70	2
Pedestrians		LLO										_
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									6			
Median type		None			None							
Median storage veh)		140110			140110							
Upstream signal (ft)												
X, platoon unblocked												
C, conflicting volume	194			244			478	516	234	502	502	1
/C1, stage 1 conf vol	.,,,							0.0	201	002	002	
C2, stage 2 conf vol												
Cu, unblocked vol	194			244			478	516	234	502	502	17
C, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3
00 queue free %	99			98			97	100	95	78	100	9
cM capacity (veh/h)	1278			1322			474	447	805	447	456	88
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	11	244	33	194	55	117						
Volume Left	11	0	33	0	15	97						
Volume Right	0	19	0	49	40	20						
SH	1278	1700	1322	1700	1106	539						
Volume to Capacity	0.01	0.14	0.02	0.11	0.05	0.22						
Queue Length 95th (ft)	0.01	0.14	0.02	0.11	0.05	20						
Control Delay (s)	7.8	0.0	7.8	0.0	10.6	14.2						
Lane LOS	7.6 A	0.0	7.6 A	0.0	10.6 B	14.2 B						
Approach Delay (s)	0.3		1.1		10.6	14.2						
Approach LOS	0.3		1.1		10.6 B	14.2 B						
ntersection Summary												
Average Delay			4.0									
ntersection Capacity Utiliza	ation		37.5%	10	III ovel s	of Service			Α			
Analysis Period (min)	1UUI		37.5%	IC	o revel (	JI Service			А			
Analysis Pellou (min)			10									

HCM Unsignalized Intersection Capacity Analysis

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 8

# Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	
Directions Served	L	Т	R	L	Т	R	LT	R	LTR	
Maximum Queue (ft)	66	561	187	65	217	49	92	141	124	
Average Queue (ft)	3	255	19	28	93	7	36	65	46	
95th Queue (ft)	38	499	106	57	181	31	75	108	96	
Link Distance (ft)		1007			741	741	405		475	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		225	250				225		
Storage Blk Time (%)		11	0		0					
Queuing Penalty (veh)		3	1		0					

# Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road

Movement	EB	EB	WB	NB	NB	SB
Directions Served	L	R	L	LT	R	LTR
Maximum Queue (ft)	9	8	103	115	93	14
Average Queue (ft)	1	0	32	42	35	1
95th Queue (ft)	6	5	72	90	67	6
Link Distance (ft)				723		278
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200	300	225		175	
Storage Blk Time (%)				0	0	
Queuing Penalty (veh)				0	0	

#### Intersection: 3: Centerville Road & Westport/Manchester Drive

Movement	EB	WB	WB	NB	NB	SB
Directions Served	LTR	L	TR	L	T	L
Maximum Queue (ft)	47	68	55	7	2	64
Average Queue (ft)	18	27	19	0	0	15
95th Queue (ft)	41	54	40	4	2	47
Link Distance (ft)	247	762			622	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			140	190		190
Storage Blk Time (%)						
Queuing Penalty (veh)						

#### Intersection: 4: News Road & Firestone Drive

Movement	EB	WB	NB	NB	SB	SB
Directions Served	L	L	LT	R	LT	R
Maximum Queue (ft)	30	28	40	54	71	33
Average Queue (ft)	3	5	12	24	35	14
95th Queue (ft)	17	21	37	49	59	39
Link Distance (ft)			372		374	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225	225		150		150
Storage Blk Time (%)						
Queuing Penalty (veh)						

#### **Network Summary**

Network wide Queuing Penalty: 4

Fords Colony TIS Update 2027 No Build

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

	•	-	$\rightarrow$	•	<b>←</b>	•	<b>1</b>	<b>†</b>	~	-	ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	<b>†</b> †	7	, j	<b>^</b>	7		ની	7		4	
Traffic Volume (vph)	4	920	26	53	577	22	52	4	273	68	1	22
Future Volume (vph)	4	920	26	53	577	22	52	4	273	68	1	22
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.967	
Flt Protected	0.950			0.950				0.955			0.964	
Satd. Flow (prot)	1805	3539	1615	1719	3471	1380	0	1669	1615	0	1676	0
Flt Permitted	0.377			0.186				0.955			0.964	
Satd. Flow (perm)	716	3539	1615	337	3471	1380	0	1669	1615	0	1676	0
Satd. Flow (RTOR)			164			164			207		13	
Adj. Flow (vph)	4	1000	28	58	627	24	57	4	297	74	1	24
Lane Group Flow (vph)	4	1000	28	58	627	24	0	61	297	0	99	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	12.0	48.0	48.0	12.0	48.0	48.0	24.0	24.0	24.0	16.0	16.0	
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Act Effct Green (s)	40.9	34.0	34.0	36.4	40.7	40.7		12.0	12.0		9.8	
Actuated g/C Ratio	0.52	0.43	0.43	0.46	0.52	0.52		0.15	0.15		0.12	
v/c Ratio	0.01	0.65	0.04	0.23	0.35	0.03		0.24	0.71		0.45	
Control Delay	10.5	22.1	0.1	12.9	13.4	0.1		37.2	22.6		42.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay	10.5	22.1	0.1	12.9	13.4	0.1		37.2	22.6		42.3	
LOS	В	С	Α	В	В	Α		D	С		D	
Approach Delay		21.5			12.9			25.1			42.3	
Approach LOS		С			В			С			D	

Intersection Summary Cycle Length: 100
Actuated Cycle Length: 78.6
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.71

Intersection Signal Delay: 20.3
Intersection Capacity Utilization 61.9%

Intersection LOS: C ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis 1: Williamsburg W Drive/Lane Pl Drive & Longhill Road Fords Colony TIS Update 2027 No Build

	۶	-	$\rightarrow$	•	<b>←</b>	•	1	<b>†</b>	1	-	ţ	1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	<b>^</b>	7	*	<b>^</b>	7		ર્ન	7		4	
Traffic Volume (vph)	4	920	26	53	577	22	52	4	273	68	1	22
Future Volume (vph)	4	920	26	53	577	22	52	4	273	68	1	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.96	
Satd. Flow (prot)	1805	3539	1615	1719	3471	1380		1670	1615		1677	
FIt Permitted	0.38	1.00	1.00	0.19	1.00	1.00		0.96	1.00		0.96	
Satd. Flow (perm)	716	3539	1615	336	3471	1380		1670	1615		1677	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	1000	28	58	627	24	57	4	297	74	1	24
RTOR Reduction (vph)	0	0	16	0	0	12	0	0	177	0	12	0
Lane Group Flow (vph)	4	1000	12	58	627	12	0	61	120	0	87	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Actuated Green, G (s)	41.5	37.4	37.4	41.0	40.7	40.7		12.0	12.0		6.8	
Effective Green, g (s)	41.5	37.4	37.4	41.0	40.7	40.7		12.0	12.0		6.8	
Actuated g/C Ratio	0.50	0.45	0.45	0.49	0.49	0.49		0.14	0.14		0.08	
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	364	1579	720	223	1685	670		239	231		136	
v/s Ratio Prot	0.00	c0.28		c0.01	c0.18			0.04			c0.05	
v/s Ratio Perm	0.01		0.01	0.12		0.01			c0.07			
v/c Ratio	0.01	0.63	0.02	0.26	0.37	0.02		0.26	0.52		0.64	
Uniform Delay, d1	10.8	17.9	12.9	12.5	13.5	11.2		31.9	33.2		37.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	0.0	1.2	0.0	0.2	0.3	0.0		0.6	2.0		9.9	
Delay (s)	10.8	19.1	13.0	12.7	13.8	11.2		32.5	35.2		47.2	
Level of Service	В	В	В	В	В	В		С	D		D	
Approach Delay (s)		18.9			13.6			34.7			47.2	
Approach LOS		В			В			С			D	
Intersection Summary												
HCM 2000 Control Delay			21.0	H	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capac	ity ratio		0.59									
Actuated Cycle Length (s)			83.8	S	um of los	t time (s)			24.0			
Intersection Capacity Utilizat	ion		61.9%	IC	U Level	of Service			В			
Analysis Period (min)			15									
c Critical Lane Group												

Fords Colony TIS Update 2027 No Build

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2: Fords Colony Drive/Dominon Village & Longhill Road

	•	-	`	-	←	•	•	<b>†</b>	-	-	Ţ	4
				*			,		,		*	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	ĵ₃				7		4			4	
Traffic Volume (vph)	4	366	44	131	331	1	88	1	165	0	1	0
Future Volume (vph)	4	366	44	131	331	1	88	1	165	0	1	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984				0.850		0.912				
Flt Protected	0.950			0.950				0.983				
Satd. Flow (prot)	1805	1779	0	1752	1776	1615	0	1646	0	0	1900	0
Flt Permitted	0.950			0.950				0.983				
Satd. Flow (perm)	1805	1779	0	1752	1776	1615	0	1646	0	0	1900	0
Adj. Flow (vph)	4	398	48	142	360	1	96	1	179	0	1	0
Lane Group Flow (vph)	4	446	0	142	360	1	0	276	0	0	1	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Control Type: Unsignalized Intersection Capacity Utilization 60.9% Analysis Period (min) 15

ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis 2: Fords Colony Drive/Dominon Village & Longhill Road

Fords Colony TIS Update 2027 No Build

	۶	<b>→</b>	•	•	<b>←</b>	•	•	<b>†</b>	~	-	ţ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	Ť	1>		ሻ	<b>↑</b>	7		4			4	
Traffic Volume (veh/h)	4	366	44	131	331	1	88	1	165	0	1	0
Future Volume (Veh/h)	4	366	44	131	331	1	88	1	165	0	1	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	398	48	142	360	1	96	1	179	0	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	361			446			1074	1075	422	1230	1098	360
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	361			446			1074	1075	422	1230	1098	360
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			87			44	99	72	100	99	100
cM capacity (veh/h)	1209			1109			171	192	636	100	186	689
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	4	446	142	360	1	276	1					
Volume Left	4	0	142	0	0	96	0					
Volume Right	0	48	0	0	1	179	0					
cSH	1209	1700	1109	1700	1700	325	186					
Volume to Capacity	0.00	0.26	0.13	0.21	0.00	0.85	0.01					
Queue Length 95th (ft)	0	0	11	0	0	189	0					
Control Delay (s)	8.0	0.0	8.7	0.0	0.0	55.5	24.4					
Lane LOS	Α		Α			F	C					
Approach Delay (s)	0.1		2.5			55.5	24.4					
Approach LOS						F	С					
Intersection Summary												
Average Delay			13.5									
Intersection Capacity Utilization												
	on		60.9%	IC	U Level	of Service			В			

Fords Colony TIS Update 2027 No Build

3: Centerville Road & Westport/Manchester Drive

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		*	î.		ሻ	<b>↑</b>	7	Ť	<b>↑</b>	7
Traffic Volume (vph)	24	1	10	71	0	61	4	437	55	65	280	11
Future Volume (vph)	24	1	10	71	0	61	4	437	55	65	280	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.850				0.850			0.850
Flt Protected		0.967		0.950			0.950			0.950		
Satd. Flow (prot)	0	1766	0	1736	1553	0	1805	1759	1282	1556	1759	967
Flt Permitted		0.967		0.950			0.950			0.950		
Satd. Flow (perm)	0	1766	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	26	1	11	77	0	66	4	475	60	71	304	12
Lane Group Flow (vph)	0	38	0	77	66	0	4	475	60	71	304	12
Sign Control		Stop			Stop			Free			Free	

ICU Level of Service A

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 45.3%
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis 3: Centerville Road & Westport/Manchester Drive

Fords Colony TIS Update 2027 No Build

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		7	ĵ»		7	<b>^</b>	7	ሻ	<b>†</b>	7
Traffic Volume (veh/h)	24	1	10	71	0	61	4	437	55	65	280	11
Future Volume (Veh/h)	24	1	10	71	0	61	4	437	55	65	280	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	1	11	77	0	66	4	475	60	71	304	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	995	989	304	940	941	475	316			535		
vC1, stage 1 conf vol	770	707	301	710	711	170	310			000		
vC2, stage 2 conf vol												
vCu, unblocked vol	995	989	304	940	941	475	316			535		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.3		
tC, 2 stage (s)	7.1	0.5	0.2	7.1	0.5	0.2	7.1			7.5		
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	86	100	99	66	100	89	100			93		
cM capacity (veh/h)	188	230	740	223	245	586	1256			966		
, , ,										900		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	38	77	66	4	475	60	71	304	12			
Volume Left	26	77	0	4	0	0	71	0	0			
Volume Right	11	0	66	0	0	60	0	0	12			
cSH	242	223	586	1256	1700	1700	966	1700	1700			
Volume to Capacity	0.16	0.34	0.11	0.00	0.28	0.04	0.07	0.18	0.01			
Queue Length 95th (ft)	14	37	9	0	0	0	6	0	0			
Control Delay (s)	22.6	29.4	11.9	7.9	0.0	0.0	9.0	0.0	0.0			
Lane LOS	С	D	В	Α			Α					
Approach Delay (s)	22.6	21.3		0.1			1.7					
Approach LOS	С	С										
Intersection Summary												
Average Delay			4.1									
Intersection Capacity Utiliza	ation		45.3%	IC	U Level	of Service	:		Α			
Analysis Period (min)			15									
, (·······)												

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Lanes, Volumes, Timings 4: News Road & Firestone Drive Fords Colony TIS Update 2027 No Build

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	ĵ.		٦	ĥ			ર્ન	7		ર્ન	7
Traffic Volume (vph)	12	237	18	31	154	53	14	0	38	103	0	21
Future Volume (vph)	12	237	18	31	154	53	14	0	38	103	0	21
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.961				0.850			0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1504	1826	0	1770	1657	0	0	1770	1583	0	1805	1615
Flt Permitted	0.950			0.950				0.950			0.950	
Satd. Flow (perm)	1504	1826	0	1770	1657	0	0	1770	1583	0	1805	1615
Adj. Flow (vph)	13	249	19	33	162	56	15	0	40	108	0	22
Lane Group Flow (vph)	13	268	0	33	218	0	0	15	40	0	108	22
Sign Control		Free			Free			Stop			Stop	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 39.3%
Analysis Period (min) 15

ICU Level of Service A

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 7

#### HCM Unsignalized Intersection Capacity Analysis 4: News Road & Firestone Drive

Fords Colony TIS Update 2027 No Build

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	₽		ሻ	1>			ની	7		र्स	7
Traffic Volume (veh/h)	12	237	18	31	154	53	14	0	38	103	0	21
Future Volume (Veh/h)	12	237	18	31	154	53	14	0	38	103	0	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	13	249	19	33	162	56	15	0	40	108	0	22
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									6			6
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	218			268			524	568	258	551	550	190
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	218			268			524	568	258	551	550	190
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			97	100	95	74	100	97
cM capacity (veh/h)	1252			1296			440	417	780	414	427	857
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	13	268	33	218	55	130						
Volume Left	13	0	33	0	15	108						
Volume Right	0	19	0	56	40	22						
cSH	1252	1700	1296	1700	1073	498						
Volume to Capacity	0.01	0.16	0.03	0.13	0.05	0.26						
Queue Length 95th (ft)	1	0.10	2	0.10	4	26						
Control Delay (s)	7.9	0.0	7.9	0.0	10.8	15.5						
Lane LOS	Α.,	0.0	Α.,	0.0	В	C						
Approach Delay (s)	0.4		1.0		10.8	15.5						
Approach LOS	0.4		1.0		В	C						
Intersection Summary												
Average Delay			4.1									
Intersection Capacity Utiliz	ation		39.3%	IC	U Level	of Service			Α			
Analysis Period (min)			15									

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 8

# Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	
Directions Served	L	T	T	R	L	Т	T	R	LT	R	LTR	
Maximum Queue (ft)	27	233	229	67	78	157	132	55	94	168	132	
Average Queue (ft)	2	114	107	8	28	84	39	10	37	73	49	
95th Queue (ft)	14	197	189	43	61	143	92	38	79	133	101	
Link Distance (ft)		1006	1006			738	738		392		461	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250			225	250			250		225		
Storage Blk Time (%)		0	0	0						0		
Queuing Penalty (veh)		0	0	0						0		

#### Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road

Movement	EB	EB	WB	NB	SB	
Directions Served	L	TR	L	LTR	LTR	
Maximum Queue (ft)	7	19	84	291	5	
Average Queue (ft)	1	1	26	106	0	
95th Queue (ft)	6	11	60	233	3	
Link Distance (ft)		2032		736	278	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		225			
Storage Blk Time (%)						
Queuing Penalty (veh)						

#### Intersection: 3: Centerville Road & Westport/Manchester Drive

Movement	EB	WB	WB	NB	NB	NB	SB
Directions Served	LTR	L	TR	L	T	R	L
Maximum Queue (ft)	47	69	58	10	2	5	72
Average Queue (ft)	20	28	20	1	0	0	19
95th Queue (ft)	42	56	41	6	2	5	52
Link Distance (ft)	247	762			622		
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			140	190		325	190
Storage Blk Time (%)							
Queuing Penalty (veh)							

#### Intersection: 4: News Road & Firestone Drive

Movement	EB	WB	NB	NB	SB	SB
Directions Served	L	L	LT	R	LT	R
Maximum Queue (ft)	28	26	38	54	79	33
Average Queue (ft)	3	5	12	24	40	16
95th Queue (ft)	16	20	37	51	67	40
Link Distance (ft)			372		374	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225	225		150		150
Storage Blk Time (%)						
Queuing Penalty (veh)						

#### **Network Summary**

Network wide Queuing Penalty: 0

Fords Colony TIS Update 2027 Build

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

	٠	<b>→</b>	$\rightarrow$	•	•	•	4	<b>†</b>	<b>/</b>	<b>&gt;</b>	ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ř	<b>†</b> †	7	, N	<b>†</b> †	7		4	7		4	
Traffic Volume (vph)	4	933	26	53	581	22	52	4	273	68	1	22
Future Volume (vph)	4	933	26	53	581	22	52	4	273	68	1	22
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.967	
Flt Protected	0.950			0.950				0.955			0.964	
Satd. Flow (prot)	1805	3539	1615	1719	3471	1380	0	1669	1615	0	1676	0
Flt Permitted	0.374			0.181				0.955			0.964	
Satd. Flow (perm)	711	3539	1615	328	3471	1380	0	1669	1615	0	1676	0
Satd. Flow (RTOR)			164			164			206		13	
Adj. Flow (vph)	4	1014	28	58	632	24	57	4	297	74	1	24
Lane Group Flow (vph)	4	1014	28	58	632	24	0	61	297	0	99	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	12.0	48.0	48.0	12.0	48.0	48.0	24.0	24.0	24.0	16.0	16.0	
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Act Effct Green (s)	41.1	34.1	34.1	36.5	40.9	40.9		12.0	12.0		9.8	
Actuated g/C Ratio	0.52	0.43	0.43	0.46	0.52	0.52		0.15	0.15		0.12	
v/c Ratio	0.01	0.66	0.04	0.23	0.35	0.03		0.24	0.71		0.45	
Control Delay	10.5	22.3	0.1	12.9	13.5	0.1		37.2	22.8		42.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay	10.5	22.3	0.1	12.9	13.5	0.1		37.2	22.8		42.5	
LOS	В	С	Α	В	В	Α		D	С		D	
Approach Delay		21.7			13.0			25.2			42.5	
Approach LOS		С			В			С			D	

Intersection Summary Cycle Length: 100
Actuated Cycle Length: 78.8
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.71

Intersection Signal Delay: 20.4 Intersection Capacity Utilization 62.3%

Analysis Period (min) 15

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



Intersection LOS: C ICU Level of Service B HCM Signalized Intersection Capacity Analysis 1: Williamsburg W Drive/Lane Pl Drive & Longhill Road Fords Colony TIS Update 2027 Build

	•	-	•	•	•	•	•	<b>†</b>	~	-	ţ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	<b>^</b>	7	*	<b>^</b>	7		4	7		4	
Traffic Volume (vph)	4	933	26	53	581	22	52	4	273	68	1	22
Future Volume (vph)	4	933	26	53	581	22	52	4	273	68	1	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.96	
Satd. Flow (prot)	1805	3539	1615	1719	3471	1380		1670	1615		1677	
Flt Permitted	0.37	1.00	1.00	0.18	1.00	1.00		0.96	1.00		0.96	
Satd. Flow (perm)	711	3539	1615	327	3471	1380		1670	1615		1677	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	1014	28	58	632	24	57	4	297	74	1	24
RTOR Reduction (vph)	0	0	15	0	0	12	0	0	177	0	12	0
Lane Group Flow (vph)	4	1014	13	58	632	12	0	61	120	0	87	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Actuated Green, G (s)	41.7	37.6	37.6	41.2	40.9	40.9		12.0	12.0		6.8	
Effective Green, g (s)	41.7	37.6	37.6	41.2	40.9	40.9		12.0	12.0		6.8	
Actuated g/C Ratio	0.50	0.45	0.45	0.49	0.49	0.49		0.14	0.14		0.08	
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	363	1584	722	220	1690	671		238	230		135	
v/s Ratio Prot	0.00	c0.29		c0.01	c0.18			0.04			c0.05	
v/s Ratio Perm	0.01		0.01	0.12		0.01			c0.07			
v/c Ratio	0.01	0.64	0.02	0.26	0.37	0.02		0.26	0.52		0.64	
Uniform Delay, d1	10.8	18.0	12.9	12.5	13.5	11.2		32.0	33.4		37.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	0.0	1.2	0.0	0.2	0.3	0.0		0.6	2.1		10.1	
Delay (s)	10.8	19.2	12.9	12.8	13.8	11.2		32.6	35.5		47.5	
Level of Service	В	В	В	В	В	В		С	D		D	
Approach Delay (s)		19.0			13.6			35.0			47.5	
Approach LOS		В			В			D			D	
Intersection Summary												
HCM 2000 Control Delay			21.1	Н	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capa	acity ratio		0.60									
Actuated Cycle Length (s)			84.0	S	um of los	t time (s)			24.0			
Intersection Capacity Utiliz	ation		62.3%	IC	CU Level	of Service			В			
Analysis Period (min)			15									
c Critical Lane Group												

Fords Colony TIS Update 2027 Build

2: Fords Colony Drive/Dominon Village & Longhill Road

	•	<b>→</b>	`	•	←	•	•	<b>†</b>	/	-	Ţ	4
			•	*			,	•	,		•	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*		7	"	<b>•</b>	7		ર્ન	7		4	
Traffic Volume (vph)	4	366	45	135	331	1	92	1	178	0	1	0
Future Volume (vph)	4	366	45	135	331	1	92	1	178	0	1	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950				0.953				
Satd. Flow (prot)	1805	1810	1524	1752	1776	1615	0	1648	1615	0	1900	0
Flt Permitted	0.950			0.950				0.953				
Satd. Flow (perm)	1805	1810	1524	1752	1776	1615	0	1648	1615	0	1900	0
Adj. Flow (vph)	4	398	49	147	360	1	100	1	193	0	1	0
Lane Group Flow (vph)	4	398	49	147	360	1	0	101	193	0	1	0
Sign Control		Free			Free			Stop			Stop	

ICU Level of Service A

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 48.6%
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis 2: Fords Colony Drive/Dominon Village & Longhill Road

Fords Colony TIS Update 2027 Build

	•	-	$\rightarrow$	•	<b>←</b>	•	•	<b>†</b>	/	-	ţ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	<b>†</b>	7	ሻ	<b>†</b>	7		4	7		4	
Traffic Volume (veh/h)	4	366	45	135	331	1	92	1	178	0	1	0
Future Volume (Veh/h)	4	366	45	135	331	1	92	1	178	0	1	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	398	49	147	360	1	100	1	193	0	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									7			
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	361			447			1060	1061	398	1157	1109	360
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	361			447			1060	1061	398	1157	1109	360
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			87			42	99	71	100	99	100
cM capacity (veh/h)	1209			1108			174	195	656	110	183	689
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	4	398	49	147	360	1	294	1				
Volume Left	4	0	0	147	0	0	100	0				
Volume Right	0	0	49	0	0	1	193	0				
cSH	1209	1700	1700	1108	1700	1700	507	183				
Volume to Capacity	0.00	0.23	0.03	0.13	0.21	0.00	0.58	0.01				
Queue Length 95th (ft)	0	0	0	11	0	0	91	0				
Control Delay (s)	8.0	0.0	0.0	8.7	0.0	0.0	25.9	24.8				
Lane LOS	Α			Α			D	С				
Approach Delay (s)	0.1			2.5			25.9	24.8				
Approach LOS							D	С				
Intersection Summary												
Average Delay			7.1									
Intersection Capacity Utiliza	ation		48.6%	IC	CU Level	of Service			Α			
Analysis Period (min)			15									

Fords Colony TIS Update 2027 Build

3: Centerville Road & Westport/Manchester Drive

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	LUL	4	LDIX	ሻ	1	WDIC	*	<u> </u>	7	N N	<u> </u>	7
Traffic Volume (vph)	24	1	10	74	0	62	4	437	56	65	280	11
Future Volume (vph)	24	1	10	74	0	62	4	437	56	65	280	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.850				0.850			0.850
Flt Protected		0.967		0.950			0.950			0.950		
Satd. Flow (prot)	0	1766	0	1736	1553	0	1805	1759	1282	1556	1759	967
Flt Permitted		0.967		0.950			0.950			0.950		
Satd. Flow (perm)	0	1766	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	26	1	11	80	0	67	4	475	61	71	304	12
Lane Group Flow (vph)	0	38	0	80	67	0	4	475	61	71	304	12
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Control Type: Unsignalized Intersection Capacity Utilization 45.3% Analysis Period (min) 15

ICU Level of Service A

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc.

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HCM Unsignalized Intersection Capacity Analysis 3: Centerville Road & Westport/Manchester Drive Fords Colony TIS Update 2027 Build

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		ሻ	1>		ሻ	<b>†</b>	7	ሻ	<b>†</b>	7
Traffic Volume (veh/h)	24	1	10	74	0	62	4	437	56	65	280	11
Future Volume (Veh/h)	24	1	10	74	0	62	4	437	56	65	280	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	1	11	80	0	67	4	475	61	71	304	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	996	990	304	940	941	475	316			536		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	996	990	304	940	941	475	316			536		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	86	100	99	64	100	89	100			93		
cM capacity (veh/h)	188	229	740	223	245	586	1256			965		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	38	80	67	4	475	61	71	304	12			
Volume Left	26	80	0/	4	4/5	0	71	304	0			
Volume Right	11	0	67	0	0	61	0	0	12			
cSH		223		1256	1700		965	1700	1700			
	241		586			1700						
Volume to Capacity	0.16	0.36	0.11	0.00	0.28	0.04	0.07	0.18	0.01			
Queue Length 95th (ft)	14	39	10	0	0	0	6	0	0			
Control Delay (s)	22.7	29.9	11.9	7.9	0.0	0.0	9.0	0.0	0.0			
Lane LOS	C	D	В	A			A					
Approach Delay (s)	22.7	21.7		0.1			1.7					
Approach LOS	С	С										
Intersection Summary												
Average Delay			4.2									
Intersection Capacity Utiliz	ation		45.3%	IC	:U Level	of Service			Α			
Analysis Period (min)			15									

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 6 Lanes, Volumes, Timings 4: News Road & Firestone Drive Fords Colony TIS Update 2027 Build

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	Ĭ	f)		٦	f)			ર્ન	7		4	7
Traffic Volume (vph)	12	239	18	31	155	53	14	0	38	103	0	21
Future Volume (vph)	12	239	18	31	155	53	14	0	38	103	0	21
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.962				0.850			0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1504	1826	0	1770	1659	0	0	1770	1583	0	1805	1615
Flt Permitted	0.950			0.950				0.950			0.950	
Satd. Flow (perm)	1504	1826	0	1770	1659	0	0	1770	1583	0	1805	1615
Adj. Flow (vph)	13	252	19	33	163	56	15	0	40	108	0	22
Lane Group Flow (vph)	13	271	0	33	219	0	0	15	40	0	108	22
Sign Control		Free			Free			Stop			Stop	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 39.4%
Analysis Period (min) 15

ICU Level of Service A

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 7

#### HCM Unsignalized Intersection Capacity Analysis 4: News Road & Firestone Drive

Fords Colony TIS Update 2027 Build

	٠	<b>→</b>	$\rightarrow$	•	<b>←</b>	•	4	<b>†</b>	<i>&gt;</i>	<b>&gt;</b>	ļ	1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	î.		ሻ	₽			ની	7		र्स	7
Traffic Volume (veh/h)	12	239	18	31	155	53	14	0	38	103	0	21
Future Volume (Veh/h)	12	239	18	31	155	53	14	0	38	103	0	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	13	252	19	33	163	56	15	0	40	108	0	22
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									6			6
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	219			271			528	572	262	555	554	191
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	219			271			528	572	262	555	554	191
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			97	100	95	74	100	97
cM capacity (veh/h)	1251			1292			437	415	777	411	425	856
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	13	271	33	219	55	130						
Volume Left	13	0	33	0	15	108						
Volume Right	0	19	0	56	40	22						
cSH	1251	1700	1292	1700	1069	495						
Volume to Capacity	0.01	0.16	0.03	0.13	0.05	0.26						
Queue Length 95th (ft)	1	0.10	2	0.10	4	26						
Control Delay (s)	7.9	0.0	7.9	0.0	10.9	15.6						
Lane LOS	Α.,	0.0	Α.,	0.0	В	C						
Approach Delay (s)	0.4		1.0		10.9	15.6						
Approach LOS	0.4		1.0		В	C						
Intersection Summary												
Average Delay			4.1									
Intersection Capacity Utiliza	ation		39.4%	IC	U Level	of Service			Α			
Analysis Period (min)			15									

Timing Plan: AM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 8

# Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	
Directions Served	L	Т	Т	R	L	Т	Т	R	LT	R	LTR	
Maximum Queue (ft)	49	250	264	29	67	166	140	44	98	167	124	
Average Queue (ft)	4	122	118	7	26	80	44	8	35	77	52	
95th Queue (ft)	32	211	211	24	55	141	101	32	76	138	99	
Link Distance (ft)		1006	1006			738	738		392		461	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250			225	250			250		225		
Storage Blk Time (%)	0	0	0							0		
Queuing Penalty (veh)	0	0	0							0		

# Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road

Movement	EB	EB	EB	WB	NB	NB	SB
Directions Served	L	T	R	L	LT	R	LTR
Maximum Queue (ft)	16	4	8	87	196	132	9
Average Queue (ft)	1	0	0	34	58	44	0
95th Queue (ft)	9	4	6	69	146	102	5
Link Distance (ft)		2030			723		278
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200		300	225		175	
Storage Blk Time (%)					1	0	
Queuing Penalty (veh)					3	0	

#### Intersection: 3: Centerville Road & Westport/Manchester Drive

Movement	EB	WB	WB	NB	NB	NB	SB
Directions Served	LTR	L	TR	L	Т	R	L
Maximum Queue (ft)	51	77	56	8	2	4	69
Average Queue (ft)	19	30	20	1	0	0	20
95th Queue (ft)	44	61	42	7	2	5	53
Link Distance (ft)	247	762			622		
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			140	190		325	190
Storage Blk Time (%)							
Queuing Penalty (veh)							

#### Intersection: 4: News Road & Firestone Drive

Movement	EB	WB	NB	NB	SB	SB
Directions Served	L	L	LT	R	LT	R
Maximum Queue (ft)	37	26	36	52	82	37
Average Queue (ft)	3	4	13	24	40	17
95th Queue (ft)	17	18	38	48	68	42
Link Distance (ft)			372		374	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225	225		150		150
Storage Blk Time (%)						
Queuing Penalty (veh)						

#### **Network Summary**

Network wide Queuing Penalty: 3

Fords Colony TIS Update

1: Williamsburg W Drive/Lane Pl Drive & Longhill Road

2019 Existing

	•	-	•	•	←	•	1	1		-	¥	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	<b>↑</b>	7	75	<b>↑</b>	7		ર્ન	7		4	
Traffic Volume (vph)	18	765	36	214	1016	40	52	0	141	24	0	15
Future Volume (vph)	18	765	36	214	1016	40	52	0	141	24	0	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.947	
Flt Protected	0.950			0.950				0.950			0.970	
Satd. Flow (prot)	1805	1845	1615	1805	1881	1615	0	1770	1568	0	1699	0
Flt Permitted	0.073			0.138				0.950			0.970	
Satd. Flow (perm)	139	1845	1615	262	1881	1615	0	1770	1568	0	1699	0
Satd. Flow (RTOR)			156			156			161		161	
Adj. Flow (vph)	19	805	38	225	1069	42	55	0	148	25	0	16
Lane Group Flow (vph)	19	805	38	225	1069	42	0	55	148	0	41	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	15.0	50.0	50.0	15.0	50.0	50.0	20.0	20.0	20.0	20.0	20.0	
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Act Effct Green (s)	56.6	44.4	44.4	51.4	55.1	55.1		8.5	8.5		7.1	
Actuated g/C Ratio	0.65	0.51	0.51	0.59	0.64	0.64		0.10	0.10		0.08	
v/c Ratio	0.10	0.85	0.04	0.75	0.89	0.04		0.32	0.49		0.14	
Control Delay	7.8	31.0	0.1	30.3	29.5	0.1		43.1	11.6		1.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay	7.8	31.0	0.1	30.3	29.5	0.1		43.1	11.6		1.1	
LOS	Α	С	Α	С	С	Α		D	В		Α	
Approach Delay		29.2			28.7			20.1			1.1	
Approach LOS		С			С			С			Α	

Intersection Summary

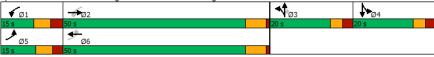
Cycle Length: 105 Actuated Cycle Length: 86.6

Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89 Intersection Signal Delay: 27.7 Intersection Capacity Utilization 81.6%

Intersection LOS: C ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis 1: Williamsburg W Drive/Lane Pl Drive & Longhill Road Fords Colony TIS Update 2019 Existing

			•	-
Movement EBL EBT EBR WBL WBT WBR NBL NBT	NBR	SBL	. SBT	SBR
Lane Configurations 7 7 7 7 4	7		4	
Traffic Volume (vph) 18 765 36 214 1016 40 52 0	141	24	0	15
Future Volume (vph) 18 765 36 214 1016 40 52 0	141			15
Ideal Flow (vphpl) 1900 1900 1900 1900 1900 1900 1900 190	1900	1900	1900	1900
Total Lost time (s) 6.5 6.0 6.0 7.0 6.0 6.0 5.5	5.5		5.5	
Lane Util. Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00		1.00	
Frt 1.00 1.00 0.85 1.00 1.00 0.85 1.00	0.85		0.95	
Flt Protected 0.95 1.00 1.00 0.95 1.00 1.00 0.95	1.00		0.97	
Satd. Flow (prot) 1805 1845 1615 1805 1881 1615 1770	1568		1700	
Flt Permitted 0.07 1.00 1.00 0.14 1.00 1.00 0.95	1.00		0.97	
<u>Satd. Flow (perm)</u> 138 1845 1615 262 1881 1615 1770	1568		1700	
Peak-hour factor, PHF 0.95 0.95 0.95 0.95 0.95 0.95 0.95	0.95			0.95
Adj. Flow (vph) 19 805 38 225 1069 42 55 0	148	3 25		16
RTOR Reduction (vph) 0 0 18 0 0 17 0 0	134			0
Lane Group Flow (vph) 19 805 20 225 1069 25 0 55	14			0
Heavy Vehicles (%) 0% 3% 0% 0% 1% 0% 2% 0%	3%	0%	0%	7%
Turn Type D.P+P NA Perm D.P+P NA Perm Split NA	Perm	Split	l NA	
Protected Phases 5 2 1 6 3 3		4	4	
Permitted Phases 6 2 2 6	3			
Actuated Green, G (s) 57.1 48.5 48.5 56.6 55.1 55.1 8.5	8.5	5	3.9	
Effective Green, g (s) 57.1 48.5 48.5 56.6 55.1 55.1 8.5	8.5	5	3.9	
Actuated g/C Ratio 0.61 0.52 0.52 0.61 0.59 0.59 0.09	0.09		0.04	
Clearance Time (s) 6.5 6.0 6.0 7.0 6.0 6.0 5.5			5.5	
Vehicle Extension (s)         2.0         5.0         5.0         2.0         5.0         5.0	3.0		3.0	
Lane Grp Cap (vph) 120 962 842 293 1114 956 161	143	3	71	
v/s Ratio Prot 0.00 0.44 c0.07 c0.57 c0.03			c0.00	
v/s Ratio Perm 0.09 0.01 0.40 0.02	0.01			
v/c Ratio 0.16 0.84 0.02 0.77 0.96 0.03 0.34	0.09		0.02	
Uniform Delay, d1 20.3 18.9 10.8 15.3 17.9 7.8 39.6	38.7	•	42.7	
Progression Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00		1.00	
Incremental Delay, d2 0.2 7.1 0.0 10.4 18.2 0.0 1.3			0.1	
Delay (s) 20.6 26.0 10.8 25.7 36.1 7.9 40.9	39.0		42.9	
Level of Service C C B C D A D	D	)	D	
Approach Delay (s) 25.2 33.5 39.5			42.9	
Approach LOS C C D			D	
Intersection Summary				
HCM 2000 Control Delay 31.2 HCM 2000 Level of Service	С	;		
HCM 2000 Volume to Capacity ratio 0.88				
Actuated Cycle Length (s) 93.0 Sum of lost time (s)	24.0	)		
Intersection Capacity Utilization 81.6% ICU Level of Service	D	)		
Analysis Period (min) 15				
c Critical Lane Group				

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 9 Report - 11/11/2019 Page 1 Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 9 Report - 11/11/2019

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Fords Colony TIS Update 2019 Existing

Synchro 9 Report - 11/11/2019

Page 3

2: Fords Colony Drive/Dominon Village & Longhill Road

	•	-	>		←	•	•	<b>†</b>	-	<b>/</b>	1	4
		-	•	•			٠,	'	'		•	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	Ť	₽.		7	<b>↑</b>	7		4			4	
Traffic Volume (vph)	0	354	55	200	293	2	47	3	126	4	0	5
Future Volume (vph)	0	354	55	200	293	2	47	3	126	4	0	5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980				0.850		0.903			0.925	
Flt Protected				0.950				0.987			0.978	
Satd. Flow (prot)	1900	1846	0	1805	1863	1615	0	1661	0	0	1719	0
Flt Permitted				0.950				0.987			0.978	
Satd. Flow (perm)	1900	1846	0	1805	1863	1615	0	1661	0	0	1719	0
Adj. Flow (vph)	0	377	59	213	312	2	50	3	134	4	0	5
Lane Group Flow (vph)	0	436	0	213	312	2	0	187	0	0	9	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 54.8%
Analysis Period (min) 15

ICU Level of Service A

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc.

HCM Unsignalized Intersection Capacity Analysis 2: Fords Colony Drive/Dominon Village & Longhill Road

Fords Colony TIS Update 2019 Existing

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	f)		,	<b>^</b>	7		4			4	
Traffic Volume (veh/h)	0	354	55	200	293	2	47	3	126	4	0	5
Future Volume (Veh/h)	0	354	55	200	293	2	47	3	126	4	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	377	59	213	312	2	50	3	134	4	0	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	314			436			1150	1146	406	1250	1174	312
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	314			436			1150	1146	406	1250	1174	312
tC, single (s)	4.1			4.1			7.1	6.8	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.3	3.3	3.5	4.0	3.3
p0 queue free %	100			81			67	98	79	96	100	99
cM capacity (veh/h)	1258			1134			150	142	644	101	157	733
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	0	436	213	312	2	187	9					
Volume Left	0	0	213	0	0	50	4					
Volume Right	0	59	0	0	2	134	5					
cSH	1700	1700	1134	1700	1700	333	193					
Volume to Capacity	0.00	0.26	0.19	0.18	0.00	0.56	0.05					
Queue Length 95th (ft)	0.00	0.20	17	0	0	81	4					
Control Delay (s)	0.0	0.0	8.9	0.0	0.0	28.8	24.5					
Lane LOS	0.0	0.0	A	0.0	0.0	D	C					
Approach Delay (s)	0.0		3.6			28.8	24.5					
Approach LOS	0.0		0.0			D	C					
Intersection Summary												
Average Delay			6.5									
Intersection Capacity Utiliza	ation		54.8%	IC	CU Level	of Service			Α			
Analysis Period (min)			15									

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 9 Report - 11/11/2019 Page 4

Fords Colony TIS Update 2019 Existing

3: Centerville Road & Westport/Manchester Drive

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		*	1		ሻ	<b>^</b>	7	*	<b></b>	1
Traffic Volume (vph)	3	1	2	49	0	29	2	305	67	24	249	2
Future Volume (vph)	3	1	2	49	0	29	2	305	67	24	249	2
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.955			0.850				0.850			0.850
Flt Protected		0.976		0.950			0.950			0.950		
Satd. Flow (prot)	0	1771	0	1805	1553	0	1805	1845	1568	1805	1863	1615
FIt Permitted		0.976		0.950			0.950			0.950		
Satd. Flow (perm)	0	1771	0	1805	1553	0	1805	1845	1568	1805	1863	1615
Adj. Flow (vph)	3	1	2	52	0	31	2	321	71	25	262	2
Lane Group Flow (vph)	0	6	0	52	31	0	2	321	71	25	262	2
Sign Control		Stop			Stop			Free			Free	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 31.4%
Analysis Period (min) 15

ICU Level of Service A

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 9 Report - 11/11/2019 Page 5 HCM Unsignalized Intersection Capacity Analysis 3: Centerville Road & Westport/Manchester Drive Fords Colony TIS Update 2019 Existing

	۶	<b>→</b>	•	•	<b>←</b>	•	4	<b>†</b>	/	<b>&gt;</b>	<b>↓</b>	1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		ሻ	1>		ሻ	<b>†</b>	7	Ť	<b>†</b>	7
Traffic Volume (veh/h)	3	1	2	49	0	29	2	305	67	24	249	2
Future Volume (Veh/h)	3	1	2	49	0	29	2	305	67	24	249	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	1	2	52	0	31	2	321	71	25	262	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	668	708	262	640	639	321	264			392		
vC1, stage 1 conf vol	000			0.0	000	02.				002		
vC2, stage 2 conf vol												
vCu, unblocked vol	668	708	262	640	639	321	264			392		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)		0.0	0.2		0.0	0.2						
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	86	100	96	100			98		
cM capacity (veh/h)	352	354	782	383	388	715	1312			1178		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	1170		
Volume Total	<u>EB I</u>	52	31	2	321	71	25	262	2			
	-											
Volume Left	3	52	0 31	2	0	0	25	0	0			
Volume Right	2	0		0	0	71	0	0	2			
cSH	431	383	715	1312	1700	1700	1178	1700	1700			
Volume to Capacity	0.01	0.14	0.04	0.00	0.19	0.04	0.02	0.15	0.00			
Queue Length 95th (ft)	1	12	3	_ 0	0	0	2	0	0			
Control Delay (s)	13.5	15.9	10.3	7.7	0.0	0.0	8.1	0.0	0.0			
Lane LOS	В	С	В	Α			Α					
Approach Delay (s)	13.5	13.8		0.0			0.7					
Approach LOS	В	В										
Intersection Summary												
Average Delay			1.9									
Intersection Capacity Utiliza	ation		31.4%	IC	U Level	of Service			Α			
Analysis Period (min)			15									
, , ,												

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 9 Report - 11/11/2019 Page 6 Lanes, Volumes, Timings 4: News Road & Firestone Drive Fords Colony TIS Update 2019 Existing

#### HCM Unsignalized Intersection Capacity Analysis 4: News Road & Firestone Drive

Fords Colony TIS Update 2019 Existing

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ne Group	EBL	EBT	WBT	WBR	SBL	SBR
nfigurations	*	<b>*</b>	4	1	*	1
olume (vph)	8	153	257	117	68	7
ume (vph)	8	153	257	117	68	7
Factor	1.00	1.00	1.00	1.00	1.00	1.00
				0.850		0.850
ected	0.950				0.950	
low (prot)	1805	1863	1863	1615	1770	1615
mitted	0.950				0.950	
v (perm)	1805	1863	1863	1615	1770	1615
v (vph)	8	159	268	122	71	7
roup Flow (vph)	8	159	268	122	71	7
ntrol		Free	Free		Stop	
ion Summary						
,						
Type: Unsignalized						
ction Capacity Utiliz	ation 24.0%			IC	CU Level	of Service /
is Period (min) 15						

Analysis Period (min)

15

# Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	
Directions Served	L	Т	R	L	Т	R	LT	R	LTR	
Maximum Queue (ft)	148	519	206	250	763	690	97	109	81	
Average Queue (ft)	16	228	25	124	330	110	39	47	26	
95th Queue (ft)	74	445	120	248	758	532	78	81	61	
Link Distance (ft)		1007			741	741	405		475	
Upstream Blk Time (%)					7	3				
Queuing Penalty (veh)					0	0				
Storage Bay Dist (ft)	250		225	250				225		
Storage Blk Time (%)	0	9	0	1	7					
Queuing Penalty (veh)	0	5	1	7	15					

#### Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road

Movement	EB	WB	WB	NB	SB
Directions Served	TR	L	Т	LTR	LTR
Maximum Queue (ft)	21	88	4	156	17
Average Queue (ft)	2	34	0	58	4
95th Queue (ft)	11	71	4	118	14
Link Distance (ft)	2032		1469	736	278
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		225			
Storage Blk Time (%)					
Queuing Penalty (veh)					

# Intersection: 3: Centerville Road & Westport/Manchester Drive

Movement	EB	WB	WB	NB	SB	
Directions Served	LTR	L	TR	L	L	
Maximum Queue (ft)	28	42	46	4	30	
Average Queue (ft)	6	20	13	0	6	
95th Queue (ft)	23	37	34	3	23	
Link Distance (ft)	247	762				
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			140	190	190	
Storage Blk Time (%)						
Queuing Penalty (veh)						

#### Intersection: 4: News Road & Firestone Drive

Movement	EB	WB	SB	SB
Directions Served	L	R	L	R
Maximum Queue (ft)	27	5	71	31
Average Queue (ft)	3	0	34	6
95th Queue (ft)	16	5	60	26
Link Distance (ft)			375	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	225	300		150
Storage Blk Time (%)				
Queuing Penalty (veh)				

#### **Network Summary**

Network wide Queuing Penalty: 28

Fords Colony TIS Update 2021 No Build

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

	•	-	$\rightarrow$	•	<b>←</b>	•	•	<b>†</b>	^	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	<b>^</b>	7	Ť	<b>↑</b>	7		4	7		4	
Traffic Volume (vph)	19	809	37	223	1075	42	54	0	147	25	0	16
Future Volume (vph)	19	809	37	223	1075	42	54	0	147	25	0	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.947	
Flt Protected	0.950			0.950				0.950			0.971	
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380	0	1687	1615	0	1636	0
Flt Permitted	0.069			0.106				0.950			0.971	
Satd. Flow (perm)	131	1863	1615	192	1827	1380	0	1687	1615	0	1636	0
Satd. Flow (RTOR)			158			158			164		164	
Adj. Flow (vph)	20	852	39	235	1132	44	57	0	155	26	0	17
Lane Group Flow (vph)	20	852	39	235	1132	44	0	57	155	0	43	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	12.0	55.0	55.0	16.0	59.0	59.0	17.0	17.0	17.0	12.0	12.0	
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Act Effct Green (s)	59.2	45.7	45.7	53.9	57.8	57.8		8.6	8.6		6.6	
Actuated g/C Ratio	0.67	0.51	0.51	0.61	0.65	0.65		0.10	0.10		0.07	
v/c Ratio	0.11	0.89	0.04	0.86	0.95	0.05		0.35	0.51		0.16	
Control Delay	7.4	34.2	0.1	49.7	36.6	0.1		46.6	12.4		1.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay	7.4	34.2	0.1	49.7	36.6	0.1		46.6	12.4		1.2	
LOS	Α	С	Α	D	D	Α		D	В		Α	
Approach Delay		32.1			37.7			21.6			1.2	
Approach LOS		С			D			С			Α	

Intersection Summary Cycle Length: 100
Actuated Cycle Length: 88.9
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.95

Intersection Signal Delay: 33.8
Intersection Capacity Utilization 84.8%
Analysis Period (min) 15

Intersection LOS: C ICU Level of Service E

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis 1: Williamsburg W Drive/Lane Pl Drive & Longhill Road Fords Colony TIS Update 2021 No Build

	•	$\rightarrow$	•	1	•	•	1	<b>†</b>	-	-	ţ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	<b></b>	7	*	<b>†</b>	7		ર્ન	7		4	
Traffic Volume (vph)	19	809	37	223	1075	42	54	Ö	147	25	0	16
Future Volume (vph)	19	809	37	223	1075	42	54	0	147	25	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.97	
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380		1687	1615		1635	
Flt Permitted	0.07	1.00	1.00	0.11	1.00	1.00		0.95	1.00		0.97	
Satd. Flow (perm)	131	1863	1615	192	1827	1380		1687	1615		1635	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	20	852	39	235	1132	44	57	0	155	26	0	17
RTOR Reduction (vph)	0	0	19	0	0	17	0	0	141	0	41	0
Lane Group Flow (vph)	20	852	20	235	1132	27	0	57	14	0	2	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Actuated Green, G (s)	59.7	50.0	50.0	59.2	57.8	57.8		8.6	8.6		3.5	
Effective Green, q (s)	59.7	50.0	50.0	59.2	57.8	57.8		8.6	8.6		3.5	
Actuated g/C Ratio	0.63	0.52	0.52	0.62	0.61	0.61		0.09	0.09		0.04	
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	115	977	847	266	1108	836		152	145		60	
v/s Ratio Prot	0.00	0.46		c0.09	c0.62			c0.03			c0.00	
v/s Ratio Perm	0.10		0.01	0.46		0.02			0.01			
v/c Ratio	0.17	0.87	0.02	0.88	1.02	0.03		0.38	0.10		0.03	
Uniform Delay, d1	22.1	19.8	10.9	21.9	18.8	7.5		40.8	39.8		44.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	0.3	9.3	0.0	26.7	32.6	0.0		1.6	0.3		0.2	
Delay (s)	22.3	29.2	10.9	48.6	51.4	7.6		42.4	40.1		44.4	
Level of Service	С	С	В	D	D	Α		D	D		D	
Approach Delay (s)		28.3			49.5			40.7			44.4	
Approach LOS		С			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			41.2	Н	CM 2000	Level of S	Service		D			
HCM 2000 Volume to Cap	acity ratio		0.95									
Actuated Cycle Length (s)	-		95.3	S	um of los	t time (s)			24.0			
Intersection Capacity Utiliz	ation		84.8%	IC	CU Level	of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 1 Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020

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Fords Colony TIS Update 2021 No Build

2: Fords Colony Drive/Dominon Village & Longhill Road

	•	-	•	•	-	•	•	<b>†</b>	/	-	. ↓	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	1≽		ሻ	<b>†</b>	7		4			4	
Traffic Volume (vph)	0	377	59	215	316	2	50	3	135	4	0	5
Future Volume (vph)	0	377	59	215	316	2	50	3	135	4	0	5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980				0.850		0.903			0.925	
Flt Protected				0.950				0.987			0.978	
Satd. Flow (prot)	1900	1771	0	1752	1776	1615	0	1650	0	0	1719	0
Flt Permitted				0.950				0.987			0.978	
Satd. Flow (perm)	1900	1771	0	1752	1776	1615	0	1650	0	0	1719	0
Adj. Flow (vph)	0	401	63	229	336	2	53	3	144	4	0	5
Lane Group Flow (vph)	0	464	0	229	336	2	0	200	0	0	9	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 57.8%
Analysis Period (min) 15

ICU Level of Service B

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc.

Synchro 10 Report - 01/13/2020

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HCM Unsignalized Intersection Capacity Analysis 2: Fords Colony Drive/Dominon Village & Longhill Road

Fords Colony TIS Update 2021 No Build

	•	<b>→</b>	•	•	<b>←</b>	•	1	<b>†</b>	~	<b>/</b>	<b>↓</b>	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	f)		,	<b>^</b>	7		4			4	
Traffic Volume (veh/h)	0	377	59	215	316	2	50	3	135	4	0	5
Future Volume (Veh/h)	0	377	59	215	316	2	50	3	135	4	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	401	63	229	336	2	53	3	144	4	0	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	338			464			1232	1228	432	1340	1258	336
vC1, stage 1 conf vol	000						1202	ILLO	.02	1010	.200	000
vC2, stage 2 conf vol												
vCu, unblocked vol	338			464			1232	1228	432	1340	1258	336
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							,,_	0.0	O.L		0.0	0.2
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			79			5.7	98	77	95	100	99
cM capacity (veh/h)	1232			1092			124	142	627	83	136	711
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	0	464	229	336	2	200	9					
Volume Left	0	0	229	0	0	53	4					
Volume Right	0	63	0	0	2	144	5					
cSH	1700	1700	1092	1700	1700	294	163					
Volume to Capacity	0.00	0.27	0.21	0.20	0.00	0.68	0.06					
Queue Length 95th (ft)	0.00	0.27	20	0.20	0.00	115	0.06					
	0.0	0.0	9.2	0.0		39.7	28.3					
Control Delay (s)	0.0	0.0		0.0	0.0							
Lane LOS	0.0		A			E	D					
Approach Delay (s)	0.0		3.7			39.7	28.3					
Approach LOS						E	D					
Intersection Summary												
Average Delay			8.3									
Intersection Capacity Utiliza	ation		57.8%	IC	CU Level	of Service			В			
Analysis Period (min)			15									

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 4

Fords Colony TIS Update 2021 No Build

3: Centerville Road & Westport/Manchester Drive

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		*	î,		Ţ	<b>†</b>	7	Ţ	<b>†</b>	7
Traffic Volume (vph)	16	1	6	56	0	30	10	331	74	25	273	22
Future Volume (vph)	16	1	6	56	0	30	10	331	74	25	273	22
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.966			0.850				0.850			0.850
Flt Protected		0.966		0.950			0.950			0.950		
Satd. Flow (prot)	0	1773	0	1736	1553	0	1805	1759	1282	1556	1759	967
Flt Permitted		0.966		0.950			0.950			0.950		
Satd. Flow (perm)	0	1773	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	17	1	6	59	0	32	11	348	78	26	287	23
Lane Group Flow (vph)	0	24	0	59	32	0	11	348	78	26	287	23
Sign Control		Stop			Stop			Free			Free	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 35.4%
Analysis Period (min) 15

ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis 3: Centerville Road & Westport/Manchester Drive

Fords Colony TIS Update 2021 No Build

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		7	1₃		7	<b>^</b>	7	Ť	<b>^</b>	7
Traffic Volume (veh/h)	16	1	6	56	0	30	10	331	74	25	273	22
Future Volume (Veh/h)	16	1	6	56	0	30	10	331	74	25	273	22
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	17	1	6	59	0	32	11	348	78	26	287	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	741	787	287	716	732	348	310			426		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	741	787	287	716	732	348	310			426		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	95	100	99	82	100	95	99			98		
cM capacity (veh/h)	311	315	757	331	339	691	1262			1062		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	24	59	32	11	348	78	26	287	23			
Volume Left	17	59	0	11	0	0	26	0	0			
Volume Right	6	0	32	0	0	78	0	0	23			
cSH	365	331	691	1262	1700	1700	1062	1700	1700			
Volume to Capacity	0.07	0.18	0.05	0.01	0.20	0.05	0.02	0.17	0.01			
Queue Length 95th (ft)	5	16	4	1	0	0	2	0	0			
Control Delay (s)	15.6	18.2	10.5	7.9	0.0	0.0	8.5	0.0	0.0			
Lane LOS	С	С	В	Α			Α					
Approach Delay (s)	15.6	15.5		0.2			0.7					
Approach LOS	C	C										
Intersection Summary												
Average Delay			2.4									
Intersection Capacity Utiliza	ation		35.4%	IC	U Level	of Service	е		Α			
Analysis Period (min)			15									
,												

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Lanes, Volumes, Timings 4: News Road & Firestone Drive Fords Colony TIS Undate

Folus Colony	113 Opuale
	2021 No Build

	•	<b>→</b>	•	•	•	•	•	<b>†</b>	-	-	Ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	7>	LDIK	ኘ	7	WDIC	IVDL	4	7	JDL	4	7
Traffic Volume (vph)	8	164	23	59	278	122	23	0	56	71	0	7
Future Volume (vph)	8	164	23	59	278	122	23	0	56	71	0	7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.954				0.850			0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1504	1814	0	1770	1653	0	0	1770	1583	0	1805	1615
Flt Permitted	0.950			0.950				0.950			0.950	
Satd. Flow (perm)	1504	1814	0	1770	1653	0	0	1770	1583	0	1805	1615
Adj. Flow (vph)	8	171	24	61	290	127	24	0	58	74	0	7
Lane Group Flow (vph)	8	195	0	61	417	0	0	24	58	0	74	7
Sign Control		Free			Free			Stop			Stop	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 46.0%
Analysis Period (min) 15

ICU Level of Service A

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc.

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Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc.

# HCM Unsignalized Intersection Capacity Analysis 4: News Road & Firestone Drive

Fords Colony TIS Update 2021 No Build

	•	<b>→</b>	•	•	+	•	1	<b>†</b>	<i>&gt;</i>	<b>/</b>	<b>+</b>	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	₽		ሻ	1>			ની	7		र्स	7
Traffic Volume (veh/h)	8	164	23	59	278	122	23	0	56	71	0	7
Future Volume (Veh/h)	8	164	23	59	278	122	23	0	56	71	0	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	8	171	24	61	290	127	24	0	58	74	0	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									6			6
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	417			195			614	738	183	692	686	354
vC1, stage 1 conf vol				170			011	700	100	0,2	000	001
vC2, stage 2 conf vol												
vCu, unblocked vol	417			195			614	738	183	692	686	354
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)								0.0	O.L		0.0	0.2
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			94	100	93	77	100	99
cM capacity (veh/h)	1052			1378			384	328	859	324	351	695
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	8	195	61	417	82	81						
Volume Left	8	0	61	0	24	74						
Volume Right	0	24	0	127	58	7						
cSH	1052	1700	1378	1700	1215	354						
Volume to Capacity	0.01	0.11	0.04	0.25	0.07	0.23						
Queue Length 95th (ft)	1	0.11	3	0.25	5	22						
Control Delay (s)	8.4	0.0	7.7	0.0	11.1	18.6						
Lane LOS	0.4 A	0.0	Α.	0.0	В	C						
Approach Delay (s)	0.3		1.0		11.1	18.6						
Approach LOS	0.3		1.0		В	10.0 C						
Intersection Summary												
Average Delay			3.5									
Intersection Capacity Utiliza	ation		46.0%	IC	U Level	of Service			Α			
Analysis Period (min)			15									
			.5									

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# Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	
Directions Served	L	T	R	L	Т	R	LT	R	LTR	
Maximum Queue (ft)	167	562	224	250	772	777	115	83	88	
Average Queue (ft)	19	251	25	145	397	204	45	45	30	
95th Queue (ft)	85	474	120	271	843	748	93	74	68	
Link Distance (ft)		1007			741	741	405		475	
Upstream Blk Time (%)					13	7				
Queuing Penalty (veh)					0	0				
Storage Bay Dist (ft)	250		225	250				225		
Storage Blk Time (%)	0	10	0	1	9					
Queuing Penalty (veh)	0	6	1	6	19					

# Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road

Movement	EB	WB	NB	SB
Directions Served	TR	L	LTR	LTR
Maximum Queue (ft)	33	105	246	22
Average Queue (ft)	3	39	84	4
95th Queue (ft)	18	79	193	16
Link Distance (ft)	2032		736	278
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		225		
Storage Blk Time (%)				
Queuing Penalty (veh)				

#### Intersection: 3: Centerville Road & Westport/Manchester Drive

Movement	EB	WB	WB	NB	SB	
Directions Served	LTR	L	TR	L	L	
Maximum Queue (ft)	40	56	46	16	50	
Average Queue (ft)	14	24	13	1	6	
95th Queue (ft)	37	47	32	8	30	
Link Distance (ft)	247	762				
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			140	190	190	
Storage Blk Time (%)						
Queuing Penalty (veh)						

#### Intersection: 4: News Road & Firestone Drive

Movement	EB	EB	WB	WB	NB	NB	SB	SB	
Directions Served	L	TR	L	TR	LT	R	LT	R	
Maximum Queue (ft)	35	1	34	4	57	68	76	33	
Average Queue (ft)	2	0	7	0	18	31	34	6	
95th Queue (ft)	16	0	26	3	47	55	61	25	
Link Distance (ft)		1230		492	372		374		
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	225		225			150		150	
Storage Blk Time (%)									
Queuing Penalty (veh)									

#### **Network Summary**

Network wide Queuing Penalty: 32

Fords Colony TIS Update 2021 Build

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

	۶	<b>→</b>	•	•	+	4	1	<u>†</u>	~	<b>\</b>	<b></b>	<b>√</b>
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	<b>*</b>	7	*	<b>*</b>	7		4	7		4	
Traffic Volume (vph)	19	817	37	223	1088	42	54	Ö	147	25	0	16
Future Volume (vph)	19	817	37	223	1088	42	54	0	147	25	0	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.947	
Flt Protected	0.950			0.950				0.950			0.971	
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380	0	1687	1615	0	1636	0
Flt Permitted	0.069			0.101				0.950			0.971	
Satd. Flow (perm)	131	1863	1615	183	1827	1380	0	1687	1615	0	1636	0
Satd. Flow (RTOR)			158			158			164		164	
Adj. Flow (vph)	20	860	39	235	1145	44	57	0	155	26	0	17
Lane Group Flow (vph)	20	860	39	235	1145	44	0	57	155	0	43	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	12.0	55.0	55.0	16.0	59.0	59.0	17.0	17.0	17.0	12.0	12.0	
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Act Effct Green (s)	59.5	46.0	46.0	54.2	58.1	58.1		8.6	8.6		6.6	
Actuated g/C Ratio	0.67	0.52	0.52	0.61	0.65	0.65		0.10	0.10		0.07	
v/c Ratio	0.11	0.90	0.04	0.88	0.96	0.05		0.35	0.51		0.16	
Control Delay	7.4	34.7	0.1	53.4	38.3	0.1		46.8	12.5		1.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay	7.4	34.7	0.1	53.4	38.3	0.1		46.8	12.5		1.2	
LOS	А	С	Α	D	D	Α		D	В		Α	
Approach Delay		32.7			39.6			21.7			1.2	

Intersection Summary

Approach LOS

Cycle Length: 100 Actuated Cycle Length: 89.2

Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.96

Intersection Signal Delay: 35.1 Intersection Capacity Utilization 85.5%

Intersection LOS: D ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Williamsburg W Drive/Lane Pl Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis 1: Williamsburg W Drive/Lane Pl Drive & Longhill Road Fords Colony TIS Update 2021 Build

	٠	-	•	•	<b>←</b>	•	4	<b>†</b>	/	<b>&gt;</b>	ţ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*5	<b>^</b>	7	7	<b>↑</b>	7		4	7		4	
Traffic Volume (vph)	19	817	37	223	1088	42	54	0	147	25	0	16
Future Volume (vph)	19	817	37	223	1088	42	54	0	147	25	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.97	
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380		1687	1615		1635	
Flt Permitted	0.07	1.00	1.00	0.10	1.00	1.00		0.95	1.00		0.97	
Satd. Flow (perm)	131	1863	1615	184	1827	1380		1687	1615		1635	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	20	860	39	235	1145	44	57	0	155	26	0	17
RTOR Reduction (vph)	0	0	18	0	0	17	0	0	141	0	41	0
Lane Group Flow (vph)	20	860	21	235	1145	27	0	57	14	0	2	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Actuated Green, G (s)	60.0	50.3	50.3	59.5	58.1	58.1		8.6	8.6		3.5	
Effective Green, g (s)	60.0	50.3	50.3	59.5	58.1	58.1		8.6	8.6		3.5	
Actuated g/C Ratio	0.63	0.53	0.53	0.62	0.61	0.61		0.09	0.09		0.04	
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	115	980	849	262	1110	838		151	145		59	
v/s Ratio Prot	0.00	0.46		c0.09	c0.63			c0.03			c0.00	
v/s Ratio Perm	0.11		0.01	0.47		0.02			0.01			
v/c Ratio	0.17	0.88	0.02	0.90	1.03	0.03		0.38	0.10		0.03	
Uniform Delay, d1	22.2	19.9	10.9	23.0	18.7	7.5		41.0	39.9		44.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	0.3	9.7	0.0	29.4	35.4	0.0		1.6	0.3		0.2	
Delay (s)	22.4	29.6	10.9	52.4	54.2	7.5		42.6	40.2		44.6	
Level of Service	С	C 28.7	В	D	D	Α		D	D		D	
Approach Delay (s)					52.4			40.9			44.6	
Approach LOS		С			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			43.0	Н	CM 2000	Level of S	Service		D			
HCM 2000 Volume to Capa	acity ratio		0.96									
Actuated Cycle Length (s)			95.6		um of los				24.0			
Intersection Capacity Utiliz	ation		85.5%	10	U Level	of Service			Е			
Analysis Period (min)			15									
c Critical Lane Group												

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 1 Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 2

Fords Colony TIS Update 2021 Build

2: Fords Colony Drive/Dominon Village & Longhill Road

	<b>→</b>	<b>→</b>	`	1	←	•	•	<b>†</b>	-	-	1	4
			•	*			,	· · · · · ·	,		•	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7		7	ሻ		7		ની	7		4	
Traffic Volume (vph)	0	377	63	228	316	2	52	3	143	4	0	5
Future Volume (vph)	0	377	63	228	316	2	52	3	143	4	0	5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.925	
Flt Protected				0.950				0.955			0.978	
Satd. Flow (prot)	1900	1810	1524	1752	1776	1615	0	1657	1615	0	1719	0
Flt Permitted				0.950				0.955			0.978	
Satd. Flow (perm)	1900	1810	1524	1752	1776	1615	0	1657	1615	0	1719	0
Adj. Flow (vph)	0	401	67	243	336	2	55	3	152	4	0	5
Lane Group Flow (vph)	0	401	67	243	336	2	0	58	152	0	9	0
Sign Control		Free			Free			Stop			Stop	

ICU Level of Service A

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 48.2%
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis 2: Fords Colony Drive/Dominon Village & Longhill Road

Fords Colony TIS Update 2021 Build

	•	<b>→</b>	•	•	+	•	1	<b>†</b>	~	<b>/</b>	<b>↓</b>	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	, j	<b>†</b>	7	, j	<b>^</b>	7		4	7		4	
Traffic Volume (veh/h)	0	377	63	228	316	2	52	3	143	4	0	5
Future Volume (Veh/h)	0	377	63	228	316	2	52	3	143	4	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	401	67	243	336	2	55	3	152	4	0	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									7			
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	338			468			1228	1225	401	1300	1290	336
vC1, stage 1 conf vol	000			100			ILLO	ILLO		1000	1270	000
vC2, stage 2 conf vol												
vCu, unblocked vol	338			468			1228	1225	401	1300	1290	336
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			78			55	98	77	95	100	99
cM capacity (veh/h)	1232			1088			123	140	653	87	128	711
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	0	401	67	243	336	2	210	9				
Volume Left	0	0	0	243	0	0	55	4				
Volume Right	0	0	67	0	0	2	152	5				
cSH	1700	1700	1700	1088	1700	1700	447	170				
Volume to Capacity	0.00	0.24	0.04	0.22	0.20	0.00	0.47	0.05				
Queue Length 95th (ft)	0.00	0.21	0.01	21	0.20	0.00	61	4				
Control Delay (s)	0.0	0.0	0.0	9.3	0.0	0.0	24.7	27.3				
Lane LOS	0.0	0.0	0.0	Α.	0.0	0.0	C	D				
Approach Delay (s)	0.0			3.9			24.7	27.3				
Approach LOS	0.0			3.7			C C	D				
Intersection Summary												
Average Delay			6.1									
Intersection Capacity Utiliza	ation		48.2%	IC	CU Level	of Service			Α			
Analysis Period (min)			15									

Fords Colony TIS Update 2021 Build

3: Centerville Road & Westport/Manchester Drive

	ၨ	<b>→</b>	`	•	-	•	•	<b>†</b>	-	-	Ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
	EDL		EDK	WDL		WDK	INDL	INDI	INDK	ODL.	3D1	3DK
Lane Configurations		4		1	₽			Т	ľ		Т	r
Traffic Volume (vph)	16	1	6	60	0	30	10	331	81	25	273	22
Future Volume (vph)	16	1	6	60	0	30	10	331	81	25	273	22
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.966			0.850				0.850			0.850
Flt Protected		0.966		0.950			0.950			0.950		
Satd. Flow (prot)	0	1773	0	1736	1553	0	1805	1759	1282	1556	1759	967
Flt Permitted		0.966		0.950			0.950			0.950		
Satd. Flow (perm)	0	1773	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	17	1	6	63	0	32	11	348	85	26	287	23
Lane Group Flow (vph)	0	24	0	63	32	0	11	348	85	26	287	23
Sign Control		Stop			Stop			Free			Free	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 35.4%
Analysis Period (min) 15

ICU Level of Service A

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc.

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Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc.

Fords Colony TIS Update 2021 Build

3: Centerville Road		пропи	viariori	COLCI E	71140							1 Build
	۶	-	•	•	<b>←</b>	•	1	<b>†</b>		-	¥	1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations		4		7	₽		7	<b>•</b>	7	7		7
Fraffic Volume (veh/h)	16	1	6	60	0	30	10	331	81	25	273	22
Future Volume (Veh/h)	16	1	6	60	0	30	10	331	81	25	273	22
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	17	1	6	63	0	32	11	348	85	26	287	23
Pedestrians												
_ane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Jpstream signal (ft)												
X, platoon unblocked												
C, conflicting volume	741	794	287	716	732	348	310			433		
C1, stage 1 conf vol												
C2, stage 2 conf vol												
/Cu, unblocked vol	741	794	287	716	732	348	310			433		
C, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.3		
C, 2 stage (s)												
F (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	95	100	99	81	100	95	99			98		
cM capacity (veh/h)	311	312	757	331	339	691	1262			1056		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	24	63	32	11	348	85	26	287	23			
/olume Left	17	63	0	11	0	0	26	0	0			
Volume Right	6	0	32	0	0	85	0	0	23			
cSH	365	331	691	1262	1700	1700	1056	1700	1700			
Volume to Capacity	0.07	0.19	0.05	0.01	0.20	0.05	0.02	0.17	0.01			
Queue Length 95th (ft)	5	17	4	1	0	0	2	0	0			
Control Delay (s)	15.6	18.4	10.5	7.9	0.0	0.0	8.5	0.0	0.0			
Lane LOS	С	С	В	Α			Α					
Approach Delay (s)	15.6	15.7		0.2			0.7					
Approach LOS	С	С										
ntersection Summary												
Average Delay			2.4									
Intersection Capacity Utiliza	ation		35.4%	IC	U Level	of Service			Α			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

Synchro 10 Report - 01/13/2020 Page 6 Lanes, Volumes, Timings 4: News Road & Firestone Drive Fords Colony TIS Update 2021 Build

	•	<b>→</b>	•	•	•	•	•	<b>†</b>	~	<b>\</b>	<b>↓</b>	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	ĵ.		Ť	f)			ર્ન	7		ર્ન	7
Traffic Volume (vph)	8	168	23	59	285	122	23	0	56	71	0	7
Future Volume (vph)	8	168	23	59	285	122	23	0	56	71	0	7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.955				0.850			0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1504	1814	0	1770	1654	0	0	1770	1583	0	1805	1615
Flt Permitted	0.950			0.950				0.950			0.950	
Satd. Flow (perm)	1504	1814	0	1770	1654	0	0	1770	1583	0	1805	1615
Adj. Flow (vph)	8	175	24	61	297	127	24	0	58	74	0	7
Lane Group Flow (vph)	8	199	0	61	424	0	0	24	58	0	74	7
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Control Type: Unsignalized Intersection Capacity Utilization 46.4% Analysis Period (min) 15

ICU Level of Service A

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc.

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Fords Colony TIS Update 2021 Build

0.96

74

0.96

0

4: News Road & Firestone Drive EBT EBR WBL WBT WBR Movement Lane Configurations Traffic Volume (veh/h) 168 285 122 Future Volume (Veh/h) 59 8 168 23 285 122 23 0 56 71 0 Sign Control Free Free Stop Stop 0% 0% 0% 0%

0.96

127

0.96

24

0.96

0

0.96

58

0.96

297

Hourly flow rate (vph)
Pedestrians Lane Width (ft)

Grade

Walking Speed (ft/s) Percent Blockage

Direction, Lane #

Peak Hour Factor

Right turn flare (veh) Median type None None Median storage veh) Upstream signal (ft) pX, platoon unblocked vC, conflicting volume 424 199 626 749 187 702 698 360 vC1, stage 1 conf vol vC2, stage 2 conf vol vCu, unblocked vol 424 tC, single (s) 4.3 4.1 7.1 6.5 6.2 7.1 6.5 6.2 tC, 2 stage (s) tF (s) 2.4 2.2 3.5 4.0 3.3 3.5 4.0 3.3 100 p0 queue free % 100 93 99 96 99 cM capacity (veh/h) 1045 1373 377 323 855 346 689 318

EB1 EB2 WB1 WB2 NB1 SB1

Volume Total	8	199	61	424	82	81
Volume Left	8	0	61	0	24	74
Volume Right	0	24	0	127	58	7
cSH	1045	1700	1373	1700	1209	348
Volume to Capacity	0.01	0.12	0.04	0.25	0.07	0.23
Queue Length 95th (ft)	1	0	3	0	5	22
Control Delay (s)	8.5	0.0	7.7	0.0	11.2	18.9
Lane LOS	Α		Α		В	С
Approach Delay (s)	0.3		1.0		11.2	18.9
Approach LOS					В	С

HCM Unsignalized Intersection Capacity Analysis

0.96

0.96

175

0.96

24

0.96

61

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

Timing Plan: PM Peak Hour Synchro 10 Report - 01/13/2020 Kimley-Horn and Associates, Inc. Page 8

# Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	
Directions Served	L	T	R	L	Т	R	LT	R	LTR	
Maximum Queue (ft)	209	553	204	250	784	777	140	87	83	
Average Queue (ft)	23	266	23	144	454	253	45	47	28	
95th Queue (ft)	105	491	111	270	929	835	98	74	63	
Link Distance (ft)		1007			741	741	405		475	
Upstream Blk Time (%)					18	10				
Queuing Penalty (veh)					0	0				
Storage Bay Dist (ft)	250		225	250				225		
Storage Blk Time (%)	0	12	0	1	10					
Queuing Penalty (veh)	0	7	0	8	22					

# Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road

Movement	EB	EB	WB	NB	NB	SB
Directions Served	T	R	L	LT	R	LTR
Maximum Queue (ft)	2	17	125	155	106	26
Average Queue (ft)	0	1	53	45	34	5
95th Queue (ft)	2	9	98	110	74	18
Link Distance (ft)	2030			723		278
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		300	225		175	
Storage Blk Time (%)				0	0	
Queuing Penalty (veh)				0	0	

#### Intersection: 3: Centerville Road & Westport/Manchester Drive

Movement	EB	WB	WB	NB	SB	
Directions Served	LTR	L	TR	L	L	
Maximum Queue (ft)	39	58	47	16	53	
Average Queue (ft)	15	24	14	1	6	
95th Queue (ft)	37	49	33	9	29	
Link Distance (ft)	247	762				
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			140	190	190	
Storage Blk Time (%)						
Queuing Penalty (veh)						

#### Intersection: 4: News Road & Firestone Drive

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	LT	R	LT	R
Maximum Queue (ft)	33	1	34	49	59	87	32
Average Queue (ft)	3	0	8	18	30	35	6
95th Queue (ft)	17	0	28	46	52	67	26
Link Distance (ft)		1230		372		374	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	225		225		150		150
Storage Blk Time (%)							
Queuing Penalty (veh)							

#### **Network Summary**

Network wide Queuing Penalty: 37

Fords Colony TIS Update 2027 No Build

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

	•	-	$\rightarrow$	•	<b>←</b>	•	•	<b>†</b>	^	-	ļ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	<b>^</b>	7	Ť	44	7		4	7		4	
Traffic Volume (vph)	21	909	42	251	1209	47	61	0	165	28	0	18
Future Volume (vph)	21	909	42	251	1209	47	61	0	165	28	0	18
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.947	
Flt Protected	0.950			0.950				0.950			0.971	
Satd. Flow (prot)	1805	3539	1615	1719	3471	1380	0	1687	1615	0	1636	0
Flt Permitted	0.151			0.214				0.950			0.971	
Satd. Flow (perm)	287	3539	1615	387	3471	1380	0	1687	1615	0	1636	0
Satd. Flow (RTOR)			195			132			200		200	
Adj. Flow (vph)	22	957	44	264	1273	49	64	0	174	29	0	19
Lane Group Flow (vph)	22	957	44	264	1273	49	0	64	174	0	48	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	12.0	64.0	64.0	22.0	74.0	74.0	22.0	22.0	22.0	12.0	12.0	
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Act Effct Green (s)	54.4	38.6	38.6	48.2	53.4	53.4		9.6	9.6		7.1	
Actuated g/C Ratio	0.64	0.45	0.45	0.57	0.63	0.63		0.11	0.11		0.08	
v/c Ratio	0.08	0.60	0.05	0.68	0.59	0.05		0.34	0.48		0.15	
Control Delay	6.8	19.6	0.1	18.5	12.7	0.1		47.4	9.4		1.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay	6.8	19.6	0.1	18.5	12.7	0.1		47.4	9.4		1.0	
LOS	Α	В	Α	В	В	Α		D	Α		Α	
Approach Delay		18.5			13.3			19.6			1.0	
Approach LOS		В			В			В			Α	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 85.2
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.68 Intersection Signal Delay: 15.4
Intersection Capacity Utilization 63.8%

Intersection LOS: B ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis 1: Williamsburg W Drive/Lane Pl Drive & Longhill Road Fords Colony TIS Update 2027 No Build

	•	-	$\rightarrow$	•	•	•	1	<b>†</b>	~	-	<b>↓</b>	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	<b>^</b>	7	*	<b>^</b>	7		4	7		4	
Traffic Volume (vph)	21	909	42	251	1209	47	61	Ö	165	28	0	18
Future Volume (vph)	21	909	42	251	1209	47	61	0	165	28	0	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.97	
Satd. Flow (prot)	1805	3539	1615	1719	3471	1380		1687	1615		1635	
Flt Permitted	0.15	1.00	1.00	0.21	1.00	1.00		0.95	1.00		0.97	
Satd. Flow (perm)	286	3539	1615	387	3471	1380		1687	1615		1635	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	22	957	44	264	1273	49	64	0	174	29	0	19
RTOR Reduction (vph)	0	0	23	0	0	20	0	0	156	0	46	0
Lane Group Flow (vph)	22	957	21	264	1273	29	0	64	18	0	2	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	55	2	. 0	1	6		3	3		4	4	
Permitted Phases	6		2	2	-	6	_	-	3	•	•	
Actuated Green, G (s)	55.0	43.8	43.8	54.5	53.4	53.4		9.6	9.6		3.3	
Effective Green, q (s)	55.0	43.8	43.8	54.5	53.4	53.4		9.6	9.6		3.3	
Actuated g/C Ratio	0.60	0.48	0.48	0.60	0.58	0.58		0.11	0.11		0.04	
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	198	1695	773	386	2027	806		177	169		59	-
v/s Ratio Prot	0.00	0.27		c0.08	c0.37			c0.04			c0.00	
v/s Ratio Perm	0.06		0.01	c0.33		0.02			0.01			
v/c Ratio	0.11	0.56	0.03	0.68	0.63	0.04		0.36	0.11		0.03	
Uniform Delay, d1	8.9	17.0	12.6	10.5	12.5	8.1		38.0	37.0		42.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	0.1	0.7	0.0	4.0	0.9	0.0		1.3	0.3		0.2	
Delay (s)	9.0	17.7	12.6	14.4	13.3	8.1		39.3	37.3		42.7	
Level of Service	A	В	В	В	В	Α		D	D		D	
Approach Delay (s)		17.3			13.4			37.8			42.7	
Approach LOS		В			В			D			D	
Intersection Summary												
HCM 2000 Control Delay			17.3	Н	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Cap	acity ratio		0.62									
Actuated Cycle Length (s)			91.4	S	um of los	t time (s)			24.0			
Intersection Capacity Utiliz	ation		63.8%	IC	CU Level	of Service			В			
Analysis Period (min)			15									
c Critical Lane Group												

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 1 Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020

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Fords Colony TIS Update 2027 No Build

2: Fords Colony Drive/Dominon Village & Longhill Road

	<b>→</b>	_	$\sim$	_	•	•	•	<b>†</b>	-	<b>_</b>	1	4
			•	•			٠,		•		•	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	₽.		7		7		4			4	
Traffic Volume (vph)	0	424	66	242	354	2	56	4	152	5	0	6
Future Volume (vph)	0	424	66	242	354	2	56	4	152	5	0	6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980				0.850		0.903			0.926	
Flt Protected				0.950				0.987			0.978	
Satd. Flow (prot)	1900	1771	0	1752	1776	1615	0	1650	0	0	1721	0
Flt Permitted				0.950				0.987			0.978	
Satd. Flow (perm)	1900	1771	0	1752	1776	1615	0	1650	0	0	1721	0
Adj. Flow (vph)	0	451	70	257	377	2	60	4	162	5	0	6
Lane Group Flow (vph)	0	521	0	257	377	2	0	226	0	0	11	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 63.7%
Analysis Period (min) 15

ICU Level of Service B

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc.

Synchro 10 Report - 01/13/2020

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HCM Unsignalized Intersection Capacity Analysis 2: Fords Colony Drive/Dominon Village & Longhill Road

Fords Colony TIS Update 2027 No Build

	•	-	$\rightarrow$	•	<b>←</b>	•	•	<b>†</b>	1	<b>\</b>	ļ	1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	, P	f)		, j	<b>*</b>	7		4			4	
Traffic Volume (veh/h)	0	424	66	242	354	2	56	4	152	5	0	6
Future Volume (Veh/h)	0	424	66	242	354	2	56	4	152	5	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	451	70	257	377	2	60	4	162	5	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	379			521			1383	1379	486	1506	1412	377
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	379			521			1383	1379	486	1506	1412	377
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			75			36	96	72	91	100	99
cM capacity (veh/h)	1191			1040			93	110	585	57	105	674
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	0	521	257	377	2	226	11					
Volume Left	0	0	257	0	0	60	5					
Volume Right	0	70	0	0	2	162	6					
cSH	1700	1700	1040	1700	1700	236	114					
Volume to Capacity	0.00	0.31	0.25	0.22	0.00	0.96	0.10					
Queue Length 95th (ft)	0	0	24	0	0	215	8					
Control Delay (s)	0.0	0.0	9.6	0.0	0.0	92.0	39.8					
Lane LOS			Α			F	Ε					
Approach Delay (s)	0.0		3.9			92.0	39.8					
Approach LOS						F	Е					
Intersection Summary												
Average Delay			17.0									
Intersection Capacity Utiliz	ation		63.7%	IC	CU Level	of Service			В			
Analysis Period (min)			15									

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 4

Fords Colony TIS Update 2027 No Build

#### 3: Centerville Road & Westport/Manchester Drive

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		7	₽		ሻ	<b>†</b>	7	Ť	<b>↑</b>	7
Traffic Volume (vph)	17	1	6	64	0	35	10	383	86	29	314	22
Future Volume (vph)	17	1	6	64	0	35	10	383	86	29	314	22
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.968			0.850				0.850			0.850
Flt Protected		0.965		0.950			0.950			0.950		
Satd. Flow (prot)	0	1775	0	1736	1553	0	1805	1759	1282	1556	1759	967
Flt Permitted		0.965		0.950			0.950			0.950		
Satd. Flow (perm)	0	1775	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	18	1	6	67	0	37	11	403	91	31	331	23
Lane Group Flow (vph)	0	25	0	67	37	0	11	403	91	31	331	23
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Control Type: Unsignalized Intersection Capacity Utilization 38.8% Analysis Period (min) 15

ICU Level of Service A

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc.

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#### HCM Unsignalized Intersection Capacity Analysis 3: Centerville Road & Westport/Manchester Drive

Fords Colony TIS Update 2027 No Build

	٠	<b>→</b>	$\rightarrow$	•	<b>←</b>	•	•	<b>†</b>	<b>/</b>	<b>\</b>	<b>↓</b>	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		ň	ĵ»		, F	<b>†</b>	7	J.	<b>†</b>	7
Traffic Volume (veh/h)	17	1	6	64	0	35	10	383	86	29	314	22
Future Volume (Veh/h)	17	1	6	64	0	35	10	383	86	29	314	22
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	18	1	6	67	0	37	11	403	91	31	331	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	855	909	331	824	841	403	354			494		
vC1, stage 1 conf vol	000	,,,	001	02.	011	100	001					
vC2, stage 2 conf vol												
vCu, unblocked vol	855	909	331	824	841	403	354			494		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.3		
tC, 2 stage (s)		0.0	0.2		0.0	O.L				110		
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	93	100	99	76	100	94	99			97		
cM capacity (veh/h)	256	266	715	278	291	643	1216			1001		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	25	67	37	11	403	91	31	331	23			
Volume Left	18	67 0	0 37	11 0	0	0 91	31 0	0	0 23			
Volume Right	6				_							
cSH	304	278	643	1216	1700	1700	1001	1700	1700			
Volume to Capacity	0.08	0.24	0.06	0.01	0.24	0.05	0.03	0.19	0.01			
Queue Length 95th (ft)	7	23	5	1	0	0	2	0	0			
Control Delay (s)	17.9	22.0	10.9	8.0	0.0	0.0	8.7	0.0	0.0			
Lane LOS	С	С	В	Α			Α					
Approach Delay (s) Approach LOS	17.9 C	18.1 C		0.2			0.7					
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utiliza	ation		38.8%	IC	U Level	of Service			Α			
Analysis Period (min)			15			2 2. 1.00						
			.5									

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 6 Lanes, Volumes, Timings 4: News Road & Firestone Drive Fords Colony TIS Update 2027 No Build

	۶	-	$\rightarrow$	•	-	•	4	<b>†</b>	~	<b>\</b>	ļ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	ĵ.		Ť	ĥ			ર્ન	7		4	7
Traffic Volume (vph)	9	182	23	59	308	137	23	0	56	80	0	8
Future Volume (vph)	9	182	23	59	308	137	23	0	56	80	0	8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.954				0.850			0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1504	1815	0	1770	1654	0	0	1770	1583	0	1805	1615
Flt Permitted	0.950			0.950				0.950			0.950	
Satd. Flow (perm)	1504	1815	0	1770	1654	0	0	1770	1583	0	1805	1615
Adj. Flow (vph)	9	190	24	61	321	143	24	0	58	83	0	8
Lane Group Flow (vph)	9	214	0	61	464	0	0	24	58	0	83	8
Sign Control		Free			Free			Stop			Stop	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 49.0%
Analysis Period (min) 15

ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis 4: News Road & Firestone Drive

Fords Colony TIS Update 2027 No Build

	۶	<b>→</b>	•	•	-	•	1	<b>†</b>	~	<b>/</b>	<b>+</b>	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	ĵ»		Ť	1}			ની	7		र्स	7
Traffic Volume (veh/h)	9	182	23	59	308	137	23	0	56	80	0	8
Future Volume (Veh/h)	9	182	23	59	308	137	23	0	56	80	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	9	190	24	61	321	143	24	0	58	83	0	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									6			6
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	464			214			667	806	202	752	746	392
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	464			214			667	806	202	752	746	392
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			93	100	93	72	100	99
cM capacity (veh/h)	1009			1356			353	299	839	294	323	661
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	9	214	61	464	82	91						
Volume Left	9	0	61	0	24	83						
Volume Right	0	24	0	143	58	8						
cSH	1009	1700	1356	1700	1186	322						
Volume to Capacity	0.01	0.13	0.04	0.27	0.07	0.28						
Queue Length 95th (ft)	1	0	4	0	6	28						
Control Delay (s)	8.6	0.0	7.8	0.0	11.5	21.0						
Lane LOS	A		Α		В	С						
Approach Delay (s)	0.3		0.9		11.5	21.0						
Approach LOS	0.5		0.7		В	C						
Intersection Summary												
Average Delay			3.7									
Intersection Capacity Utilization			49.0%	IC	U Level	of Service			Α			
Analysis Period (min)			15		2 25.0.							

Page 7

# Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	
Directions Served	L	T	T	R	L	T	T	R	LT	R	LTR	
Maximum Queue (ft)	59	238	228	33	211	251	230	73	109	110	90	
Average Queue (ft)	15	123	113	9	93	110	93	12	45	47	31	
95th Queue (ft)	48	203	204	29	170	212	185	49	91	87	66	
Link Distance (ft)		1006	1006			738	738		390		461	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250			225	250			250		225		
Storage Blk Time (%)		0	0		0	0	0	0				
Queuing Penalty (veh)		0	0		1	1	0	0				

# Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road

Movement	EB	WB	NB	SB
Directions Served	TR	L	LTR	LTR
Maximum Queue (ft)	32	138	500	26
Average Queue (ft)	4	52	216	5
95th Queue (ft)	19	102	508	18
Link Distance (ft)	2032		736	278
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)		225		
Storage Blk Time (%)				
Queuing Penalty (veh)				

# Intersection: 3: Centerville Road & Westport/Manchester Drive

Movement	EB	WB	WB	NB	SB	
Directions Served	LTR	L	TR	L	L	
Maximum Queue (ft)	38	70	46	14	54	
Average Queue (ft)	15	27	15	1	8	
95th Queue (ft)	38	57	35	10	33	
Link Distance (ft)	247	762				
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			140	190	190	
Storage Blk Time (%)						
Queuing Penalty (veh)						

# Intersection: 4: News Road & Firestone Drive

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	TR	LT	R	LT	R
Maximum Queue (ft)	37	32	2	52	67	99	33
Average Queue (ft)	4	8	0	18	30	40	7
95th Queue (ft)	20	27	2	46	56	76	29
Link Distance (ft)			492	372		374	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	225	225			150		150
Storage Blk Time (%)						0	
Queuing Penalty (veh)						0	

## **Network Summary**

Network wide Queuing Penalty: 1

Fords Colony TIS Update 2027 Build

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

	•	-	$\rightarrow$	•	<b>←</b>	•	•	<b>†</b>	<b>/</b>	-	ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	<b>^</b>	7	ሻ	<b>^</b>	7		4	7		4	
Traffic Volume (vph)	21	917	42	251	1222	47	61	0	165	28	0	18
Future Volume (vph)	21	917	42	251	1222	47	61	0	165	28	0	18
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.947	
Flt Protected	0.950			0.950				0.950			0.971	
Satd. Flow (prot)	1805	3539	1615	1719	3471	1380	0	1687	1615	0	1636	0
Flt Permitted	0.147			0.211				0.950			0.971	
Satd. Flow (perm)	279	3539	1615	382	3471	1380	0	1687	1615	0	1636	0
Satd. Flow (RTOR)			195			132			200		200	
Adj. Flow (vph)	22	965	44	264	1286	49	64	0	174	29	0	19
Lane Group Flow (vph)	22	965	44	264	1286	49	0	64	174	0	48	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	12.0	64.0	64.0	22.0	74.0	74.0	22.0	22.0	22.0	12.0	12.0	
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Act Effct Green (s)	54.7	38.9	38.9	48.5	53.6	53.6		9.6	9.6		7.1	
Actuated g/C Ratio	0.64	0.45	0.45	0.57	0.63	0.63		0.11	0.11		0.08	
v/c Ratio	0.08	0.60	0.05	0.69	0.59	0.05		0.34	0.48		0.15	
Control Delay	6.8	19.6	0.1	18.9	12.8	0.1		47.5	9.4		1.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay	6.8	19.6	0.1	18.9	12.8	0.1		47.5	9.4		1.0	
LOS	Α	В	Α	В	В	Α		D	Α		Α	
Approach Delay		18.5			13.4			19.6			1.0	
Approach LOS		В			В			В			Α	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 85.5
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.69

Intersection Signal Delay: 15.5 Intersection Capacity Utilization 64.0%

Intersection LOS: B ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis 1: Williamsburg W Drive/Lane Pl Drive & Longhill Road Fords Colony TIS Update 2027 Build

	•	-	•	•	•	•	•	<b>†</b>	~	-	ţ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	<b>^</b>	7	*	<b>^</b>	7		4	7		4	
Traffic Volume (vph)	21	917	42	251	1222	47	61	Ö	165	28	0	18
Future Volume (vph)	21	917	42	251	1222	47	61	0	165	28	0	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.97	
Satd. Flow (prot)	1805	3539	1615	1719	3471	1380		1687	1615		1635	
FIt Permitted	0.15	1.00	1.00	0.21	1.00	1.00		0.95	1.00		0.97	
Satd. Flow (perm)	280	3539	1615	382	3471	1380		1687	1615		1635	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	22	965	44	264	1286	49	64	0	174	29	0	19
RTOR Reduction (vph)	0	0	23	0	0	20	0	0	156	0	46	0
Lane Group Flow (vph)	22	965	21	264	1286	29	0	64	18	0	2	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D.P+P	NA	Perm	D.P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	55	2	. 0	1	6		3	3		4	4	
Permitted Phases	6		2	2	-	6	_	-	3	•	•	
Actuated Green, G (s)	55.2	44.0	44.0	54.7	53.6	53.6		9.6	9.6		3.3	
Effective Green, q (s)	55.2	44.0	44.0	54.7	53.6	53.6		9.6	9.6		3.3	
Actuated g/C Ratio	0.60	0.48	0.48	0.60	0.59	0.59		0.10	0.10		0.04	
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	195	1699	775	384	2031	807		176	169		58	
v/s Ratio Prot	0.00	0.27		c0.08	c0.37			c0.04			c0.00	
v/s Ratio Perm	0.07		0.01	c0.33		0.02			0.01			
v/c Ratio	0.11	0.57	0.03	0.69	0.63	0.04		0.36	0.11		0.03	
Uniform Delay, d1	9.0	17.0	12.5	10.5	12.5	8.0		38.2	37.1		42.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	0.1	0.7	0.0	4.0	0.9	0.0		1.3	0.3		0.2	
Delay (s)	9.1	17.7	12.6	14.6	13.4	8.1		39.4	37.4		42.8	
Level of Service	Α	В	В	В	В	Α		D	D		D	
Approach Delay (s)		17.3			13.5			38.0			42.8	
Approach LOS		В			В			D			D	
Intersection Summary												
HCM 2000 Control Delay			17.3	Н	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Cap	acity ratio		0.62									
Actuated Cycle Length (s)	-		91.6	S	um of los	t time (s)			24.0			
Intersection Capacity Utiliz	ation		64.0%	IC	CU Level	of Service			В			
Analysis Period (min)			15									
c Critical Lane Group												

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 1 Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 2

Lanes, Volumes, Timings

Fords Colony TIS Update 2027 Build

2: Fords Colony	Drive/Dominon	Village &	Longhill	Road
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			•	*			,	· · · · · ·	,		•	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7		7			7		ર્ન	7		4	
Traffic Volume (vph)	0	424	70	255	354	2	58	4	160	5	0	6
Future Volume (vph)	0	424	70	255	354	2	58	4	160	5	0	6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.926	
Flt Protected				0.950				0.955			0.978	
Satd. Flow (prot)	1900	1810	1524	1752	1776	1615	0	1659	1615	0	1721	0
Flt Permitted				0.950				0.955			0.978	
Satd. Flow (perm)	1900	1810	1524	1752	1776	1615	0	1659	1615	0	1721	0
Adj. Flow (vph)	0	451	74	271	377	2	62	4	170	5	0	6
Lane Group Flow (vph)	0	451	74	271	377	2	0	66	170	0	11	0
Sign Control		Free			Free			Stop			Stop	

ICU Level of Service A

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 52.7%
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis 2: Fords Colony Drive/Dominon Village & Longhill Road

Fords Colony TIS Update 2027 Build

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	, j	<b></b>	7	, j	<b>^</b>	7		ર્ન	7		4	
Traffic Volume (veh/h)	0	424	70	255	354	2	58	4	160	5	0	6
Future Volume (Veh/h)	0	424	70	255	354	2	58	4	160	5	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	451	74	271	377	2	62	4	170	5	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									7			
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	379			525			1376	1372	451	1457	1444	377
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	379			525			1376	1372	451	1457	1444	377
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			74			33	96	72	92	100	99
cM capacity (veh/h)	1191			1037			93	109	613	61	98	674
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	0	451	74	271	377	2	236	11				
Volume Left	0	0	0	271	0	0	62	5				
Volume Right	0	0	74	0	0	2	170	6				
cSH	1700	1700	1700	1037	1700	1700	336	121				
Volume to Capacity	0.00	0.27	0.04	0.26	0.22	0.00	0.70	0.09				
Queue Length 95th (ft)	0	0	0	26	0	0	126	7				
Control Delay (s)	0.0	0.0	0.0	9.7	0.0	0.0	38.8	37.7				
Lane LOS				Α			F	Е				
Approach Delay (s)	0.0			4.0			38.8	37.7				
Approach LOS	0.0			1.0			E	E				
Intersection Summary												
Average Delay			8.6									
Intersection Capacity Utiliza	ation		52.7%	IC	CU Level	of Service			Α			
Analysis Period (min)			15									

Lanes, Volumes, Timings

Fords Colony TIS Update 2027 Build

3: Centerville Road & Westport/Manchester Drive

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		7	1≽		7	<b>↑</b>	7	7	<b>↑</b>	7
Traffic Volume (vph)	17	1	6	68	0	35	10	383	93	29	314	22
Future Volume (vph)	17	1	6	68	0	35	10	383	93	29	314	22
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.968			0.850				0.850			0.850
Flt Protected		0.965		0.950			0.950			0.950		
Satd. Flow (prot)	0	1775	0	1736	1553	0	1805	1759	1282	1556	1759	967
Flt Permitted		0.965		0.950			0.950			0.950		
Satd. Flow (perm)	0	1775	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	18	1	6	72	0	37	11	403	98	31	331	23
Lane Group Flow (vph)	0	25	0	72	37	0	11	403	98	31	331	23
Sign Control		Stop			Stop			Free			Free	

ICU Level of Service A

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 38.8%
Analysis Period (min) 15

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 5

#### HCM Unsignalized Intersection Capacity Analysis 3: Centerville Road & Westport/Manchester Drive

Fords Colony TIS Update 2027 Build

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		ሻ	1>		ሻ	<b>†</b>	7	ሻ	<b>↑</b>	7
Traffic Volume (veh/h)	17	1	6	68	0	35	10	383	93	29	314	22
Future Volume (Veh/h)	17	1	6	68	0	35	10	383	93	29	314	22
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	18	1	6	72	0	37	11	403	98	31	331	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	855	916	331	824	841	403	354			501		
vC1, stage 1 conf vol	000	710	001	02.	011	100	001			001		
vC2, stage 2 conf vol												
vCu, unblocked vol	855	916	331	824	841	403	354			501		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.3		
tC, 2 stage (s)	7	0.0	0.2		0.0	0.2				1.0		
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	93	100	99	74	100	94	99			97		
cM capacity (veh/h)	256	263	715	278	291	643	1216			995		
1 3 1 7								00.0	00.0	775		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	25	72	37	11	403	98	31	331	23			
Volume Left	18	72	0	11	0	0	31	0	0			
Volume Right	6	0	37	0	0	98	0	0	23			
cSH	303	278	643	1216	1700	1700	995	1700	1700			
Volume to Capacity	0.08	0.26	0.06	0.01	0.24	0.06	0.03	0.19	0.01			
Queue Length 95th (ft)	7	25	5	1	0	0	2	0	0			
Control Delay (s)	17.9	22.5	10.9	8.0	0.0	0.0	8.7	0.0	0.0			
Lane LOS	С	С	В	Α			Α					
Approach Delay (s)	17.9	18.5		0.2			0.7					
Approach LOS	С	С										
Intersection Summary												
Average Delay			2.7									
Intersection Capacity Utiliza	ation		38.8%	IC	U Level	of Service			Α			
Analysis Period (min)			15			2 2						
			.5									

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 6 Lanes, Volumes, Timings 4: News Road & Firestone Drive Fords Colony TIS Update 2027 Build

	•	<b>→</b>	$\rightarrow$	•	<b>←</b>	•	•	<b>†</b>	/	<b>&gt;</b>	ļ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	, T	f)		٦	f)			ર્ન	7		4	7
Traffic Volume (vph)	9	186	23	59	315	137	23	0	56	80	0	8
Future Volume (vph)	9	186	23	59	315	137	23	0	56	80	0	8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.954				0.850			0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1504	1815	0	1770	1653	0	0	1770	1583	0	1805	1615
Flt Permitted	0.950			0.950				0.950			0.950	
Satd. Flow (perm)	1504	1815	0	1770	1653	0	0	1770	1583	0	1805	1615
Adj. Flow (vph)	9	194	24	61	328	143	24	0	58	83	0	8
Lane Group Flow (vph)	9	218	0	61	471	0	0	24	58	0	83	8
Sign Control		Free			Free			Stop			Stop	

Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 49.4%
Analysis Period (min) 15

ICU Level of Service A

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc.

Synchro 10 Report - 01/13/2020

Page 7

HCM Unsignalized Intersection Capacity Analysis 4: News Road & Firestone Drive

Fords Colony TIS Update 2027 Build

	•	<b>→</b>	•	•	<b>←</b>	4	1	<b>†</b>	~	<b>/</b>	<b>+</b>	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	î.		ሻ	₽			ની	7		र्स	7
Traffic Volume (veh/h)	9	186	23	59	315	137	23	0	56	80	0	8
Future Volume (Veh/h)	9	186	23	59	315	137	23	0	56	80	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	9	194	24	61	328	143	24	0	58	83	0	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									6			6
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	471			218			678	817	206	762	758	400
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	471			218			678	817	206	762	758	400
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			93	100	93	71	100	99
cM capacity (veh/h)	1003			1352			347	294	835	289	319	655
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	9	218	61	471	82	91						
Volume Left	9	0	61	0	24	83						
Volume Right	0	24	0	143	58	8						
cSH	1003	1700	1352	1700	1180	317						
Volume to Capacity	0.01	0.13	0.05	0.28	0.07	0.29						
Queue Length 95th (ft)	1	0	4	0.20	6	29						
Control Delay (s)	8.6	0.0	7.8	0.0	11.5	21.4						
Lane LOS	A	0.0	A	0.0	В	C						
Approach Delay (s)	0.3		0.9		11.5	21.4						
Approach LOS	0.5		0.7		В	C						
Intersection Summary												
Average Delay			3.7									
Intersection Capacity Utiliz	ation		49.4%	IC	U Level	of Service			Α			
Analysis Period (min)			15									

Timing Plan: PM Peak Hour Kimley-Horn and Associates, Inc. Synchro 10 Report - 01/13/2020 Page 8

# Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	
Directions Served	L	Т	Т	R	L	Т	Т	R	LT	R	LTR	
Maximum Queue (ft)	69	262	253	53	215	242	244	115	128	103	88	
Average Queue (ft)	15	129	120	11	94	108	96	12	45	42	32	
95th Queue (ft)	50	229	219	40	166	203	189	59	97	80	69	
Link Distance (ft)		1006	1006			738	738		390		461	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250			225	250			250		225		
Storage Blk Time (%)	0	0	1	0	0	0	0	0				
Queuing Penalty (veh)	0	0	0	0	0	0	0	0				

# Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road

Movement	EB	EB	WB	B11	NB	NB	SB
Directions Served	T	R	L	Т	LT	R	LTR
Maximum Queue (ft)	5	19	134	54	357	156	24
Average Queue (ft)	0	1	62	2	107	56	5
95th Queue (ft)	5	8	112	55	362	145	18
Link Distance (ft)	2030			2988	723		278
Upstream Blk Time (%)					1		
Queuing Penalty (veh)					0		
Storage Bay Dist (ft)		300	225			175	
Storage Blk Time (%)					10	1	
Queuing Penalty (veh)					16	0	

# Intersection: 3: Centerville Road & Westport/Manchester Drive

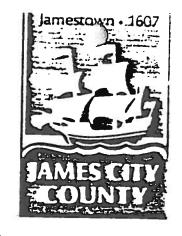
Movement	EB	WB	WB	NB	SB	SB	
Directions Served	LTR	L	TR	L	L	R	
Maximum Queue (ft)	42	63	49	19	49	2	
Average Queue (ft)	15	27	16	2	9	0	
95th Queue (ft)	39	52	36	11	33	0	
Link Distance (ft)	247	762					
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			140	190	190	325	
Storage Blk Time (%)							
Queuing Penalty (veh)							

# Intersection: 4: News Road & Firestone Drive

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	TR	LT	R	LT	R
Maximum Queue (ft)	44	37	6	54	54	94	33
Average Queue (ft)	4	10	0	18	28	40	7
95th Queue (ft)	23	31	3	46	50	76	29
Link Distance (ft)			492	372		374	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	225	225			150		150
Storage Blk Time (%)						0	
Queuing Penalty (veh)						0	

### **Network Summary**

Network wide Queuing Penalty: 18



OFFICE OF COUNTY ATTORNEY

COUNTY GOVERNMENT CENTER, 101 MOUNTS BAY ROAD

Frank M. Morton, III County Attorney

Mailing Address:

Williamsburg, Va. 23187-3627 Tel. 253-6612

P.O. Box JC

Larry W. Davis Assistant County Attorney August 1, 1988



Vernon M. Geddy, Jr., Esquire McGuire, Woods, Battle & Boothe 137 York Street Williamsburg, Virginia 23185

RE: Ford's Colony - Phasing Plan for Road Improvements

Dear Bud:

Enclosed please find an executed copy of the Agreement and schedule for the road improvements at Ford's Colony. A copy of the Resolution adopted by the Board of Supervisors at their July 12, 1988 meeting is also attached.

Very truly yours,

Frank M. Morton, III County Attorney

/mfr 4.2F Enclosures

cc: JCC Planning Dept.

Frenk -

After you sign

litter - plo. have somione

Pienning light one for our file.

#### RESOLUTION

# FORD'S COLONY - PHASING PLAN FOR ROAD IMPROVEMENTS

WHEREAS, Ford's Colony has submitted a phasing plan for road improvements proffered as part of the Master Plan approved on October 5, 1987.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors hereby approves the attached agreement between James City County and Realtec Incorporated providing for the approval of the phasing plan as described herein authorizes and directs the Chairman of the Board of Supervisors to execute that certain Agreement dated June 20, 1988, by and between Realtec, Inc., and the County of James City.

Jack O Edwards, Chairman Board of Supervisors

ATTEST:

David B. Norman

Clerk to the Board

SUPERVISOR VOTE

NORMENT AYE
TAYLOR AYE
MAHONE AYE
DEPUE AYE
EDWARDS AYE

Adopted by the Board of Supervisors of James City County. Virginia, this 12th day of July, 1988.

0630w

THIS AGREEMENT, made this 20th day of Junk, 1988, between THE COUNTY OF JAMES CITY, a Virginia political subdivision (JCC); and REALTEC INCORPORATED (formerly FORD'S COLONY AT WILLIAMSBURG, INC.), a North Carolina corporation (REALTEC).

JCC has previously approved a Master Plan for the development of Ford's Colony at Williamsburg and has approved amendments thereto subject to Proffers set forth in a document dated March 11, 1987 entitled "FORD'S COLONY PROFFERS" (the Proffers) and subsequently restated in a document dated October 1, 1987 entitled "RESTATED FORD'S COLONY PROFFERS" (the Restated Proffers), and

Paragraph 3 of the Proffers and Paragraph 1) of the Restated Proffers requires REALTEC to submit to JCC for approval by its Board of Supervisors, a phasing plan for the installation of the roadway and intersection improvements which REALTEC set forth in the Proffers, and

REALTEC has submitted such phasing plan supported by a Traffic Impact Study dated April, 1988, prepared by Vilbur Smith Associates, copies of which have been delivered to JCC, and which is incorporated herein by this reference, and

The phasing plan attached hereto as Exhibit A is acceptable to REALTEC and to JCC.

THEREFORE, THIS AGREEMENT WITNESSETH:

1) REALTEC covenants and agrees that it will construct each of the roadway and intersection improvements set

forth in the Proffers and Restated Proffers in accordance with the schedule set forth in Exhibit A. Each of such improvements shall be begun and expeditiously completed when the number of residential building permits issued by JCC for family dwelling units within the Ford's Colony development equals the number of units set forth in Column A or Column B of Exhibit A opposite the particular improvement proffered by REALTEC. Each individual dwelling unit within a multi-family structure shall be considered a separate "residential building permit" for the purposes of the schedules set forth in Exhibit A. The 310-room hotel/convention center shown on the Master Plan when built, shall equal 428 "residential building permits" for purposes of the schedule set forth in Exhibit A. Column A of Exhibit A sets forth the residential building permits in addition to the 310-room hotel/convention center. In the event that the hotel/convention center is not built, then Column B of Exhibit A sets forth the schedule of construction.

each five years thereafter, REALTEC shall submit to the County Planning Department for their approval a traffic impact study by an independent traffic consultant showing then existing and anticipated traffic volume. Should any such approved study require acceleration of the schedule set forth in Exhibit A, REALTEC will conform to the schedule shown to be necessary by such approved study, or studies. If such approved study, or studies, justifies delay in the schedule or deletion of any of

the improvements shown in Exhibit A, REALTEC and JCC agree that such improvements may be constructed in accordance with the delayed schedule or deleted, as the case may be.

3) 700 haves	
3) JCC hereby approv	es the construction schedule set
forth in Exhibit A and the term	s of this Agreement.
WITNESSETH the follow	ing signatures:
	THE COUNTY OF JAMES CITY
	By: Chairman of Board of
	Supervisors
	REALTEC INCORPORATED
	By: Duan Jung
	Vice President
APPROVED AS TO FORM:	
County Attorney	
STATE OF VIRGINIA AT LARGE	
COUNTY OF James City	, to-wit:
The foregoing instrume	ent was acknowledged before me
this 12 day of July	, 1988 by
Jack D. Edwards, Chairs	man of the Board of Supervisors.
	Mari Lin Smith
SE.	NOTARY PUBLIC
My commission expires:	

Jeh. 14, 1989

STATE OF VIRGINIA AT LARGE
CITY OF WILLIAMSBURG, to-wit:

The foregoing instrument was acknowledged before me this day of \_\_\_\_\_\_, 1988 by Brian F. Ford, Vice President of REALTEC INCORPORATED, on behalf of the corporation,

HOTARY PUBLIC PAINED

My commission expires: June 29, 1991

July 4, 1989

	Column A	Column B
Proffer Number	Residential Building Permits if Hotel Built	Building Permits i
<ul><li>(a) Installation of traffic signals:</li><li>(i) Williamsburg West Drive/</li><li>Longhill Road</li></ul>	1,808 units	2236 units
(ii) News Road Entrance	3,250 units	3250 units
<pre>(iii) Ford's Colony Drive/    Longhill Road</pre>	519 units	947 units
<ul><li>(b) Installation of left and right turn l</li><li>(i) News Road Entrance</li></ul>	lanes 2,175 units	2603 units
(ii) Centerville Road/Old Manchester Drive No		947 units
<ul><li>(c) Construct Williamsburg West Drive:</li><li>(i) Establish right of way for four 1 road to Longhill Road Not</li></ul>	ane 1,117 units e: Partially complete 1988	15 <b>4</b> 5 units
<pre>(ii) Construct two lane private road    (Williamsburg West Drive) to    Longhill Road</pre>	1,117 units Note: Phase I construction-1988	1545 units
(iii) If VDOT does not permit constructs of an intersection with Route 199 set forth in Paragraph (g) below, the initial two lane road to a for	as	2928 units
(d) Installation of dual through lanes on turn on Route 612 to Villiamsburg West Drive; dual right turn on Williamsburg West Drive; dual right turn on	Route 612, dual left ve; right turn on Rout	te 612 to

(i) Construct intersection of Williamsburg 1,117 units

1545 units

Williamsburg West Drive; dual right turn on

West Drive and Longhill Road with:

Williamsburg West Drive to Route 612:

Right turn lane on Williamsburg West Drive onto Longhill Road; Right turn lane on Longhill Road onto Williamsburg West Drive; and Left turn lane on Longhill Road onto Williamsburg West Drive

		onto williamsburg west Drive.		
	(ii)	Add two through lanes on Longhill Road.	2,175 units	2603 unit:
	(iii)	Add lane for dual left turn lanes on westbound Longhill Road onto Longhill Road onto Williamsburg West Drive.	2,500 units	2928 units
	(iv)	Add lane for dual right turn on Williamsburg West Drive onto Longhill Road.	3,250 units	3250 units
(e)		allation of right turn lane on this colony Drive.	519 units	947 units
(f)	four Driv	cation of 15 foot strip of land and struction of improvements to create a lane road from Williamsburg West to the proposed intersection of whill Road with Route 199.	1,117 units	1545 un;
(g)	inst poin cros appr	ent of \$230,000 to VDOT for the sallation of an intersection at a st on Ford's Colony where Route 199 ses the property and as may be oved by VDOT, including, the	As required by VDOT when construction begins	Y

installation of appropriate turn lanes

and traffic signals to the extent

required by VDOT.

# 90002925

#### AMENDED AND RESTATED FORD'S

#### COLONY PROFFERS

These AMENDED and RESTATED FORD'S COLONY PROFFERS are made this 24% day of January, 1999 by REALTEC INCORPORATED, a North Carolina corporation ("Realtec"), JAMES HERBERT NEW, MATTIE PAGE SPRATT, CHARLES G. NEW, JR., SUZANNE SEELY, REBECCA HENDRICKSON and MELINDA COX, owners of the property described on Exhibit A-3, C. C. CASEY LIMITED COMPANY, a Virginia limited liability company and owner of the property described on Exhibit A-1, and PAUL A. WILFORD, RUTH WILFORD CACCAVALE, MARY WILFORD-HUNT and CARL J. WILFORD, owners of the property described on Exhibit A-2. Realtec and each of the other signatories to these Proffers and their respective successors in title are hereinafter collectively referred to as "Owner".

#### RECITALS

- A. Realtec is the owner and developer of the Ford's Colony at Williamsburg development containing approximately 2,512.21 acres and which is zoned R-4, Residential Planned Community, with proffers, and subject to a Master Plan heretofore approved by James City County.
- B. Realtec, with the consent of each other Owner, has applied to amend its existing Master Plan to include four tracts of land containing approximately 265 acres, which property is more particularly described on Exhibits A-1 through A-4 hereto (the "Additional Property") and to rezone the Additional Property to R-4.

- C. In connection with prior Master Plan amendments,
  Realtec has entered into and James City County has accepted
  Amended and Restated Ford's Colony Proffers dated as of September
  29, 1995 and recorded in the Clerk's Office of the Circuit Court
  for the City of Williamsburg and County of James City in James
  City Deed Book 757 at page 526 and Richard J. Ford has entered
  into and James City County has accepted Richard J. Ford/Ford's
  Colony Proffers dated as of September 29, 1995 and recorded in
  the Clerk's Office of the Circuit Court for the City of
  Williamsburg and County of James City in James City Deed Book 757
  at page 529 (together, the "Existing Proffers"). Realtec now
  owns the property subject to the Richard J. Ford/Ford's Colony
  Proffers referenced above.
- D. In consideration of the approval of the amendment of its Master Plan and the rezoning, Realtec, with the approval of the other Owners as evidenced by their signatures hereon, desires to amend and restate the Existing Proffers as set forth below. If the requested amendment of Realtec's Master Plan is not approved by James City County, these Amended and Restated Ford's Colony Proffers shall be void and the Existing Proffers shall remain unchanged, in full force and effect.

#### RESTATEMENT AND AMENDMENTS

- 1. Restatement. The Existing Proffers are hereby restated and incorporated herein by reference.
- Additional Property. These Amended and Restated
   Proffers shall apply to the property now subject to the Existing

Proffers and, in addition, to the Additional Property.

Archaeological Sites. A Phase I Archaeological Study for each parcel of the Additional Property shall be submitted to the Director of Planning for his review and approval prior to land disturbance in the applicable parcel. A treatment plan shall be submitted to and approved by the Director of Planning for all sites in the Phase I study that are recommended for a Phase II evaluation and/or identified as being eligible for inclusion on the National Register of Historic Places. Phase II study is undertaken such a study shall be approved by the Director of Planning and a treatment plan for said sites shall be submitted to and approved by the Director of Planning for sites that are determined to be eligible for inclusion on the National Register of Historic Places and/or those sites that require a Phase III study. If, in the Phase II study, a site is determined eligible for nomination to the National Register of Historic Places and said site is to be preserved in place, the treatment plan shall include nomination of the site to the National Register of Historic Places. If a Phase III study is undertaken for said sites, such studies shall be approved by the Director Of Planning prior to land disturbance within the study All Phase I, Phase II, and Phase III studies shall meet the Virginia Department of Historic Resources' Guidelines for Preparing Archaeological Resource Management Reports and the Secretary of the Interior's Standard and Guidelines' for Archaeological Documentation, as applicable, and shall be

conducted under the supervision of a qualified archaeologist who meets the qualifications set forth in the Secretary of the Interior's Professional Qualification Standards. All approved treatment plans shall be incorporated into the plan of development for the site, and the clearing, grading or construction activities thereon. If Owner undertakes any Phase II studies on the Additional Property it shall make available a portion of the artifacts for display in public buildings.

- 4. Endangered Plant Species. Owner shall cause surveys to be conducted of the Additional Property for endangered plant The location of any small whorled pogonias or Virginia species. least trillium located on the Additional Property shall be shown on all subdivision or other development plans of the Additional Property and Owner shall submit to the Director of Planning with any subdivision or development plan a conservation plan for such The conservation plan shall provide for the conservation plants. of such plants either through transplanting the plants to other suitable habitat within Ford's Colony or by preserving a 20 foot buffer around the plants and, if necessary planting additional overstory to shade the plants, all as determined by Owner consistent with its past practices at Ford's Colony. The conservation plan shall be approved by the Director of Planning before any land disturbing activity is allowed in the vicinity of the any small whorled pogonias or Virginia least trillium identified on the Additional Property.
  - 5. Longhill Road Bike Lanes. Owner shall install shoulder

bike lanes within the existing rights-of-way adjacent to the right turn lanes Owner is installing at the entrances into Ford's Colony from Longhill Road at the time of construction of the right turn lanes. In addition, at the request of the County Administrator Owner shall convey to the County up to an additional 10 feet of right-of-way from the Additional Property along Longhill Road as necessary to accommodate a bike lane.

- 6. Longhill Road Buffer. The Owner shall designate a greenbelt buffer along the Additional Property's Longhill Road frontage in the locations shown on the Amended Master Plan. The buffer shall have a width of 150 feet unless reductions in the buffer to no less than 100 feet are approved by the Director of Planning, provided, however, that Owner shall have the right to appeal any decision of the Director of Planning refusing to approve reductions in the buffer to the Development Review Committee, whose decision shall be final. It is the intent of this provision to provide for a determination if existing or proposed topography, vegetation and/or building setbacks from Longhill Road provide sufficient buffer to satisfy the objectives of the County's greenbelt buffer policy. The greenbelt buffer shall be exclusive of any lots and, except as set forth below, shall be undisturbed. Utilities, drainage improvements, pedestrian/bicycle trails and signs as approved by the Owner and the Development Review Committee shall be permitted.
- 7. Off-Site Road Improvements. Owner shall make a contribution of \$750.00 to the County for each residential lot or

unit shown on final subdivision plats or site plans of the portion of the Additional Property described on Exhibits A-1 through A-3. Such contributions shall be used by the County to finance off-site road improvements on News Road, Longhill Road and/or Centerville Road or used by the County for any other project included in the County's capital improvement program, the need for which is generated in whole or in part by the development of the Additional Property. Such contributions shall be made at the time of final subdivision plat or site plan approval for lots or units within the portions of the Additional Land described above.

- 8. New Town Buffer. Owner shall provide a 50 foot buffer along the boundary of the Additional Property and Section 13 of the New Town development. The buffer shall be exclusive of any lots and, except as set forth below, shall be undisturbed. Utilities and drainage improvements as approved by the Owner and the Development Review Committee shall be permitted.
- 9. Emergency Services Contribution. Owner shall make a contribution of \$312.00 to the County for each of the residential lots or units shown on final subdivision plats or site plans of the Additional Property as hereinafter provided. Such contributions shall be used by the County for emergency services purposes or for any other project included in the County's capital improvement program, the need for which is generated in whole or in part by the development of the Additional Property. For the first 126 residential lots or units within the Additional

Property, such contributions shall be made at the time of final subdivision plat or site plan approval. For the balance of the residential lots or units within the Additional Property (assumed to be 242 lots or units), such contributions shall be made in five annual installments, consisting of four equal annual installments of \$15,100.80 and a final installment of the unpaid balance due under this Proffer. Payments shall be due beginning on the date one year from the date of final approval of the subdivision plat or site plan for the 126th lot or unit within the Additional Property and on each of the succeeding four anniversary dates of such approval. The final payment shall be equal to \$15,100.80 unless as of its due date either (i) the Additional Property has been fully developed and contains either more or less than 368 lots or units in which case the final payment shall be in an amount necessary to make the total payments under this Proffer equal to the actual number of lots or units on the Additional Property multiplied by \$312.00 or (ii) the Additional Property has not been fully developed but the Owner and the County agree that at full development the Additional Property will contain either more or less than 368 lots or units in which case the final payment shall be in an amount necessary to make the total payments under this Proffer equal the agreed upon number of lots or units on the Additional Property multiplied by \$312.00. The obligation of Owner to make the installment payments required by this Proffer shall be secured by the subdivision improvement surety posted by Owner

with the County.

- 10. Conservation Easement. Within 90 days of the approval by the County of final subdivision plats for the portions of the Additional Property adjacent to Powhatan Creek, Owner shall (i) grant a conservation easement in form approved by the County Attorney to the Williamsburg Land Conservancy or another land conservancy organization acceptable to the County over the portions of Ford's Colony along Longhill Swamp, Chisel Run and Powhatan Creek generally as shown on Exhibit B hereto now estimated to contain in excess of 200 acres (the "Conservation Area") and (ii) convey the Conservation Area, subject to the conservation easement described in this Condition, to the Ford's Colony at Williamsburg Homeowners Association. The conservation easement described in this condition shall permit installation and maintenance of (i) passive recreational facilities, including but not limited to, nature trails, overlooks, bird watching towers and similar facilities, (ii) utilities and stormwater management facilities approved by the County Engineer and (iii) wetland mitigation projects as approved by the U.S. Army Corps of Engineers. In addition, the conservation easement over the Conservation Area shall be subject to the rights of the holders of all existing easements to exercise their rights under the applicable easement agreements.
- 11. Passive Recreation. Within three years from approval by the County of the applied for rezoning and the amendment of the Master Plan, a soft surface nature trail shall be

constructed within the Conservation Area to connect Recreation

Park #10 as shown on the Amended Master Plan with John Pott Drive

and a bird watching tower shall be constructed within the portion

of the Conservation Area south of Williamsburg West Drive.

Greenway Contribution. At the time of approval of the 12. first final subdivision plat of lots within the Additional Property, Owner shall make a restricted contribution to the Williamsburg Land Conservancy of \$5,000.00 for use by the Williamsburg Land Conservancy for the acquisition of greenways and/or development of trails within existing greenways within James City County. On or before the first, second and third anniversaries of the approval of the first final subdivision plat of lots within the Additional Property, Owner shall make additional restricted contributions to the Williamsburg Land Conservancy of \$5,000.00 for use by the Williamsburg Land Conservancy for the acquisition of greenways and/or development of trails within existing greenways within James City County. A further condition of these contributions shall be that if for any reason the Williamsburg Land Conservancy is unable or unwilling to use the contributions for their intended purpose within four years of the date of the initial contribution, that the Williamsburg Land Conservancy shall transfer the funds contributed to it pursuant to this Condition to the County's greenway fund included in the County's capital improvement program for the acquisition of greenways and/or development of trails within existing greenways within James City County.

any contribution required by this Proffer is not made when due, the County shall not be obligated to approve subdivision plats or site plans until such contribution has been made.

- approval of the first final subdivision plat of lots within the Additional Property, Owner shall make a contribution to Housing Partnerships of \$4,000.00 for use by Housing Partnerships within James City County and a contribution of \$1,000.00 to the County's Neighborhood Connections program. On or before the first, second and third anniversaries of the approval of the first final subdivision plat of lots within the Additional Property, Owner shall make additional contributions to Housing Partnerships of \$4,000.00 for use by Housing Partnerships within James City County and additional contributions of \$1,000.00 to the County's Neighborhood Connections program. If any contribution required by this Proffer is not made when due, the County shall not be obligated to approve subdivision plats or site plans until such contribution has been made.
- 14. Miscellaneous. These Proffers shall be a part of the zoning regulations applicable to the Additional Property and the obligations hereunder run with title to the Additional Property. Upon the conveyance of the portions of the Additional Property owned by Owners other than Realtec to Realtec, Realtec and its successors in title to such Additional Property shall be bound by these Proffers and such other Owners shall have no further obligations under these Proffers.

WITNESS the following signatures.

REALTEC INCORPORATED

Pitle: VICE PASSIO

STATE OF VIRGINIA

CITY/COUNTY OF WILLIAMS JRG

The foregoing instrument was acknowledged before me this

3rd day of February, 1999, by MEW R MULHTARE as Vice Messaut of

Realtec Incorporated.

NOTARY PUBLIC

My commission expires: 12 31 99

James Herbert Men
JAMES HERBERT NEW
Mattie Just stratt
MATTIE PAGE SPRATT
Marle O. THU GY.
CHARLES G. NEW JR. DATTOWNEY-IN-FACT
sugarn fley
SUZANNE SEFLY STATES HERSONT New, ATTOMOSY-IN-FACT
REBECCA HENDRICKSON
REBECCA HENDRICKSON BY TAMES HEADENT NEW, ATTOMNEY-IN-FACT
MELINDA COX BY JAMES HERBERT NEW, ATTORNEY-IN-FACT
BY JAMES HERBERT NEW!

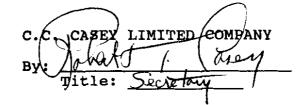
STATE OF VIRGINIA

CIRY/COUNTY OF Fairfax

The foregoing instrument was acknowledged before me this  $q^{\frac{1}{2}}$  day of February, 1999, by James Herbert New, individually and as attorney-in-fact for Mattie Page Spratt, Charles G. New, Jr., Suzanne Seely, Rebecca Hendrickson and Melinda Cox.

My commission expires: 03/31/00

NOTARY PUBLIC



STATE OF VIRGINIA CITY/COUNTY OF dames

The foregoing instrument was acknowledged before me this 5 day of February 1999, by Robert T. Casey as Secretary of C.C. Casey Limited Company.

My commission expires: Sept 30, 2000



	Paul A Wilford  Paul A. WILFORD  Ruth Wilford Caccavale by Paul A. Wilford  RUTH WILFORD CACCAVALE her attorney in fait.  Many Wilford-Hunt by Paul A. Weful her attorney  MARY WILFORD-HUNT  Cal J. Wilford by Pal A Welf her attorney  CARL J. WILFORD
STATE OF VIRGINIA	7 '
CITY/COUNTY OF	
J# 7 1.	was acknowledged before me this

day of February, 1999, by Paul A. Wilford, individually and as attorney-in-fact for Ruth Wilford Caccavale, Mary Wilford-Hunt and Carl J. Wilford.

COLLEEN E. SHETTARY PUBLIC
A Notary Public of New Jersey
My Commission Expires Dec. 28, 1999

My Commission Expires Dec. 28, 1999.

My Commission Expires Dec. 28, 1999.



This document prepared by: Vernon Geddy, III Geddy, Harris & Geddy 516 S Henry Street Williamsburg, VA 23185

# Description of Additional Property

#### Casey Parcel

All that certain lot or parcel containing 72 acres, more or less, shown and described as "Parcel C" on a plat entitled "CASEY PROPERTY PROPOSED WEST SIDE SUBDIVISION, BERKELEY DISTRICT, JAMES CITY COUNTY, VIRGINIA" dated 2/2/98 and made by AES Consulting Engineers of Williamsburg, Virginia.

#### Description of Additional Property

#### Wilford Parcel

All that certain piece, parcel or tract of land containing 33 acres more or less, situate in James City County, Virginia, adjoining Mount Pleasant Grave Yard, and separated by an newly chopped line of trees, and bounded on the north by the land of P. W. Hiden; on the south and southeast by the land of J. S. New; and on the west by Powhatan Swamp.

All that certain tract or parcel of land, containing 45.1 acres, more or less, situate in James City County, Virginia, being a portion of a tract containing 152.6 acres which was partitioned among the heirs of J. S. New, deceased; the parcel hereby conveyed being bounded and described as follows: Beginning at a concrete monument on the western boundary line of the property now or formerly owned by Charles New and on the division line between the property now or formerly owned by Henley New and the parcel hereby conveyed; thence North 58° 15' West, passing a pine and an oak, 1685 feet to a stob on the boundary line of the property now or formerly owned by J. R. Austin; thence North 59° 15' East, 50.2 feet to a point, thence North 36° 00' East 178 feet to a 20 inch maple; thence North 45° 30' East 330 feet to an 8 inch ash; thence North 39° 45' East 170 feet to a 12 inch ash; thence north 76° 00' East 297 feet to a stob; thence South 58° 15' East 1441 feet to a concrete monument on the line between the property herein conveyed and that of the property now or formerly owned by P. H. Hiden; thence South 41° 30' West 1240 feet to a concrete monument, the point of beginning.

#### Description of Additional Property

#### New Parcel

All that certain tract, or parcel of land, containing 45.1 acres and bounded and described as follows:

Beginning at a point designated by a concrete monument at the eastern corner of the said tract of land, thence south 77' 30" west 169 feet to a 16 inch qum; thence south 72' 20" west 205 feet to a point,, thence south 77' 00" west, passing a 4 inch pine and a 16 inch hickory 340 feet to a point; thence south 81' 15" west 176 feet to a 36 inch pine; thence south 84' 00" west, along a fence 723 feet to a point on the west side of the road; thence south 84' 30" west 293 feet to a point, thence south 76' 30" west 48 feet to a point, thence south 72' 30" west 247 feet to a large tree; thence south 70' 30" west 148 feet to a point; thence south 72' 00" west 200 feet to a point; thence south 65' 00" west 164 feet to a concrete monument; thence north 41' 30" east 980 feet to a concrete monument; thence same course 1240 feet to a concrete monument; thence south 58' 15" east 1898 feet to the point of beginning. Bounded on the northeast by the land of P. W. Hieden (Hiden); on the south by the lands of William A New's Estate; on the west by the parcels conveyed to Henly New and Drummond New.

#### Description of Additional Property

#### Carter Parcel

That certain piece or parcel of land located in James City County shown and set out as Tax Parcel (31-3)(1-30) owned by Elizabeth Carter.

PLAT ATTACHED

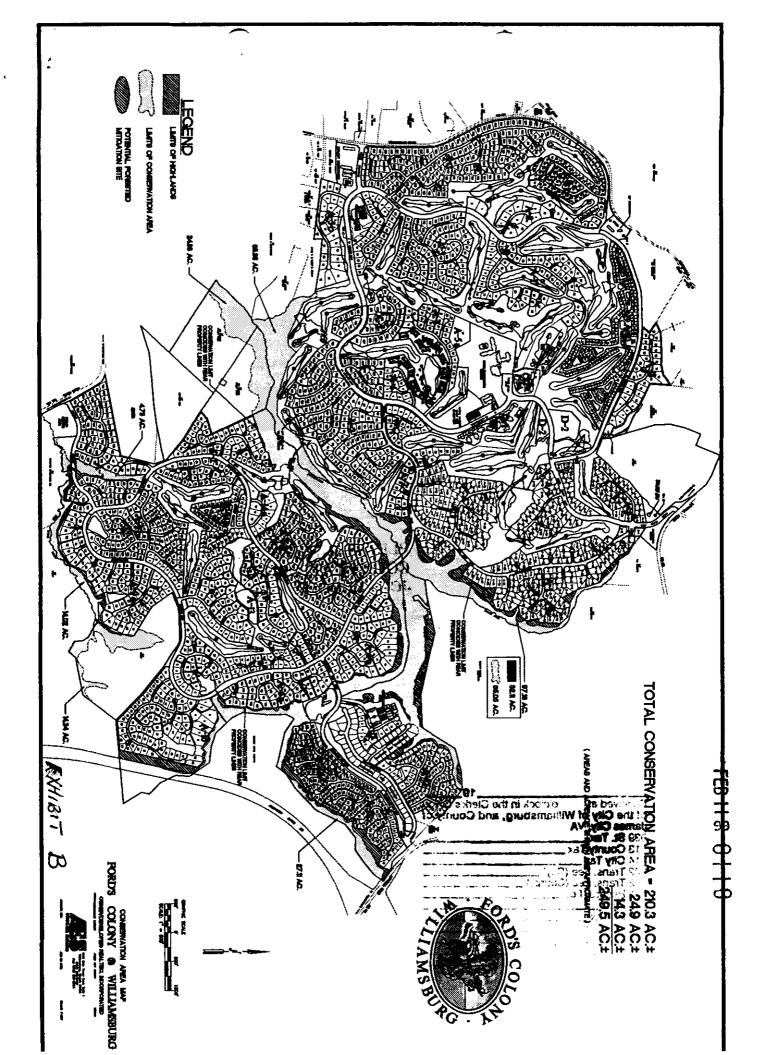
James City, to Wit:

In the Clerk's Office of the Circuit Court of the City of Williamsburg and County of James City the day of Market 1972. This Mended admitted to record at 1972 o'clock

Teste: Helene S. Ward, Clerk

Deputy Clerk

The second of th



# COMMONWEALTH OF VIRGINIA



# INE: 14:26:35 ACCOUNT: 830CLR990002925 RECEIPT: 99000004557 DFFICIAL RECEIFT COUNTY CIRCUIT DEED RECEIFT

DATE OF DESCRIPTION 1: FARCEL C CASEY PROPERTY, AMENDED AND RECONSIDERATION:

CONSIDERATION:

CODE DESCRIPTION

SOI DEEDS

DATE OF DEED: 01/24/99

RECORDED: 02/11/99 AT 14:25 EX: N LGC: CD EX: N PCT: 100%

TECHNOLOGY FUND FEE

ASSUME/VAL: .00
PAID CODE DESCRIPTION
PA.00 145 VSLF
3.00

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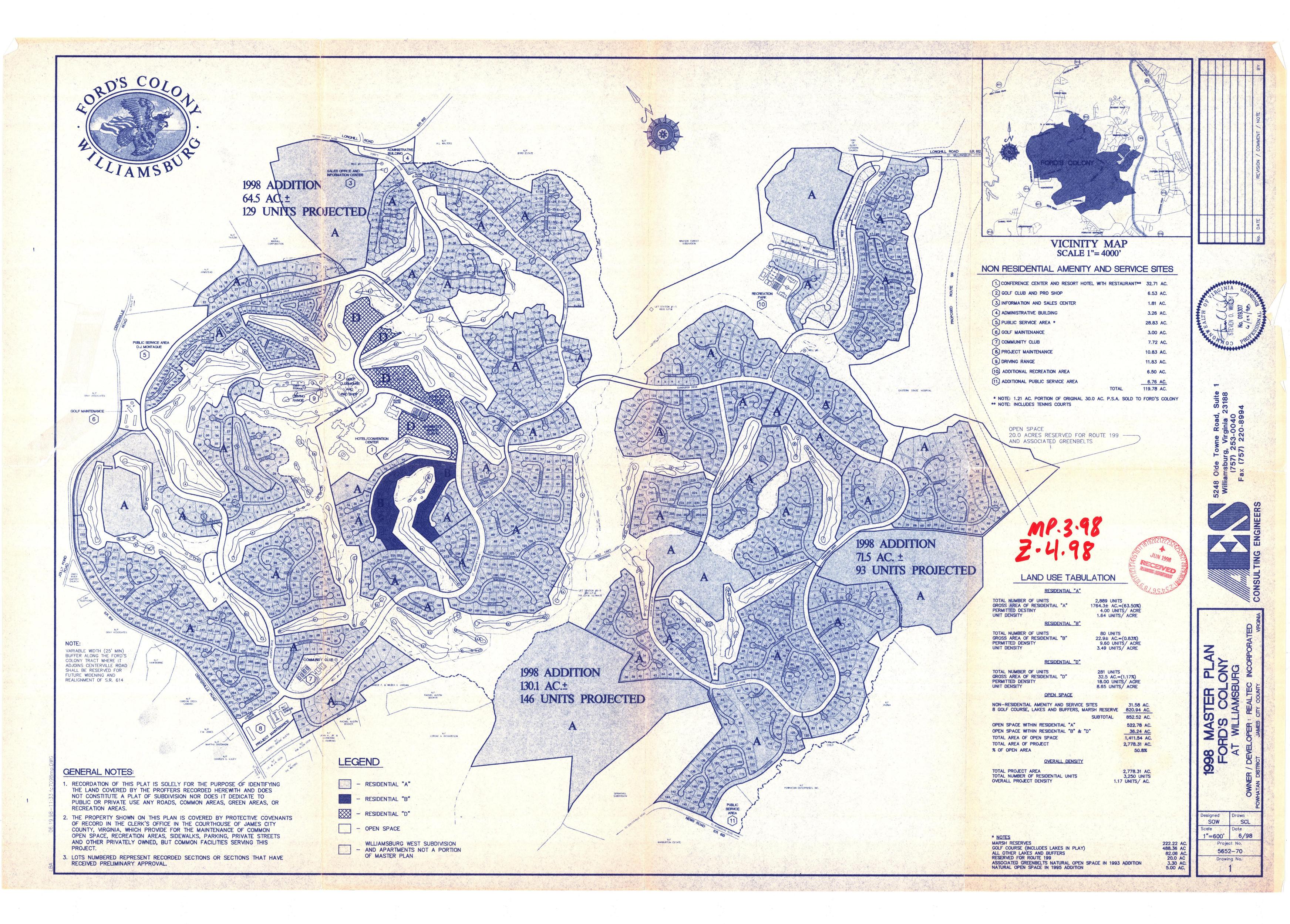
ją.

PAID 1.00

CLERK OF COURT: HELENE S. WARD

PLEASE RETURN TO: COUNTY ATTORNEY JCC - BLDG. C

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of the City of Williams James City, VA.	burg, and County of
213 County Tax 214 City Tax	
222 Trans. Fee (City) _ 212 Trans. Fee (Count) 301 Record. Fee	11-028.00
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## Unapproved Minutes of the April 1, 2020 Planning Commission Regular Meeting

#### **Z-19-0003. Fords Colony Proffer Amendment**

Mr. Alex Baruch, Senior Planner, stated that Ms. Susan Tarley of Tarley Robinson, PLC has applied, on behalf of Realtec Community Services, for a proffer amendment to amend previously approved proffers for Ford's Colony to address traffic improvements and outstanding proffers. Mr. Baruch stated that the Ford's Colony development is nearing build-out. Mr. Baruch further stated that the Master Plan, not including the Continuing Care Retirement Communities on the south side of News Road, allows for up to 3,250 dwelling units. Mr. Baruch stated that approximately 2,857 units have been constructed to date and other lots have been platted but are not yet improved. Mr. Baruch stated that the subject properties listed on the application include those properties where new development is still planned.

Mr. Baruch stated that staff and the applicant are in agreement that there are 104 dwelling units that remain to be constructed on four parcels that have a residential designation on the Master Plan. Mr. Baruch stated that the overall purpose and intent of this proffer amendment is to specify the division of these units between those four parcels, specify the remaining traffic improvements that need to be constructed as a part of the buildout of Fords Colony, and eliminate traffic related improvements which were listed in the original proffers, but which are no longer necessary.

Mr. Baruch stated that the parcels are zoned R-4, Residential Planned Community and are designated Low Density Residential on the 2035 Comprehensive Plan Land Use Map.

Mr. Baruch stated that staff finds the proposal to be compatible with the surrounding development and consistent with the adopted Comprehensive Plan. Mr. Baruch further stated that Staff recommends that the Planning Commission recommend approval of this application and the amended proffers to the Board of Supervisors.

Mr. Rob Rose inquired about why the bike lane was eliminated.

Mr. Baruch stated that the bike lane is no longer shown on the Longhill Road Corridor Study on that side of the road. Mr. Baruch further stated that it is now shown as a multi-use path on the North side of the road.

Mr. Krapf called for disclosures from the Commission.

Mr. O'Connor stated that he spoke with Mr. Drew Mulhare.

There were no further disclosures.

Mr. Krapf opened the Public Hearing.

Mr. Drew Mulhare, General Manager, Fords Colony at Williamsburg Home Owners Association (FCHOA), stated that FCHOA has been joined in this application by Windsor Healthcare Equities,

LLC, the Dorothea M. Ford Trust, and Redus Va. Housing, LLC. Mr. Mulhare addressed the Commission in support of the application and commended staff for the efforts to find appropriate strategies to resolve outstanding issues.

Mr. O'Connor inquired if the unit counts on each parcel were locked in or if fewer units could be constructed on one parcel and the remaining units added to the unit count on another parcel.

Mr. Mulhare stated that the unit counts could not be redistributed. Mr. Mulhare stated that the application partners have agreed to the unit counts and, further, that FCHOA has entered into a supplemental Declaration of Covenants regarding those parcels.

Mr. Holt noted that should any changes be requested, it would require a further proffer amendment.

As no one else wished to speak, Mr. Krapf closed the Public Hearing.

Mr. O'Connor noted that there are likely several developments where the developer is no longer present or has made certain obligations that have carried over to a Home Owners Association (HOA) that do not necessarily belong under the HOA's purview. Mr. O'Connor stated that the traffic study is one of those obligations. Mr. O'Connor stated that he appreciates FCHOA working through the issues to arrive at a resolution.

Mr. Rose noted that, in regard to the bike lane, that for avid bikers, the multi-use path is not an equivalent option due to the other uses that would occur on the multi-use path.

Mr. O'Connor inquired if the Longhill Road Corridor called for dual lanes.

Mr. Holt stated that the Longhill Road Corridor Study recommendations were developed with a substantial amount of public engagement. Mr. Holt stated that based on citizen preferences for the road design, the multi-use path came forward as one of the recommendations. Mr. Holt stated that staff would need to review the recommendations regarding a separate on-street bike lane.

Mr. Polster stated that he participated in the three public meetings for the Longhill Road Corridor Study. Mr. Polster noted that the issue of bike safety was discussed extensively. Mr. Polster further stated that the consensus was that bikers could use the road or the multi-use path. Mr. Polster stated that he would like to see the multi-use path extend along the entire corridor.

Mr. Haldeman made a motion to recommend approval of the application.

On a roll call vote, the Commission voted to recommend approval of Z-19-0003. Fords Colony Proffer Amendment. (7-0)

#### **AGENDA ITEM NO. I.1.**

#### **ITEM SUMMARY**

DATE: 5/12/2020

TO: The Board of Supervisors

FROM: Grace A. Boone, Director of General Services

SUBJECT: Establishment of a Full-Time Building Security and Custodial Services Superintendent

Position

#### **ATTACHMENTS:**

Description Type
Resolution Resolution
Memorandum Cover Memo

#### **REVIEWERS:**

Department	Reviewer	Action	Date
General Services	Boone, Grace	Approved	5/5/2020 - 12:55 PM
Publication Management	Burcham, Nan	Approved	5/5/2020 - 1:08 PM
Legal Review	Kinsman, Adam	Approved	5/5/2020 - 1:08 PM
Board Secretary	Fellows, Teresa	Approved	5/5/2020 - 1:09 PM
Board Secretary	Purse, Jason	Approved	5/5/2020 - 1:43 PM
Board Secretary	Fellows, Teresa	Approved	5/5/2020 - 2:01 PM

#### RESOLUTION

#### ESTABLISHMENT OF FULL-TIME BUILDING SECURITY AND

#### CUSTODIAL SERVICE SUPERINTENDENT -

#### DEPARTMENT OF GENERAL SERVICES

- WHEREAS, the James City Board of Supervisors has the authority to establish County full-time positions; and
- WHEREAS, the Director of General Services desires to establish a Full-Time Building Security and Custodial Services Superintendent and has allocated funds for this position effective July 1, 2020.
- NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, hereby approves the establishment of a Full-Time (2,080 hours/year) Building Security and Custodial Services Superintendent effective July 1, 2020, to support the ongoing needs of security, safety, and environmental services for our staff and facilities.

	James O. Icenh Chairman, Boa	,	ervisors	
		VOTES	8	
ATTEST:		<u>AYE</u>	<u>NAY</u>	<b>ABSTAIN</b>
	SADLER			
	MCGLENNON			-
Teresa J. Fellows	LARSON HIPPLE			
Deputy Clerk to the Board	ICENHOUR			
Adopted by the Board of Supervisors May, 2020.	of James City Cour	nty, Virgi	inia, this	12th day of

FT-SecCustSupr-res

#### MEMORANDUM

DATE: May 12, 2020

TO: The Board of Supervisors

FROM: Grace A. Boone, Director of General Services

SUBJECT: Establishment of Full-Time Building Security and Custodial Services Superintendent -

Department of General Services

The Department of General Services respectfully requests the establishment of a Full-Time Building Security and Custodial Services Superintendent (2,080 hours) to be effective July 1, 2020. Although this position was proposed to be established in the Fiscal Year 2021 budget for January 2021, with the impact of COVID-19, General Services is asking that the position move forward to July 2020. Increased oversight of the custodial services section is needed for scheduling additional cleaning, ordering, and delivery of custodial and personal protective equipment for County departments. This position will oversee the advanced planning, organizing, and directing of the daily operations of the custodial services section, as well as monitor and evaluate the operational effectiveness of the safety and security program within facilities. Funding will be made available for this position through the General Services budget.

This position will oversee the daily sanitization and cleanliness of all County facilities and work in partnership with building occupants to ensure a safe and secure working environment. This position will ensure adherence to industry standards for custodial practices and methods and procedures. This position will monitor budget expenditures, conduct site visits, develop reports, and provide recommendations on program or service improvements.

The Department of General Services requests that the James City County Board of Supervisors approve the establishment of a Full-Time Building Security and Custodial Services Superintendent position effective July 1, 2020.

GAB/nb FT-SecCustSupr-mem

Attachment

#### **AGENDA ITEM NO. I.2.**

#### **ITEM SUMMARY**

DATE: 5/12/2020

TO: The Board of Supervisors

FROM: Michael Woolson, Senior Watershed Planner

SUBJECT: Skimino Creek Watershed Management Plan - Board Adoption

#### **ATTACHMENTS:**

	Description	Type
۵	Memorandum	Cover Memo
ם	Resolution	Resolution
ם	<b>Executive Summary</b>	Backup Material
ם	Chapter 1	Backup Material
ם	Chapter 2	Backup Material
ם	Chapter 3	Backup Material
ם	Chapter 4	Backup Material
ם	Chapter 5	Backup Material
ם	Chapter 6	Backup Material
ם	Appendices	Backup Material

#### **REVIEWERS:**

Department	Reviewer	Action	Date
Engineering & Resource Protection	Cook, Darryl	Approved	4/27/2020 - 8:04 AM
Development Management	Holt, Paul	Approved	4/27/2020 - 8:48 AM
Publication Management	Daniel, Martha	Approved	4/27/2020 - 8:54 AM
Legal Review	Kinsman, Adam	Approved	4/27/2020 - 10:47 AM
Board Secretary	Fellows, Teresa	Approved	4/29/2020 - 1:59 PM
Board Secretary	Purse, Jason	Approved	5/5/2020 - 1:44 PM
Board Secretary	Fellows, Teresa	Approved	5/5/2020 - 2:01 PM

#### MEMORANDUM

DATE: May 12, 2020

TO: The Board of Supervisors

FROM: Toni Small, Stormwater and Resource Protection Division Director

Michael D. Woolson, Senior Watershed Planner

SUBJECT: Skimino Creek Watershed Management Plan - Board Adoption

In 1998, James City County began watershed management efforts in response to concerns about rapid development within the County and along the Powhatan Creek, in particular. In James City County, the watershed planning process identifies environmentally sensitive areas and develops specific protection, restoration, and infrastructure retrofit recommendations. This information guides development within the watersheds and identifies prioritized capital projects for the County's Capital Improvement and Maintenance Programs.

Plans for Powhatan (2002), Yarmouth (2003), Mill (2011), Gordon (2011), and Ware (2016) Creeks are complete and have been adopted by the Board of Supervisors. Since then, staff has continued to work with consultants to develop an additional plan for the County watershed of Skimino Creek. The Skimino Creek Watershed Management Plan is ready for the Board's consideration and adoption at the May 12, 2020, meeting.

The Skimino Creek Watershed Management Plan is similar to other watershed management plans in that it encourages improved management of the County's resources through development and private property owner incentives. Second, data collection and mapping technologies have improved since the adoption of the Powhatan and Yarmouth plans and this plan provides information that is more detailed. Staff started work on the Skimino Creek Plan in 2013, held stakeholder meetings in 2018 and 2019, and the final plan has been prepared. Skimino Creek has unique challenges and opportunities and this is reflected in the resulting watershed goals and strategies.

Staff recommends adoption of the attached resolution.

TS/MDW/md SkiminoCrkWMPlan-mem

#### RESOLUTION

#### SKIMINO CREEK WATERSHED MANAGEMENT PLAN - BOARD ADOPTION

- WHEREAS, Skimino Creek is a resource of local and regional significance; and
- WHEREAS, the Board authorized staff to prepare management plans to help the County and landowners protect and restore the watersheds and their natural resources; and
- WHEREAS, stakeholders, staff, and consultants have met over a period of 48 months to share information, set goals, and develop the watershed management plan.
- NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, hereby adopts the Skimino Creek Watershed Management Plan dated April 2020.

		James O. Icen	hour, Jr.		
		Chairman, Boa	ard of Su	pervisors	1
			VOTE	S	
ATTEST:			<u>AYE</u>	<u>NAY</u>	<b>ABSTAIN</b>
		SADLER MCGLENNON			
<del></del>		LARSON			
Teresa J. Fell		HIPPLE			
Deputy Clerk	to the Board	ICENHOUR			
Deputy Clerk		ICENHOUR upervisors of James City Cou	—— ınty, Virg	– ginia	— ı, this

SkiminoCrkWMPlan-res

May, 2020.



## **Executive Summary**

#### **Watershed Overview**

The Skimino Creek watershed is a group of subwatersheds draining to the York River, located in the northeast portion of James City County between the Ware Creek Watershed and the York County boundary (Figure 1-1). The portion of the Skimino Creek Watershed located in York County is not included as part of this baseline assessment. The Skimino Creek watershed lies within the York River-Skimino Creek Watershed, corresponding to hydrologic unit code (HUC) 020801070104. The National Watershed Boundary Dataset code is YO65.

At approximately 15 square miles in size, the Skimino Creek watershed is the third largest watershed of the eight watersheds in James City County and is located mostly within James City County limits (Figure 1-1). Situated within the Coastal Plain geologic province, topography varies from nearly flat tidal marshes to well drained, steep, and erodible slopes. Like the other watersheds in James City County, the established drainage pattern is highly dissected. This is especially true of the first order tributaries, where side slopes in excess of 15 percent are common. These headwater tributaries often transition in a downstream direction into wide, flat floodplain systems with fairly steep valley walls.

The Skimino Creek watershed is subdivided into eight subwatersheds. Four of the subwatersheds drain directly to the York River to the north. These are York River 1 (YR-1), York River State Park (YRP), York River 2 (YR-2) and Upper Taskinas Creek (UTC). The other four subwatersheds drain towards the east to Skimino Creek and are as follows: Fenton Mill Pond (FMP), Barlow's Mill Pond (BMP), Lower Skimino Creek (LSC) and a portion of Camp Peary (CAP). Skimino Creek forms a portion of the eastern boundary of James City County and all water within it flows northward as a series of tributaries. The larger tributaries (i.e., second order or greater) within the watershed are slow-moving and sinuous streams that flow within the topographically-defined floodplains described earlier. The channel substrates were found to be commonly sand or organic material, with surrounding agricultural and developed uplands playing a large part in the local substrate type. The larger floodplain reaches of Taskinas Creek and Skimino Creek, specifically, are typified by slack waters and floodplain distributary channels and are often floored by a thick layer of organic deposits and in-stream vegetation. The majority of these bottomlands often qualify as jurisdictional wetlands from sideslope to sideslope, sustained by a nearsurface groundwater table and by discharge from springs and toe-of-slope seepage. Stream channel geometry is susceptible to dramatic alterations in this setting, as tree throws and flood debris can present formidable obstructions and result in the formation of complex channels.



The majority of the soils within the Skimino Creek watershed are sandy loams, mostly Caroline, Craven, Emporia, and Slagle. The most notable soil type is Emporia which is notorious for having high erodibility, particularly in the Coastal Plain. The presence of this soil type, particularly around headwaters with significant slopes, coupled with land development and agriculture, is the primary cause of the sandy substrates typical of Skimino Creek watershed stream channels.

Approximately 29% of the Skimino Creek watershed is urbanized with 20% of the watershed in residential uses, 4% in transportation uses, and 5% in commercial and institutional uses. The major transportation corridors in the watershed are I-64, which crosses close to the border between the Barlow's Mill Pond and Fenton Mill Pond subwatersheds, Croaker Road, which tracks the northwestern boundary of the watershed, and Richmond Road, along the southwestern boundary. The Skimino Creek watershed is largely rural land (71% of the watershed). Forest makes up the majority of the undeveloped land, totaling 50% of the watershed. Agricultural land use makes up 7% of the watershed with 10% being open water and wetlands and about 2% in open space/meadow.

Impervious cover in the Skimino Creek watershed totals 368 acres, which accounts for 3.8% of the total watershed area. Fenton Mill Pond is the only watershed over 10 percent impervious, where the majority of the impervious cover is located along Richmond Road at the upper-most portion of the watershed. The Richmond Road corridor contains a mixture of general business and industrial land use. The remainder of the existing and planned development in the watershed is rural residential development, with the exception of the area surrounding Fenton Mill Pond which is planned for business/industrial and multi-family residential. A total of 15 stormwater management facilities lie within the watershed, all of which are located within two subwatersheds: Barlow's Mill Pond and Fenton Mill Pond.

#### **Watershed Assessment**

The Skimino Creek watershed, while possessing some residential communities, is largely undeveloped, and what development exists is relatively old. The overall impervious cover within the Skimino Creek watershed is small, at 3.8%, while one of the subwatersheds is over 10% impervious. Only 5% of the wastershed is treated with stormwater facilities. Moreover, the stormwater infrastructure mirrors the older age of the developments they are treating, meaning that the technology for this infrastructure is not up to date.

However, in addition to the percent of impervious surface and the characteristics and age of the stormwater network that routes runoff from these surfaces, numerous other issues should be evaluated in the planning process. These include the distribution and condition of the sanitary sewer system and the location of other utilities and infrastructure to areas threatened by erosion. Perhaps the most important factor for an undeveloped watershed



such as Skimino Creek is the implementation of smart development – understanding the baseline conditions and projected progression through the evaluation of zoning. By characterizing the environmental susceptibility of the watershed, appropriate steps can be instilled to provide for conservation of important natural resources that could not be undertaken after development has occurred. Understanding the extent and implications of potential resource impacts and developing plans to resolve and protect them are the fundamental reasons for pursuing watershed management planning. The conditions within the Skimino Creek watershed that provide the impetus for such planning are described briefly below.

#### Stream, Floodplain, and Conservation Area Assessment

A comprehensive evaluation of most of the streams was carried out within each of the subwatersheds. Field efforts were carried out to characterize the condition of in-stream and riparian habitat; document occurrences of stream instabilities such as bank and channel erosion; map the location of stormwater outfalls, utility and other stream crossings, and trash and debris; and to help identify and prioritize potential stormwater retrofit, stream restoration, and/or riparian buffer management opportunities.

The results of the Stream and Floodplain Assessment are summarized below:

- An evaluation of stream habitat found that the vast majority of streams fall into the fair category (52%), with 30% classified as good or excellent, and 18% as poor.
- Floodplain conditions scored higher than did stream habitat, with 85% ranked as good or excellent, 12% as fair, and just 3% as poor. Floodplain connectivity is typically optimal for most of the stable meandering stream channels.
- The stream and floodplain assessment determined that the overall Skimino Creek watershed is in fair condition, with notable reaches that are considerably impaired by uncontrolled stormwater input and associated bank and channel erosion and excess sedimentation. Most problem areas are located in the upper reaches of first order tributaries.
- A total of 17 stormwater outfalls were assessed as part of the study, and while there were some stormwater issues in the Skimino Creek watershed, only three (3) outfalls were given a severity of 4 or 5. The majority of the severe erosion locations fell within the Barlow's Mill Pond subwatershed, and most of the trash sites were located in Upper Taskinas Creek. Each of the severe erosion locations corresponded with actual stream bank instabilities and headcutting due to excess stormwater runoff from nearby development or roadways.

Because of the relatively developed condition, which are largely comprised of agricultural land, forested land and rural development of the Skimino Creek watershed, only five tracts



of forested land meeting the general screening criteria were identified. After field verifying these locations, all were chosen for field evaluation of forest structure, condition, and intactness.

Based on DCR-DNH database review and supporting information from other state and federal agencies, the following conclusions may be drawn regarding previously documented Rare Threatened and Endangered (RTE) species within the Skimino Creek Watershed:

- Bald eagle nests reported by natural resource agencies reflect the presence of suitable nesting and foraging habitat both in and around the Skimino Creek Watershed. Proactive regulatory agency coordination and proper conservation management techniques (e.g., buffer restrictions) should be considered in advance of changes to land use;
- The presence of known small whorled pogonia populations and abundant potential forested upland habitat within the watershed indicate the need for regulatory agency coordination for this species prior to changes in land use within uplands; and
- The presence of potential habitat for other federally listed (sensitive joint-vetch) and state-listed (Mabee's salamander, Henslow's sparrow, and loggerhead shrike) RTE species may trigger natural resources agency review of any proposed impacts to potential habitat.

#### **Existing Stormwater Infrastructure and Pollutant Loading.**

Based on the County's SWM database, as of 2019, there were 15 stormwater facilities located in the watershed. Drainage areas were delineated for all systems, giving a treatment area of approximately 494 acres, or 5 percent of the watershed. The treatment practices include 1 detention basin, 1 extended detention basin with water quality treatment, 8 infiltration practices, and 5 retention basins.

Two elements of the Unified Subwatershed and Site Reconnaissance were conducted as part of the watershed assessment effort: the Hotspot Site Investigation (HSI) and Neighborhood Source Assessment (NSA), which evaluate pollution-producing behaviors and restoration potential in upland areas of the Skimino Creek Watershed. A significant portion of the impervious area in the watershed appears to be disconnected. Older subdivision streets have open-section grassed channels for storm drainage, providing some disconnection, at least for smaller rain events. Many of the primary streets are drained in the same manner. Because of the high level of disconnected downspouts, the main source of runoff appears to be the street network. Neighborhood Source Assessments did not reveal significant sources of pollution other than some areas of highly managed lawns.



About two-thirds of the neighborhood area was developed before 2000, there was not a lot of evidence of new development in the areas assessed, with only a few neighborhoods built since 2000. Residential development is currently underway, as there was evidence of development in several of the areas assessed. With two exceptions, the single-family lots were greater than 1 acre in size, and impervious coverage of each lot was estimated to be from about 10 to 20 percent on the larger lots and 20 percent to 35 percent on smaller lots. Tree canopy on residential lots varied widely, from 15 to 75 percent.

Roof runoff was disconnected to a large degree, even in the multi-family areas, with 80 to 100 percent of the downspouts estimated to be directed onto pervious areas rather than driveways, parking lots, or streets. In general, only one downspout on each dwelling was directed to the driveway, draining from 1/6 to 1/4 of the roof area. There was no evidence anywhere in the watershed of roof drainage connected to storm drains or sewers. Storm drainage in every area assessed was conveyed through open-section grassed ditches at the edge of pavement with no curb, gutter, and storm drain.

The results of the NSA investigation provide some guidance for outreach to property owners and for internal County activities. Regarding outreach, the most effective improvements will be to restore some of the hydrological effects of the original forested condition in the watershed.

Outreach, education, and assistance in tree planting to improve the canopy coverage in residential areas is a primary approach. Encouraging the replacement of lawn area with native vegetation is another potential program. Finally, although downspout disconnection was not a high priority in the watershed neighborhoods, establishing a rain barrel and rain garden program is a first step in helping residents to learn more about runoff and streams. Several of the neighborhoods had the potential for onsite retrofits by converting grass channels to bioswales.

## **Realizing Watershed Goals through Strategic Actions**

JCC has developed four overarching goals for watershed protection and restoration:

- 1. Minimize the further degradation of water quality and preserve, restore and maintain the outstanding quality of all streams within the watershed as well as tidal and nontidal wetlands.
- 2. Develop in a manner that is consistent with the protection of living resources: avoid habitat fragmentation and encourage the preservation of riparian and wildlife corridors.
- 3. Promote active stewardship among residents, community associations, businesses, and seasonal visitors.
- 4. Promote viable traditional and emerging rural economic initatives (production of local agricultural and forestry commodities, agri-tourism, eco-tourism, etc.).



Realizing these goals and addressing watershed issues involves the implementation of two basic principles that represent the core of the watershed management plan.

- Address known problem areas with cost effective and sustainable Watershed Restoration Projects such as restoring degraded stream channels, retrofitting BMPs, and addressing sanitary sewer maintenance in a timely manner;
- Programmatic/Technical and Educational Efforts aimed at increasing JCC staff
  and stakeholder awareness, fostering watershed stewardship, encouraging
  responsible development, augmenting baseline information about watershed
  resources, and realizing opportunities for land conservation and redevelopment
  through the pursuit of shared goals and transparent communication with and
  between property owners.

A total of 19 Strategic Actions were developed with the Watershed Goal(s) that are considered as Programmatic/Technical and Educational Efforts and are universal, amounting to a County doctrine for watershed protection and restoration. Others, particularly the Watershed Protection Projects, are watershed-specific.

	Strategic Actions
1	Provide incentives for new development (and redevelopment) to add intermittent stream buffers, expanded RPA and mainstem buffers, preserve identified conservation areas, minimize impervious cover and maximize contiguous open space.
2	Identify areas within the watershed where riparian corridors are in an unnatural condition and seek ways, including incentives, to restore those areas to their natural condition.
3	Implement Special Stormwater Criteria for all new plans for development (except those with approved plans or in review)
4	Promote alternative funding sources for special resource areas (e.g., riparian buffers and conservation areas). Determine how much buildable land is in the watershed.
5	Identify key stakeholders within the watershed (landowners, schools, etc.) that can help implement watershed planning objectives. Work with them to develop a shared vision for preserving natural resources through community actions and provide opportunities for them to contribute to the attainment of watershed management goals.
6	Continue to fully implement the requirements of the County's MS4 permit in relation to watershed management throughout County.
7	Update or develop new Better Site Design (BSD) educational materials to be made available to developers, homeowner's associations, and citizens and conduct training.
8	Continue to work with County departments to incorporate BSD requirements into applicable ordinances, into state/county stormwater management regulations and to develop consistent review procedures.
9	Use subwatershed maps to ensure James City County staff and stakeholder awareness of existing locations for restoration and potential conservation areas.



10	Continue to support and grow a citizen/volunteer-based team of individuals to routinely perform assessments of stream health, including sampling for benthic macroinvertebrates, water quality indicators and photo-documentation.
11	Improve the availability of educational materials by developing materials for use by HOA's and neighborhood associations. Educate people about watershed awareness including proper disposal of fats, oils, grease, other chemicals, pet waste, onsite waste disposal systems, trash, on-lot rainwater harvesting and biofiltration techniques.
12	Conduct additional feasibility assessments, validate and carry out the stormwater retrofits, outfall repairs and stream restorations identified in this watershed plan.
13	Continue to utilize available regional/state/federal data in the County GIS database, including but not limited to data from the DHR-DSS, DCR-DNH and DGIF to: a) assist in prioritizing conservation areas; b) ensure that potential development opportunities fully appreciate the cultural and natural resources within the footprint; and c) be sensitive to potential resources when and where any emergency action is needed.
14	Consider participation in the Virginia Big Tree or similar recognition program to identify historic and specimen trees and promote the importance of trees to the landscape.
15	Develop an inter-departmental rapid response protocol and team to deal with unforeseen and emergency threats to water quality and infrastructure (e.g., leaking sewer lines, storm-related or unpredictable channel and bank erosion, hazmat spills, etc.)
16	Develop guidelines to lessen steep slope threshold to 15% from 25% in areas with highly erodible soils.
17	Develop guidelines for the management of invasive plant species.
18	Promote the use of nutrient management planning for existing residential areas.
19	Promote responsible agriculture or forestry land uses, including coordination with the Colonial Soil and Water Conservation District, USDA-NRCS and VDOF.

## **Watershed Restoration Opportunities**

The stream and floodplain assessment determined that bottomland areas represent active and important floodwater and sediment storage areas. In general, stream condition is fair to good in these areas. By contrast, headwater streams were observed to be relatively unstable with bank and channel erosion being noted immediately downstream of stormwater outfalls. Curtailing sediment delivery from these upstream sources and protecting infrastructure should be considered a key goal and can be accomplished through stream restoration or enhancement and/or retrofitting stormwater outfalls. Seventeen such opportunities have been identified. Other issues requiring attention are localized concerns at stormwater outfalls (3), sewer line stream crossings and instances of



exposed lateral pipes in banks (2), localized bank erosion (4) and occurrences of trash and debris (8).

Potential stormwater retrofit opportunities to improve water quality and protect channels were identified by carrying out a Retrofit Reconnaissance Inventory. Opportunities include wet pond and dry pond retrofits, parking lot retrofits and culvert retrofits. There is also potential for retrofitting the open section drainage system to dry swales or water quality swales in areas where additional water quality treatment is recommended. A total of 8 projects were identified.

The 3 Stream Assessment Reaches (SARs) and 8 stormwater retrofit sites were ranked using a Decision Support System (DSS) that was developed to support organizational decision making activities based on a consideration of watershed goals and the degree to which a project can satisfy these goals based on eight Prioritization Factors including water quality/runoff quantity, floodplain connectivity, aquatic habitat, sedimentation, environmental awareness, project size/scope, channel condition and condition of contributing watershed; and eight Possible Conflicts including utility conflicts, construction access, neighborhood impact, physical feasibility, level of design, property constraints, permitting issues and negative environmental impacts. The DSS is an integral part of the watershed planning process and an essential tool for prioritizing TMDL reduction projects.

## Components of the Skimino Creek Watershed Management Plan

The Skimino Creek Watershed Management Plan consists of the following Chapters:

Chapter 1 provides a Watershed Overview and discusses why watershed management planning is important.

*Chapter 2* summarizes the Baseline Assessment.

*Chapter 3* describes the development of Watershed Goals and Strategic Actions for their realization.

*Chapter 4* discusses the methods used to select candidate Watershed Restoration Projects and presents their location within the watershed.

*Chapter 5* presents the Strategic Action Plan, outlining the tentative timeframe for the execution of the Strategic Actions, their approximate cost and responsible parties.

Chapter 6 includes individual Subwatershed Management Plans that summarize conditions within the subwatersheds. These are designed to act as quick reference guides for JCC staff and include a general description of the subwatershed, the proposed watershed restoration opportunities therein and their estimated cost and a variety of other tabular information such as:

land use;



- impervious area;
- stormwater management practices and drainage areas treated;
- existing condition pollutant loading;
- existing urban runoff loads; and
- estimated pollutant loading reductions based on proposed retrofits.

## **Watershed Management Plan**

# Skimino Creek Watershed

# James City County, Virginia

Contract No. 09-0095:

Watershed Management Planning Services

Prepared for

**James City County** 

101-F Mounts Bay Road, Suite 300 Williamsburg, VA 23185 (757) 253-6646

Prepared by



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## Introduction

#### 1.1 Watershed Overview

The Skimino Creek watershed is a group of subwatersheds draining to the York River, located in the northeast portion of James City County between the Ware Creek Watershed and the York County boundary (Figure 1-1). The portion of the Skimino Creek Watershed located in York County is not included as part of this baseline assessment. The Skimino Creek watershed lies within the York River-Skimino Creek Watershed, corresponding to hydrologic unit code (HUC) 020801070104. The National Watershed Boundary Dataset code is YO65.

At approximately 15 square miles in size, the Skimino Creek watershed is the third- largest watershed of the eight watersheds in James City County and is located mostly within James City County limits (Figure 1-1). Situated within the Coastal Plain geologic province, topography varies from nearly flat tidal marshes to well drained, steep, and erodible slopes (Figure 1-2). Like the other watersheds in James City County, the established drainage pattern is highly dissected and dendritic (NRCS 1985). This is especially true of the first order tributaries, where side slopes in excess of 15 percent are common. These headwater tributaries often transition in a downstream direction into wide, flat floodplain systems with fairly steep valley walls. These valleys originated as the paleochannels that once occupied these valleys and were buried during the Pleistocene interglacial highstands, when sea-level rose in response glacier melting.

The Skimino Creek watershed is subdivided into eight subwatersheds (Figure 1-2). Four of the subwatersheds drain directly to the York River to the north. The other four subwatersheds drain towards the east to Skimino Creek. They are named as follows: York River 1 (YR-1), York River State Park (YRP), York River 2 (YR-2), Upper Taskinas Creek (UTC), Fenton Mill Pond (FMP), Barlow's Mill Pond (BMP), Lower Skimino Creek (LSC) and a portion of Camp Peary (CAP). Skimino Creek forms a portion of the eastern boundary of James City County and all water within it flows northward as a series of tributaries. The larger tributaries (i.e., second order or greater) within the watershed are slow-moving and sinuous streams that flow within the topographically-defined floodplains described earlier. The channel substrates were found to

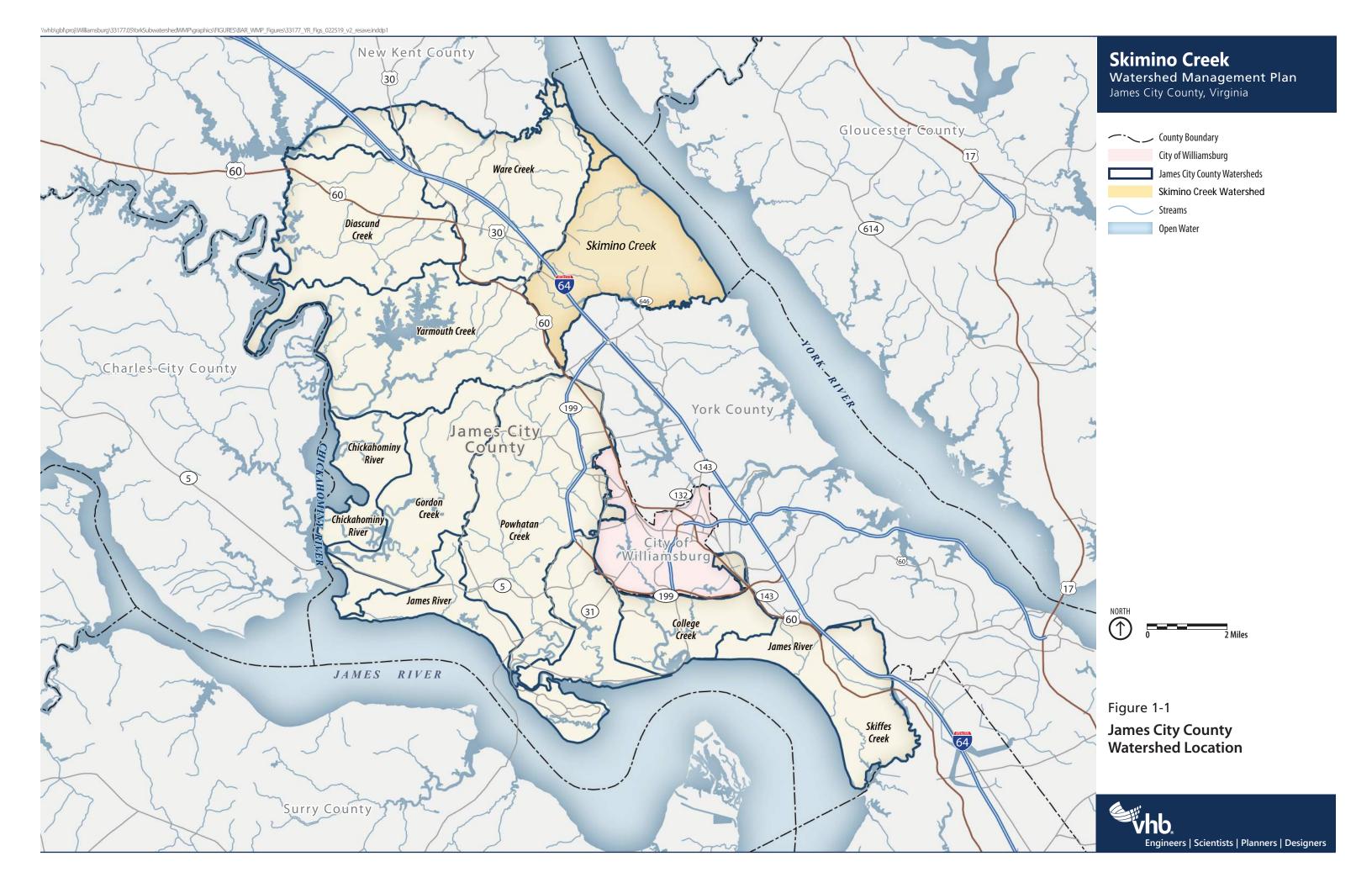


be commonly sand or organic material, with surrounding agricultural and developed uplands playing a large part in the local substrate type. The larger floodplain reaches of Taskinas Creek and Skimino Creek, specifically, are typified by slack waters and floodplain distributary channels and are often floored by a thick layer of organic deposits and in-stream vegetation. The majority of these bottomlands often qualify as jurisdictional wetlands from sideslope to sideslope, sustained by a near-surface groundwater table and by discharge from springs and toe-of-slope seepage. Stream channel geometry is susceptible to dramatic alterations in this setting, as tree throws and flood debris can present formidable obstructions and result in the formation of complex, bifurcated channels.

The majority of the soils within the Skimino Creek watershed are poorly drained type C soils consisting of Caroline, Craven, Emporia, and Slagle (Figure 1-3). The most notable soil type is Emporia which is notorious for having high erodibility, particularly in the Coastal Plain. The presence of this soil type, particularly around headwaters with significant slopes, coupled with land development and agriculture, is the primary cause of the sandy substrates typical of Skimino Creek watershed stream channels.

The Skimino Creek watershed is approximately 29 percent urbanized with 20 percent of the watershed in residential uses, 4 percent in transportation uses, and 5 percent in commercial and institutional uses. The major transportation corridors in the watershed are I-64, which crosses close to the border between the Barlow's Mill Pond and Fenton Mill Pond subwatersheds, Croaker Road, which tracks the northwestern boundary of the watershed, and Richmond Road, along the southwestern boundary. The Skimino Creek watershed is largely rural land (71 percent of the watershed). Forest makes up the majority of the undeveloped land, totaling 50 percent of the watershed. Agricultural land use makes up 7 percent of the watershed with 10 percent being open water and wetlands, and about 2 percent in open space/meadow. Skimino Creek watershed existing land use is presented on Figure 1-4 and the zoning breakdown is presented on Figure 1-5.

The Skimino Creek watershed contains approximately 368 impervious acres for an overall watershed imperviousness of 3.8 percent. Fenton Mill Pond is the only watershed over 10 percent impervious, where the majority of the impervious cover is located along Richmond Road at the upper most portion of the watershed. The Richmond Road corridor contains a mixture of general business and industrial land use. The remainder of the existing and planned development in the watershed is rural residential development, with the exception of the area surrounding Fenton Mill Pond which is planned for business / industrial and multi-family residential. A total of 15 stormwater management facilities lie within the watershed, all of which are located within two subwatersheds: Barlow's Mill Pond and Fenton Mill Pond.





# 1.2 The Need for Watershed Management and Watershed Goals

Each of the County's watersheds has unique attributes related to size, location and the extent and age of development. While watershed management is important for all watersheds, the goals of a watershed plan should reflect the specific needs of each. The Skimino Creek watershed, while possessing some residential communities, is largely undeveloped and what development exists is relatively new. While the impervious cover within the Skimino Creek watershed is small, only 3.8%, it is treated by stormwater management facilities. These facilities and other stormwater infrastructure mirror the younger age of the development they are treating, meaning that the technology for this infrastructure is relatively up-to-date. However, while existing stormwater management infrastructure is a concern for the Skimino Creek watershed planning process, it is the future infrastructure and its ability to maintain or improve upon the relatively undisturbed conditions in the watershed that is of greater concern.

In addition to the percent of impervious surface and the characteristics and age of the stormwater network that routes runoff from these surfaces, numerous other issues should be evaluated in the planning process. These include the distribution and condition of the sanitary sewer system and the location of other utilities and infrastructure to areas threatened by erosion. Perhaps the most important factor for an undeveloped watershed such as Skimino Creek is the implementation of smart development – understanding the baseline conditions and projected progression through the evaluation of zoning. By characterizing the environmental susceptibility of the watershed, appropriate steps can be instilled to provide for conservation of important natural resources that could not be undertaken after development has occurred. Understanding the extent and implications of potential resource impacts and developing plans to resolve and provide protection are a couple of reasons for pursuing watershed management planning. The conditions within the watershed that provide the impetus for such planning are described briefly below.

# 1.2.1 Existing Stormwater Infrastructure and Watershed Conditions

As previously stated, the Skimino Creek watershed is largely undeveloped and existing stormwater infrastructure is generally performing satisfactorily due to the newer age of development. Conversely, other JCC watersheds such as Mill Creek are much older and have been nearly built to capacity. In the Mill Creek watershed, impervious cover is high and stormwater infrastructure is older, less substantial and outdated. Despite these watersheds' proximity to one another, their differences are integral to the assessment of watershed health and determination of what strategic actions are the most important.

For older development in James City County, designs for methods of stormwater conveyance and treatment followed long-standing and conventional norms typically focusing on routing



runoff from source to outlet as expeditiously as possible. For comparison, some of the older subdivisions within the Mill Creek watershed, which is covered by approximately 21% impervious area, including concrete-lined drainage ditches, and others route runoff through underground pipes. Both of these means of conveyance offer no opportunity for stormwater infiltration. Furthermore, the design of these stormwater conveyance systems often gave little consideration to the interface between the end pipe and the natural system to which they discharge. The combination of rapid stormwater conveyance and a lack of energy dissipation at the outfall can result in a focused discharge triggering erosion in the receiving area, be it a stream channel, wetland or floodplain. Headwater streams are particularly vulnerable to such increased discharge and often become incised. The resulting erosion can impact downstream aquatic habitat and water quality, stream bank stability and threaten adjacent infrastructure. Moreover, because conventional stormwater management systems offer limited opportunities for infiltration or storage along their pathway, any pollutants liberated from the surfaces where the runoff was generated will be discharged untreated. This includes sediment, heavy metals, bacteria and nutrients.

By contrast, newer stormwater management, such as what is primarily in place in the Skimino Creek watershed, takes into account the way infiltration and retention can curtail uncontrolled discharge velocities and pollutant dispersal. Approximately 29% of the Skimino Creek watershed is developed. Fifteen stormwater facilities (Figures 1-6 and 1-7) exist to treat stormwater from approximately 5% of the developed watershed area. The differences in the physical composition of the Skimino Creek and Mill Creek watersheds is readily apparent in the way that each responds to significant precipitation events.

# 1.2.2 Threats to Utilities and Infrastructure

Stream bank erosion can lead to channel widening and migration. When this occurs in close proximity to utilities, road surfaces and other public or private infrastructure, these resources become threatened, with safety issues and property damage occurring. Such stream channel instabilities and their potential repercussions may be difficult to identify. Typically, this type of erosion begins in headwaters, often in conjunction with antiquated stormwater infrastructure. However, even watersheds with limited impervious cover and adequate stormwater infrastructure can experience erosion problems. As previously stated, the majority of the soils in the Skimino Creek watershed are highly susceptible to erosion.



### 1.2.3 Water Quality and Total Maximum Daily Loads (TMDLs)

The Virginia Department of Environmental Quality (DEQ) has been testing Virginia's rivers, lakes, reservoirs and tidal waters and developing lists of "impaired waters" since 1992. Through extensive monitoring of pollutants, individual segments of streams, lakes and estuaries that violate water quality standards are reported to the citizens of Virginia and the US Environmental Protection Agency (EPA) in the Virginia Water Quality Assessment 305(b)/303(d) Integrated Report, which is prepared on even-numbered years. The report describes the nature of the impairment including the suspected cause and source of the pollutant when sufficient data exists. The DEQ, with input from the public, has been developing plans called Total Maximum Daily Loads (TMDLs) in an effort to restore and maintain the water quality for the impaired waters. The term TMDL represents the total volume of a specific pollutant a water body can assimilate and still meet approved water quality standards.

The 2014 report lists two waterways situated within the Skimino Creek watershed as impaired on the 305(b)/303(d) listing, meaning they fall within category 4 in accordance with EPA definitions. The state of Virginia further defines subcategories with alpha suffix designations attached to the numeric EPA categories. All Skimino Creek watershed impairments fall within categories 4A, which is defined as follows:

 Category 4A – Water is impaired or threatened for one or more designated uses but does not require a TMDL. A new TMDL is not necessary to address the newly identified impaired tributaries if TMDL modeling, source identification and reductions cover the entire watershed and the TMDL has been approved by EPA. These waters are primarily related to shellfish and/or recreational bacteria impairments but could include benthic impairments;

The tidal portion of Skimino Creek, originally listed in 1998 for fecal coliform and designated as category 5B, was lowered to category 4A during the 2012 cycle. This waterway has been condemned for shellfishing, and a TMDL for fecal coliform was approved by the EPA in 2010. Taskinas Creek, originally listed in 1998 for fecal coliform and designated as category 5B, was lowered to category 4A during the 2012 cycle. This waterway has been condemned for shellfishing, and a TMDL for fecal coliform was approved by the EPA in, 2010. A summary of the impaired waterways within the Skimino Creek watershed is presented in Table 1-1.

Table 1-1: List of Impaired Waters (Draft 2016 305(b)/303(d) list)

Assessment	Water		Cause	Cause	Cycle First	TMDL	
Unit	Name	Use	Category	Name	Listed	Schedule	Size
VAT-F26E_SKM	Skimino	Shellfishing	4A	Fecal	1998	2016	Estuary
01A00	Creek			Coliform			0.17 sq mi
VAT-F26E_TSK0	Taskinas	Shellfishing	4A	Fecal	1998	2016	Estuary
1A00	Creek			Coliform			0.03 sq mi



The major cause of impairment of the recreation and shellfishing uses is excessive bacteria as documented in the TMDL Report for Chesapeake Bay Shellfish Waters, prepared by DEQ, dated January 2010. Bacterial Source Tracking (BST) was used to identify sources of fecal contamination. Potential sources of fecal coliform bacteria consist primarily of non-point source contributions, as there are no permitted point source discharges that directly impact the identified impairment in the watershed. Nonpoint sources include wildlife, livestock, land application of bio-solids, recreational vessel discharges, uncontrolled discharges (straight pipes conveying gray water from kitchen and laundry areas of private homes, etc.) and failed, malfunctioning, or non-operational septic systems. Approximately 8% of the Skimino Creek watershed lies within the JCC Primary Service Area (PSA). The PSA is a County-defined area where sanitary sewer is available. The land within the PSA is primarily the commercial properties along Richmond Road, and the land areas in the vicinity of the American Heritage RV Park and Kiskiack Golf Club. Thus, most of the watershed and existing and future residential areas are not connected to the municipal sanitary sewer system. The limited sanitary sewer pipes located within the watershed run through many bottomland areas in close proximity to streams and wetlands to take advantage of gravity flow. This setting means that should accidental discharges of sanitary sewage occur via pipeline obstructions, untreated effluent can quickly enter streams and be carried some distance downstream.

The results of the TMDL study reveal that the primary sources of fecal coliforms for the Skimino Creek watershed are pets (30.7%), human (26.5%), wildlife (22.9%), and livestock (19.8%). For the Taskinas Creek sub-watershed, the sources are wildlife (37.1%), livestock (31.8%), and pets (15.8%).

#### 1.2.4 Overarching Watershed Goals

In light of these challenges, JCC has developed four overarching goals for watershed protection and restoration:

- Minimize the further degradation of water quality and preserve, restore and maintain the outstanding quality of all streams within the watershed as well as tidal and nontidal wetlands.
- Develop in a manner that is consistent with the protection of living resources: avoid habitat fragmentation and encourage the preservation of riparian and wildlife corridors.
- Promote active stewardship among residents, community associations, businesses and seasonal visitors.
- Promote viable traditional and emerging rural economic initiatives (production of local agricultural and forestry commodities, agri-tourism, eco-tourism, etc.).

Achieving these goals is accomplished through a stepwise watershed management planning process. The first step is performing a **Baseline Assessment**; a desktop analysis and field effort that identifies where these stormwater and utility issues are occurring. The second step is involving watershed stakeholders in the process by holding a **Public Meeting** to discuss the results of the Baseline Assessment and gather feedback from attendees and isolate watershed-specific issues that may not have been considered to date. Lastly, a **Watershed Management** 



**Plan** is developed that provides recommendations or "**Strategic Actions**" for the rectification of watershed issues.

Similar to other approved Watershed Management Plans, each of these steps has been undertaken for the Skimino Creek watershed. The Skimino Creek Watershed Baseline Assessment is available on James City County's website. The first public meeting was held on March 1, 2018 and focused on the results of the Baseline Assessment. A second stakeholder meeting was held on January 17, 2019, at the Stormwater Program Advisory Committee and focused on watershed goals and proposed strategic actions. The goal of both meetings is to gather public input to help prioritize proposed actions presented in this plan.

## 1.3 Realizing Watershed Goals through Strategic Actions

Realizing JCC's overarching watershed goals and addressing watershed issues involves the implementation of two types of **Strategic Actions**. These represent the core of the watershed management plan.

**Watershed Restoration Projects** such as restoring degraded stream channels, retrofitting stormwater facilities and addressing sanitary sewer maintenance in a timely manner; and

**Programmatic / Technical and Educational Efforts** aimed at increasing JCC staff and stakeholder awareness, fostering watershed stewardship, augmenting baseline information about watershed resources and realizing opportunities for land conservation and redevelopment through the pursuit of shared goals and transparent communication with and between property owners.

The remainder of the *Skimino Creek Watershed Management Plan* consists of the following Chapters:

Chapter 2 summarizes the Baseline Assessment.

Chapter 3 describes the development of Watershed Goals and Strategic Actions.

Chapter 4 discusses the methods used to select candidate Watershed Restoration Projects and presents their location within the watershed.

Chapter 5 presents an Implementation Plan for the Strategic Actions, outlining the tentative timeframe for their execution, approximate cost and responsible parties.

Chapter 6 includes individual Subwatershed Management Plans that summarize conditions within the five subwatersheds. These are designed to act as quick reference guides for JCC staff.



2

#### **Watershed Assessment**

#### 2.1 Field Data Collection

The data provided in the Skimino Creek-York River Watershed Baseline Assessment Report was collected by VHB and KCI scientists and engineers in the field in December 2013 and field verified in February 2018. Specific methodologies, protocols, and field forms are discussed in the Baseline Assessment Report and are highlighted in this chapter. To provide the best quality data and to expedite the extensive field collection duties, VHB utilized ArcGIS<sup>TM</sup> software to digitally record and maintain a database of all field data. To minimize field and office time associated with paper forms, VHB translated all appropriate forms into an electronic ArcPad<sup>TM</sup> format using ArcPad Studio<sup>TM</sup> software. The created feature classes and their associated forms were then easily checked out of a database to applications running on tablet computers for mobile data collection. These computers were connected to an internal GPS receiver that assisted with navigation in the field and more accurate spatial analysis of specific features. After each field effort, feature class data was checked back into the existing database. Records were checked in the office, and photos taken in the field were linked to the appropriate features. This method of data collection allows for VHB to provide the County with the full database of field data as well as spatial definition for all evaluated features.

### 2.2 Subwatershed Designations and Limits of the Assessment

For planning purposes, the Skimino Creek watershed was subdivided into eight subwatersheds through coordination with the County and a detailed examination of topography, road surfaces, and drainage pathways. For all evaluations, each subwatershed was given a three-character alpha designation to provide consistency among the three components of the Baseline Assessment Report. These subwatersheds are Barlow's Mill Pond (BMP), Camp Peary (CAP), Fenton Mill Pond (FMP), Lower Skimino Creek (LSC), Upper Taskinas Creek (UTC), York



River 1 (YR1), York River 2 (YR2), and York River State Park (YSP), and range in area from approximately 0.5 to 3.9 square miles (Figure 1-2).

Because Camp Peary and York River State Park are owned entirely by Federal and State agencies and are outside of the jurisdiction of James City County, detailed assessments were not performed for these subwatersheds.

Barlow's Mill Pond subwatershed consists of 2,313.5 acres, with a highly varied mixture of land use. Natural lands include 43 percent forested land and six percent wetlands. Developed areas include 21 percent in single-family residential, 7 percent in transportation, and a combined one percent in industrial, commercial, and institutional use. Agricultural use makes up thirteen percent of the total watershed. Fenton Mill Pond (FMP) subwatershed consists of 1,406.6 acres. The largest use is forested land making 34 percent of the total area. Sixteen percent is agricultural, and another two percent is in turf. Twenty percent of the subwatershed is residential and eight percent is transportation. Lower Skimino Creek (LSC) subwatershed consists of 1,049.9 acres, with 61 percent of the area made up of forested land, 16 percent harvested forest, eight percent agricultural, and nine percent wetlands. Only three percent of the subwatershed consists of residential uses, along the northern border of the subwatershed. Upper Taskinas Creek (UTC) subwatershed consists of 1,465.3 acres, with 29 percent of the area made up of forested land, five percent wetlands, and seven percent in agricultural uses. UTC is one of the more developed subwatersheds, with 53 percent of its area in residential uses. York River 1 (YR1) subwatershed consists of 230.2 acres, with 21 percent of the area made up of forested land and 10 percent in wetlands. This subwatershed is also one of the more developed areas, with 67 percent of the land in residential uses. York River 2 (YR2) is 308.5 acres in area, and is also highly developed, with 63 percent of the area in residential land use. Twenty-two percent of the watershed is forested, and nine percent is made up of wetlands.

This Baseline Assessment Study serves to evaluate each subwatershed individually as well as the entire watershed as a whole.

#### 2.3 Land Use and Imperviousness

The Skimino Creek watershed is approximately 15.1 square miles in extent. It is 29 percent urbanized. The developed land is primarily residential, with 20 percent of the watershed in residential lots, four percent in transportation uses, and five percent in commercial and institutional areas. The major transportation corridors in the watershed are I-64, which crosses close to the border between the Barlow's Mill Pond and Fenton Mill Pond subwatersheds, Croaker Road, which tracks the northwestern boundary of the watershed, and Richmond Road, along the southwestern boundary. The Skimino Creek watershed is largely rural land (71 percent of the watershed). Forest makes up the majority of the undeveloped land, totaling 50 percent of the watershed. Seven percent of the watershed is agriculture, ten percent is open water and wetlands, and about two percent is in open space/meadow.



Impervious surfaces are those that don't allow precipitation to infiltrate through soils into groundwater. They include roadways, parking lots, sidewalks, roofs, and driveways. Imperviousness is one of the causes of degradation of urban streams and waterbodies. Impervious area was estimated for the Watershed by using the GIS coverage developed by Sanborn and provided by the County, which includes the following types of features: derived from the County's planimetric mapping:

- Road (Streets, Parking Lots)
- Buildings (Apartment/Townhouse, Church, Commercial, Garage/Shed, Residential, Schools, Trailers, Other)
- Other (Driveways, Sidewalks, Minor Parking Lots)

In order to provide input for pollutant load modeling and to forecast future imperviousness, the impervious areas were overlaid with the land use. The results are shown in Table 2-1.

Table 2-1: Percent Impervious by Land Use (acres)

				Driveways	Total	Percent
	<b>Total Area</b>	Buildings	Pavement	and Other	Impervious	Impervious
Land Use	(ac)	(ac)	(ac)	(ac)	Area (ac)	(%)
URBAN						
Single-family, rural, wooded	1,183.4	16.2	5.3	27.5	49.1	4.1
Single-family, rural, turf	166.9	3.7	1.5	4.7	9.8	5.9
Single-family, large lot	427.3	14.6	1.8	18.7	35.0	8.2
Single-family, small lot	146.9	10.6	0.5	10.0	21.1	14.3
Multi-family and townhouse	0.0	0.0	0.0	0.0	0.0	0.0
Commercial	172.8	24.3	37.9	17.8	80.0	46.3
Institutional	283.2	1.7	6.4	0.2	8.3	2.9
Industrial	20.6	0.1	1.3	0.2	1.6	7.5
Transportation	367.6	0.0	109.7	9.7	119.5	32.5
Urban open space	209.3	0.9	4.7	6.6	12.2	5.8
RURAL						
Agriculture	701.9	3.3	2.6	5.8	11.7	1.7
Forest	4,847.8	1.1	10.8	6.9	18.8	0.4
Harvested Forest	168.0	0.0	0.0	0.1	0.2	0.1
Water	128.2	0.0	0.0	0.1	0.1	0.1
Wetland	830.9	0.1	0.7	0.4	1.2	0.1
TOTAL	9.654.9	76.8	183.2	108.4	368.4	3.8

Using these estimates, there are approximately 368 impervious acres, for an overall watershed imperviousness of 3.8%. Table 2-2 shows that Fenton Mill Pond is the only subwatershed over 10 percent impervious. The two subwatersheds not in the County's jurisdiction are less than one percent impervious. Figures 2-1 to 2-4 show the impervious area mapped from the GIS planimetric layers.



Table 2-2: Impervious Area by Subwatershed (acres)

Subwatershed	Impervious Area (ac)	Subwatershed Area (ac)	Percent Impervious
Barlow's Mill Pond	96.2	2,313.5	4.2%
Camp Peary	1.7	394.0	0.4%
Fenton Mill Pond	147.8	1,406.6	10.5%
Lower Skimino Creek	10.5	1,049.9	1.0%
Upper Taskinas Creek	67.6	1,465.3	4.6%
York River 1	8.0	230.2	3.5%
York River 2	21.1	308.5	6.8%
York River State Park	15.5	2,486.9	0.6%
Total	368.4	9,654.9	3.8%

Impervious cover and land use results specific to each of the six assessed subwatersheds is presented in the Skimino Creek-York River Baseline Assessment Report. Those findings are applicable to the proposed subwatershed-specific recommendations presented in this Watershed Management Plan.

### 2.4 Stream and Floodplain Inventory and Assessment

The majority of the stream reaches located within the Skimino Creek watershed are stable systems that are well connected to their floodplains. The most significant stream and floodplain systems are the broad, flat waters and wetlands located the closest to the York River to the north, which includes Upper Taskinas Creek and Lower Skimino Creek. Overall high-density development is limited in the Skimino Creek watershed and is primarily concentrated around the Richmond Road and Interstate 64 transportation corridors. These areas make up the headwaters of the Fenton Mill Pond subwatershed and Barlow Mill Pond subwatershed. The Lower Skimino Creek and Upper Taskinas Creek subwatersheds primarily consist of lower density existing or planned rural residential development.

The headwater streams, because they have the largest potential for impairment, were the primary subject of VHB's stream and floodplain field assessment. Most of these systems were stable Rosgen type-E and B channels that were defined by natural topography and groundwater seepage. VHB assessed 88 individual stream reaches, of which 68 were E channels, 5 were C channels, 1 B channel, 2 F channels, and the remaining 12 were G channels. Again, the majority of the streams assessed were in good condition, and the assessment does not include the broad floodplain settings that are located in the lower valley portions of Upper Taskinas Creek and Lower Skimino Creek. These larger systems are assumed to be in good condition given the undeveloped nature of the watershed, specifically in the vicinity of these features.



Likewise, most of the assessed reaches were still in Stage I of the evolution process. In fact, 68 reaches (77 percent of total assessed length) were in Stage 1. The remainder were downcutting (Stage II) or widening (Stage III) streams relegated mostly to the channels receiving concentrated drainage from the more developed areas of the Skimino Creek watershed.

Most stream reaches (52 percent) exhibited a fair habitat rating, but this was mostly due to low scores from lack of bedform diversity and pool formation, most likely due to sedimentation from upland erosion from highly erodible soils, from upstream bank erosion or from downcutting. About 16 stream assessment reaches (SAR) (18 percent) fell in the Poor habitat range, most of which were located in the headwater reaches receiving uncontrolled stormwater flows. However, these headwater reaches are typically short compared to the downstream assessment reaches, and this is illustrated by the fact that those 16 SARs only correspond to 8 percent of the total length of assessment. The remaining 29% of the SARs fell in the Good to Excellent category which mostly consisted of the lower valley stable type-E stream reaches.

The floodplain assessment provided higher ratings overall, with 85% of the total assessment length falling in the Good or Excellent range. In fact, only 3% of the total length (5 SARs) fell in the Poor range. Floodplains generally were rated higher as the assessment proceeded in a downstream direction, which usually corresponded to less developed riparian zones as well.

A total of 17 stormwater outfalls were assessed as part of the study and only three (3) outfalls were given a severity of 4 or 5. Likewise, only 1 of the 10 assessed stream crossings was given a severity rating greater than 3. Only five utility crossings were assessed, and only 1 was given a severity greater than 3. Four severe erosion locations were identified, three of which were located in Barlow Mill Pond subwatershed and the other one in the Fenton Mill Pond subwatershed. Additionally, 8 trash and debris sites were identified as part of the baseline assessment.

The biggest issue in the Skimino Creek watershed was related to stream habitat conditions due to the lack of bedform diversity. The deficiency in riffle pool bed formation appears to be a result of sedimentation from highly erodible upland soils in residential and agricultural land uses.

Additionally, the receiving upper valley stream channels consisted of the majority of the Stage II downcutting and Stage III widening stream reaches. Bank and bed stream erosion contributed to the habitat deficiency in these reaches and the sediment from these reaches also contributed to lower habitat value in the lower valley stable stream reaches.

Soil mapping shows the prevalence of highly erodible soils throughout the watershed, specifically around headwaters. Development in the watershed is very similar in age, and since little evidence of discrete and/or recent sediment sources was found during the assessment, it is likely that most of the sediment was deposited at some point in the past, probably in association with the existing development. While the majority of the Skimino Creek watershed is not yet built-out, the prevalence of this sediment in the developed areas should provide some important guidance as remaining lands in the watershed undergo similar development plans.



#### 2.4.1 Stream Inventory Assessment

In December of 2013, environmental scientists and engineers from VHB performed a stream and floodplain assessment of the Skimino Creek watershed. Field assessments were carried out in a manner consistent with previously completed watershed management plans prepared by the Center for Watershed Protection and VHB.

Field efforts associated with these plans focused on the implementation of two field data forms from the Environmental Protection Agency's (EPA) "Rapid Bioassessment Protocols" (Barbour et al. 1999): the Habitat Assessment and Floodplain Assessment. VHB employed these as well as additional field protocols to evaluate the level of protection afforded to the streams and their riparian areas under existing County administrative and regulatory codes, to document occurrences of stream instabilities and to help prioritize potential stormwater retrofit, stream restoration and riparian buffer management opportunities. These additional protocols include the Rosgen Classification of Natural Rivers (Rosgen 1994) and the Channel Evolution Model or "CEM" (Schumm et al., 1984), used to document the physical characteristics and general stability of the stream reaches, respectively. Furthermore, six forms contained within the Center for Watershed Protection's (CWP) Urban Subwatershed Restoration Manual No. 10: Unified Stream Assessment were also completed as conditions warranted. These include stormwater outfalls (OT), severe bank erosion (ER), impacted buffer (IB), stream crossing (SC), trash and debris (TR) and utility impacts (UT).

Based on County GIS information, over 15 miles of stream channel is mapped within the Skimino Creek watershed. These previously mapped streams represented just one aspect of the effort. Many topographic depressions within the watershed have no mapped streams, yet were found to have natural channels. These features were often times associated with inlandpoint RPA fingers.

Because it was not feasible to assess all stream channels within the watershed, VHB's assessment included a snapshot approach. Priority areas and subwatersheds were determined in coordination with the County. Because the Camp Peary, Lower Skimino Creek, York River 1, and York River State Park subwatersheds are so sparsely developed, the least amount of field work was conducted in these areas. However, as these subwatersheds represent a large portion of the overall watershed area, provide ideal baseline conditions, and will be subject to future development plans, representative assessments were conducted in these areas as well. The majority of the field work was completed in the more developed Barlow's Mill Pond, Fenton Mill Pond, Upper Taskinas Creek, and York River 2 subwatersheds, areas where stormwater management has been implemented and where the opportunity for instabilities are most likely.

Headwater reaches were the primary focus, as these areas have the highest chances of being unstable due to development and/or improper stormwater management. As top-down restoration of such unstable headwater streams can have beneficial effects on water quality in receiving streams and can represent a cost-effective approach, these valleys were studied with particular scrutiny.



#### 2.4.2 Rapid Bioassessment Protocol

Numerous techniques have been developed for assessing stream channel conditions. The most common techniques utilize a semi-quantitative method of assigning a score to various habitat parameters of a stream reach by comparing what is seen at points along the stream to a series of descriptions. The total number of assessment parameters varies depending on the complexity of the assessment method chosen. The Rapid Bioassessment Protocol (RBP) was employed for the Skimino Creek Stream and Floodplain Assessment.

The RBP "Stream Habitat Assessment" consists of ten questions that address various channel and riparian attributes. Each question has an associated point value on a 10-point or 20-point scale. VHB scientists also utilized the "Floodplain Assessment" form that was adapted originally for the Powhatan Creek Watershed Assessment. Possessing a similar structure to the Stream Habitat Assessment form, the Floodplain Assessment consists of seven metrics that serve to characterize the impairment of the floodplain, each measured on a 10-point scale. Appendix A includes a detailed description of each of the parameters used in the Habitat and Floodplain Assessments.

Following the field data collection using the RBP, the relative degree of stream and floodplain impairment can be estimated by comparing the assessment scores recorded at select study reaches to those found at the least impaired reaches within the watershed, or "reference reaches." The reference streams do not necessarily represent the best attainable condition for the study area, as 100% evaluation coverage was not attained as part of this assessment. However, while field reconnaissance focused primarily on the more-developed areas of the watershed to better ascertain problematic reaches, a considerable portion of the study focused on reaches within the large undeveloped portion of the watershed. As expected, good reference reaches were available for comparison purposes. Ranking stream reaches in a comparative manner assists in prioritizing potential restoration efforts. To determine the breakpoints between assessment categories, the three highest scores for the watershed were averaged. Stream Habitat and Floodplain Assessment scores totaling over 90 percent of that value are considered EXCELLENT; between 81 and 90 percent are GOOD; between 61 and 80 are FAIR; and below 60 are POOR.

#### 2.4.3 Other Assessment Techniques

VHB scientists utilized the Rosgen Classification of Natural Rivers (Rosgen, 1994) and the Channel Evolution Model (CEM) (Schumm et al., 1984) to document the physical characteristics and general stability of the stream reaches, respectively. In brief, the Rosgen classification is a broad delineation consisting of seven stream types allowing for rapid initial field assessment.

- Stable systems generally fall into categories A, B, C, D, and E (though D is reserved for braided systems).
- F and G streams are entrenched systems that have experienced a rejuvenation in downcutting and widening in response to land use changes in the watershed or natural uplift.



All Rosgen classifications were estimated using a cursory evaluation and best professional judgment, and no detailed geomorphic assessment was carried out or measurements recorded.

CEM is a simple, linear model that describes stream evolution in response to changes in the contributing watershed via five stages. Stage I is stable; Stage II is incision, or downcutting; Stage III is widening; Stage IV is stabilizing; and Stage V is the re-attainment of stable conditions via the development of a new floodplain at a lower elevation.

Finally, VHB scientists utilized the following forms from Chapter 10 of the CWP's Unified Stream Assessment: A User's Manual, Version 2.0 (CWP 2005) to chronicle instances of stream impairment:

- OT: Storm Water Outfalls
- ER: Severe Bank Erosion
- IB: Impacted Buffer
- SC: Stream Crossing
- TR: Trash and Debris
- UT: Utility Impacts

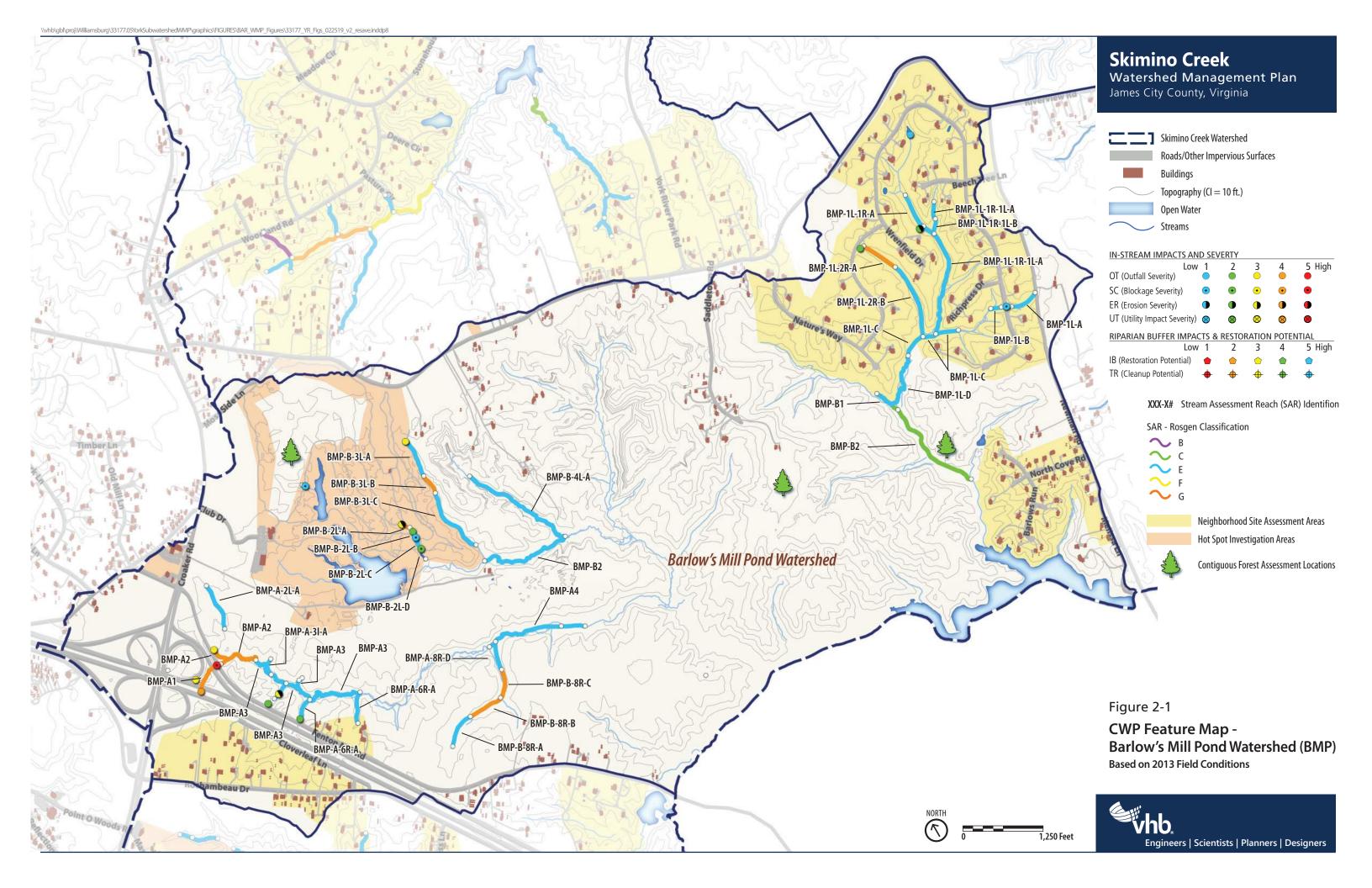
In an effort to streamline the field data collection process, VHB personnel translated all of the forms and protocols mentioned above into electronic format using ArcGIS®, ArcPad®, and ArcPad Studio®. The forms were created for use with tablet computers, allowing scientists to collect data and populate the forms directly while in the field. This process allows for all of the data to be contained within a single personal geodatabase which will be transferred to the County and readily updated in the future as new projects or development in the watershed occur.

Equipped with a tablet computer and an integrated GPS receiver to collect all field data, field scientists walked along the candidate stream corridors, delineating "Stream Assessment Reaches," or "SARs," where stream channel and bank attributes and riparian cover were relatively homogenous. The breakpoints between SARs were typically based on:

- a change in stage of the Channel Evolution Model; and/or
- a change in stream type per the Rosgen classification of Natural Rivers.

Within each of the designated SARs, the Habitat and Floodplain Assessment data forms were completed and the CEM stage and Rosgen classification determined. Specific observations, concerns, and potential recommendations for future action were recorded.

The results of the Baseline Assessment are mapped on Figures 2-1 through 2-4. The Rosgen Classification for each SAR is provided in brackets at the end of each SAR name. For example, SAR 201-D(G) is a G-type stream. The results of the Habitat Assessment are referenced by the color of the individual SAR. The results of the Floodplain Assessment are not depicted, but are discussed in the following sections. Recommended remedial actions to address observed concerns are discussed in detail in Chapter 4, Watershed Restoration, and in Chapter 6, Subwatershed Management Plans.





### 2.4.4 Stream Classification and the Channel Evolution Model



Photo 1: FMP-A2 Sinking Creek - Stable E5 Channel

In general, the results vary according to whether the assessed reach falls within an undeveloped subwatershed (Lower Skimino Creek, York River 1, or York River State Park) versus a developed subwatershed (Barlow's Mill Pond, Fenton Mill Pond, Upper Taskinas Creek, or York River 2). In the undeveloped areas. headwater channels, while sometimes located along a steep gradient, are still relatively stable B-type and E-type streams (Photo 1). Proceeding downstream, most streams in the Skimino Creek watershed become well-connected with their floodplain,

coincident with their contact with natural valleys. At this point, they become E-type streams, characterized by sinuous channels flowing on gentle slopes (Photo 2).

By contrast, while the channels in the developed areas still eventually turn into E channels lower in their profile, the headwaters often experienced significant downcutting associated with uncontrolled runoff and the highly erodible Emporia soils. In these developed areas of the Barlow's Mill Pond and Fenton Mill Pond subwatersheds, excessive sedimentation often prevented the channel dimensions from measuring as G or F channels due to the artificial shallowing effect resulting from the high sediment load.

Overall, the Skimino Creek watershed is typified by stable E-type channels, though the few G-type erosional reaches are of significant concern from a stability standpoint. Most channels in the developed areas had a sand bed that was sometimes observed to have a depth in excess of 5 inches. In total, 77% of the reaches assessed were E-types, while another 9% were classified as either C, B, or A channels. Only 14% of the SARs were classified as G or F streams. This means that, with a few notable exceptions, channel instability from erosion is not a major concern in

the Skimino Creek watershed at this time.



Photo 2: YR2-D3 - Lower Valley Stable E5 Channel



The dominant geomorphic process in the Skimino Creek watershed was Stage I of the CEM, typical of the sinuous E-type channels passing through an undeveloped wetland floodplain. However, the field study provided plenty of examples of unstable Stage II (incising) or Stage III (widening) channels (Photo 3). Though the development is still fairly young, and the instabilities are often located some distance from any structures, these features can still pose a serious threat to infrastructure, private property and public safety. Out of all the reaches assessed, 77% were stable Stage 1 systems, while only 23% fell in Stage II or III, further illustrating the lack of stream stability issues within the watershed. Notable exceptions in stability are coincident with the Severe Erosion (ER) locations, which are described in the following section of this report. The stage II streams within this watershed could be good candidates for stream restoration.



Photo 3: BMP-A2 - Unstable G channel north of Interstate 64 ramp to Croaker Road.

Along each bottomland in the Skimino Creek watershed, tree throws caused by recent storm events as well as from beaver activity are plentiful. In many places, trees have fallen or beaver dams have been created across the stream channel, resulting in the upstream accumulation of flood debris and causing floodwaters to be shunted out of the primary channel and into secondary channels within the floodplain. These occurrences can result in multiple channels that are active not only during flood events, but even as baseflow channels. However, based on their location along the stream profiles, most of these "natural" impediments are not causing any instability in channel or floodplain structure or habitat.

#### 2.4.5 In-Stream Habitat

An evaluation of stream habitat found that the majority of streams fall into the fair category (52%), with 17% classified as good, 12% as excellent and 18% as poor. The Habitat Assessment metric that typically scored the lowest for the Skimino Creek watershed was Pool Substrate Characterization and Pool Variability. Low pool-related scores are typical for the habitat scoring for first and second order streams, they usually do not exhibit well-developed pools due to higher channel slopes and sediment contributions. This is especially true in the sand-bed and low-gradient streams typical in the Skimino Creek watershed. Nevertheless, the lack of defined pools can be an indicator of a surplus of sediment transport from upstream reaches, especially where uncontrolled stormwater discharge is occurring (Photo 4). Many E streams were observed to have freshly deposited fine sand, liberated from the erodible fine sandy loam banks of the G or B-type headwaters. Such a changeable substrate also tended to diminish the score for epifaunal substrate / available cover. Channel alteration scored very high in the habitat assessment with the majority of the SAR's exhibiting anthropogenic influence. Sinuosity



on average scored marginal to suboptimal with some of the lower valley E-type streams exhibiting optimal sinuosity while the headwater systems are exhibiting marginal sinuosity. The channel flow conditions scored optimal in the lower valley stream reaches and were marginal in the headwater reaches. The overall habitat scores appear to be artificially low because the assessments focused more on the headwater channels, which are straighter than the E-type channels winding through the lower floodplains.



Photo 4: Lower Valley Stream Reach UTC-A3 with sediment deposition downstream of the Woodland Farms neighborhood.

It should also be noted that the Habitat Assessment considers factors outside the

channel as well as in-stream. For those streams having residential or commercial development in close proximity, the score for Riparian Vegetative Zone Width in some SARs was correspondingly low.

#### 2.4.6 Floodplain Habitat

Overall floodplain conditions scored excellent with 40% ranked as excellent, 33% of streams ranked as good, 16% as fair and 6% as poor. Though floodplain connectivity is typically optimal or suboptimal wherever E-type streams were found, the overall floodplain score was often diminished by low scores for "Flood Flow Status" and "Floodplain Surface Scouring". This is because concentrated flow outside the channel is common, particularly with the high degree of seepage typical in these valleys and frequency of beaver activity noted in the watershed. The scouring is a result of the stream accessing the floodplain more frequently and enhancing the floodplain hydrology.

The "Floodplain Habitat" metric was often scored as marginal because a diversity of wetland and upland settings are rare in the bottomlands, with the former being dominant.

### 2.4.7 Outfalls, Utilities, and other Point Impacts

Figures 2-1 through 2-4 include locations of observed CWP point feature assessments for stormwater outfalls, stream and utility crossings and stream impairments regarding buffer quality, trash and erosion. Each feature assessed was assigned a severity rating from 1 to 5 which is color-coded on the figures. The total number of outfalls and impairments are summarized by subwatershed in Table 2-3, along with a summary of the impervious cover. A total of 17 stormwater outfalls were assessed as part of the study, and while there were some stormwater issues in the Skimino Creek watershed, only three (3) outfalls were given a severity



of 4 or 5. Likewise, only 1 of the 12 assessed stream crossings was given a severity rating greater than 3. Four (4) severe erosion locations were identified, though these were located within the Fenton Mill Pond and Barlow Mill Pond subwatersheds. Additionally, eight (8) trash and debris sites were identified as part of the baseline assessment.

Table 2-3: Stream Impairments by Subwatershed

	•			lmp	ervious .	Area	•	•	•			
				Ir	npact Cla	ass	CV	VP Poi	int Fea	tures /	Assess	ed
	Area	Impervious	Impervious	%	%	%						
Subwatershed	(Ac)	Cover (ac)	Cover (%)	pave	bldgs	other	OT	SC	UT	ER	IB	TR
Barlow Mill	2 214	00	40/	2.40/	0.60/	1 40/	0	г		2		
Pond	2,314	96	4%	2.4%	0.6%	1.4%	9	5		3		
Fenton Mill	1 407	1.40	110/	2 50/	2.40/	4 50/	4	4		1		2
Pond	1,407	148	11%	3.5%	2.4%	4.5%	4	4		ı		3
Lower Skimino	1 050	11	1%	0.00/	0.20/	0.20/					-	
Creek	1,050	11	1%	0.6%	0.2%	0.2%						
Upper Taskinas	1 400	<b>C</b> 0	Γ0/	1 70/	1 20/	1 70/	2					г
Creek	1,465	68	5%	1.7%	1.2%	1.7%	3					5
York River 2	308	21	7%	2.2%	1.9%	2.7%	1	3				
TOTALS:	6,544	344	5%				17	12		4		8



Photo 5: Eroded outfall located at the head of BMP-A1 from Interstate 64 and Croaker Road Interchange

As is evident from the table, certain point features are associated with specific subwatersheds. For example, all 17 outfalls fall within the developed Barlow Mill Pond, Fenton Mill Pond, Upper Taskinas Creek, and York River 2 subwatersheds. The majority of the severe erosion locations fell within the Barlow Mill Pond subwatershed and were the result of a lack of energy dissipation below the outfall structure. Most of the trash sites were located in the Upper Taskinas Creek subwatershed. Outfall severity was gauged by

physical stability (Photo 5) rather than by discharge observations or water quality, since these were assessed solely as a snapshot of existing conditions. Stream Crossings were assessed in the same manner. The majority of the Trash and Debris sites consisted of illegal tire dumping. Each of the severe erosion locations corresponded with actual stream bank instabilities and



headcutting due to excess stormwater runoff from nearby development or roadways. There were very few utility crossings or impacted buffer sites documented during the study.

#### 2.5 Conservation Areas

A natural resource assessment was completed as part of the baseline assessment for watershed planning purposes for James City County. VHB scientists were tasked with the evaluation and assessment of upland contiguous forest communities, wetland functions, and rare, threatened and endangered (RTE) species. Fieldwork was conducted by qualified VHB scientists, which included an interdisciplinary team of wildlife biologists, wetland ecologists, aquatic biologists, foresters, hydrologists and environmental scientists.

Contiguous forests are large blocks of forested land unfragmented by significant breaks, such as roadways, power lines, or other clearings. The value of these tracts is measured by interior area, also referred to as 'interior forest.' Potential tracts of contiguous forest were identified in ArcGIS<sup>TM</sup> using a review of 2007 digital orthophotography provided by the County. Because of the level of development in the York River subwatersheds, five tracts of forested land meeting the general screening criteria of being 100 m [330 feet (ft)] square were identified in the conservation area assessment. One "Upland Contiguous Forest" (UCF) form was completed at each of the five locations using tablet computers running ArcPad<sup>TM</sup> software to aid in the streamlining of field data collection. Data collected include dominant tree species and diameter at breast height (DBH) for trees enumerated using a prism factor of 10. An Upland Contiguous Forest form is provided in Appendix A and results are provided in Table 4-1. The data collected at each site indicates that forest structure, forest composition, forest diversity, and seral stages are well diversified throughout the study area.

Functional assessments were not completed for wetland areas within the watershed because non-RPA were absent when comparing the U.S. Fish and Wildlife Service's National Wetland Inventory (NWI) and County GIS RPA layer. Candidate sites for Evaluation for Planned Wetlands (EPW) assessments are typically selected by identifying those NWI-mapped wetlands that lie outside the RPA buffer and thus are not subject to the protection afforded by RPA status. However, no NWI-mapped wetlands positioned outside of the County's RPA buffer were identified by VHB within the Skimino Creek watershed. It is important to address that jurisdictional wetlands, both isolated and those contiguous to larger tributaries, do exist within non-RPA portions of the watershed and represent significant component to the overall wetland ecosystem within the study area. Detailed wetland delineation would reveal the most accurate representation of jurisdictional water features outside the RPA, but that level of investigation is not feasible (or necessary) for this type of study. Therefore, future non-RPA wetland investigation could rely more heavily on previous investigations completed by others, or targeted preliminary wetland studies that allow reliable approximations of wetland locations/functions in key areas.

Current status of Rare, Threatened and Endangered (RTE) species within the Skimino Creek watershed was reviewed through online database information obtained from various natural



resource agencies, including USFWS, VA DCR, and VA DGIF. Furthermore, multiple site visits were performed by qualified VHB scientists to document current field conditions and confirmed agency database searches. Existing RTE species populations reported in the Skimino Creek watershed include those for the bald eagle and small whorled pogonia, as shown in the natural resource agency search results depicted in Tables 4-3 through 4-6.

Based on DCR-DNH database review and supporting information from other state and federal agencies, the following conclusions may be drawn regarding previously documented RTE species within the watershed:

- bald eagle nests reported by natural resource agencies reflect the presence of suitable nesting and foraging habitat both in and around the Skimino Creek Watershed.
   Proactive regulatory agency coordination and proper conservation management techniques (e.g., buffer restrictions) should be considered in advance of changes to land use:
- the presence of known small whorled pogonia populations and abundant potential forested upland habitat within the watershed indicate the need for regulatory agency coordination for this species prior to changes in land use within uplands;
- the presence of potential habitat for other federally listed (sensitive joint-vetch) and state-listed (Mabee's salamander, Henslow's sparrow, and loggerhead shrike) RTE species may trigger natural resources agency review of any proposed impacts to potential habitat.

In order to properly conserve the known and potential RTE resources within the Skimino Creek watershed, proactive regulatory agency coordination and conservation management techniques (e.g., buffer restrictions) should be considered during future land planning in James City County.

# 2.6 Assessment of Existing Stormwater Management Practices

An overview of JCC regulations regarding stormwater management requirements, allowable practices and stormwater facility maintenance and inspection is provided in Appendix B. The following section describes existing stormwater management facilities within the Skimino Creek watershed specifically.

### 2.6.1 Existing Stormwater Management Facilities

Based on the County's SWM database, as of 2019, there were 23 stormwater facilities located in the watershed. Drainage areas were delineated for all systems, giving a treatment area of approximately 494 acres, or five percent of the watershed. The facilities are located in only two



of the subwatersheds, Barlow's Mill Pond and Fenton Mill Pond. They treat 13 percent and 12 percent of each subwatershed, respectively. Overall, approximately five percent of the developed area of the watershed is treated by stormwater facilities. Table 2-4 shows a summary of the type of facility, treatment provided, number of facilities, and approximate drainage area and Figure 1-7 show the extent of the treated area.

Table 2-4: Stormwater Management Facilities in Skimino Creek Watershed

CMM Tyma	Treatment Drevided	Number of	Treated Area	Treated Impervious
SWM Type	Treatment Provided	Systems	(acres)	Area (acres)
ED Water Quality Control	Quality	1	3.0	1.5
Infiltration Basin	Quantity and Quality	5	14.9	5.0
Infiltration Dry Basin	Quantity	1	1.1	0.7cwp
Infiltration Trench	Quantity and Quality	2	5.1	2.7
Wet Detention WQ	Quality	1	8.0	1.1
Wet Pond	Quantity	2	169.2	73.3
Wet Pond WQ	Quantity and Quality	3	287.7	12.5
TOTAL		15	494.3	96.7

<sup>\*</sup>Area is calculated assuming that stormwater facility drainage areas are not overlapping (i.e. no additional treatment is provided by downstream stormwater facilities) as a conservative approach to avoid duplicate treatment accounting.

In general, treatment for residential areas is provided by retention and detention basins and the majority of treatment for commercial areas is provided by retention basins.

#### 2.6.2 Upland Reconnaissance

Two elements of the Unified Subwatershed and Site Reconnaissance were conducted as part of the watershed assessment effort: Hotspot Site Investigation (HSI) and Neighborhood Source Assessment (NSA), which evaluate pollution-producing behaviors and restoration potential in upland areas of the Skimino Creek Watershed. These assessments are "windshield surveys" where field crews drive streets in the watershed to determine specific pollution sources and identify areas outside the stream corridor where pollution prevention possibilities exist. The goal of the reconnaissance is to quickly identify source areas that are contributing pollutants to receiving waters and recommend methods to reduce these pollutant loads through source controls, outreach and change in current practice, or improved municipal maintenance operations. Additional information on the reconnaissance procedure is found in Wright et al. (2004).

Field crews assessed 16 potential hotspots in Barlow's Mill Pond and Fenton Mill Pond subwatersheds and 14 residential neighborhoods within all of the assessed subwatersheds except Lower Skimino Creek. Detailed results of the HSI/NSA assessments are presented in the subwatershed write-ups which follow in Chapter 6. General findings for the watershed are as follows:



2.6.2.1 **Neighborhood Source Assessment** 

### (NSA)

The Neighborhood Source Assessment (NSA) was conducted to evaluate pollution source areas, stewardship behaviors, and restoration opportunities within individual residential areas. The assessment looks specifically at yards and lawns, rooftops, driveways and sidewalks, curbs, and common areas. Neighborhoods were assessed in five general categories:

- Characterization involved age, lot size, and degree of infill or remodeling.
- Yard and lawn condition assessed landscaping, tree cover, lawn maintenance, and general upkeep.
- Driveways, sidewalks, and curbs were rated on condition, drainage, and debris or litter.
- Rooftops were reviewed primarily to identify whether they drained directly to storm drains, impervious areas, or were disconnected by draining to impervious areas.
- Common areas were assessed for evidence of resident stewardship (i.e., storm drain stenciling, pet waste management signage, etc.).

Each site was assigned a pollution severity rating of "severe," "high," "moderate," or "low," using a set of benchmarks set forth in Wright et al. (2004). Pollution severity is an index of the amount of non-point source pollution a neighborhood is likely generating based on easily observable features (i.e. lawn care practices, drainage patterns, oil stains, etc.). A restoration potential rating of high, moderate or low was also assigned to each neighborhood. Restoration potential is a measure of how feasible onsite retrofits, such as bioretention or swales, or behavior changes, such as installation of rain barrels or change in fertilizer use, would be based on space, number of opportunities, presence of a strong homeowner association (HOA), and similar factors.

#### **Neighborhood Characterization**

The neighborhoods assessed were developed from the 1970s to the present. About two-thirds of the neighborhood area was developed before 2000, there was not a lot of evidence of new development in the areas assessed. With two exceptions, the single-family lots were greater than 1 acre in size, and impervious coverage of each lot was estimated to be from about 10 to 20 percent on the larger lots and 20 percent to 35 percent on smaller lots. Tree canopy on residential lots varied widely, from 15 to 75 percent.

Roof runoff was disconnected to a large degree, even in the multi-family areas, with 80 to 100 percent of the downspouts estimated to be directed onto pervious areas rather than driveways, parking lots, or streets. In general, only one downspout on each dwelling was directed to the driveway, draining from 1/6 to 1/4 of the roof area. There was no evidence anywhere in the watershed of roof drainage connected to storm drains or sewers. Storm drainage in every area assessed was conveyed through open-section grassed ditches at the edge of pavement with no curb, gutter, and storm drain.



#### **Potential Pollutant Sources**

The assessment ruled out a number of potential pollutant sources. No litter or pet waste was seen in either private areas or common areas. There was no evidence of litter, trash, or dumping in streets or gutters, and very few instances of accumulation on private lots. Lawns were well established and were not receiving a high level of maintenance. There were no indicators of trash, litter, or sediment sources. More than 90% of the watershed does not receive sewer service, so septic systems are a potential source of nitrogen and bacteria in the older areas.

#### Recommendations

The results of the NSA investigation provide some guidance for outreach to property owners and for internal County activities. Regarding outreach, the most effective improvements will be to restore some of the hydrological effects of the original forested condition in the watershed.

Outreach, education, and assistance in tree planting to improve the canopy coverage in residential areas is a primary approach. Encouraging the replacement of lawn area with native vegetation is another potential program. Finally, although downspout disconnection was not a high priority in the watershed neighborhoods, establishing a rain barrel and rain garden program is a first step in helping residents to learn more about runoff and streams. Several of the neighborhoods had the potential for onsite retrofits by converting grass channels to bioswales.

#### 2.6.2.2 Hotspot Site Investigation (HSI)

The Hotspot Site Investigation (HSI) is used to evaluate commercial, industrial, municipal or transport-related sites that have a high potential to contribute contaminated runoff to the storm drain system or directly to receiving waters. At hotspot sites, field crews look specifically at vehicle operations, outdoor materials storage, waste management, building conditions, turf and landscaping, and stormwater infrastructure to evaluate potential pollution sources. Based on observations at the site, field crews may recommend enforcement measures, follow-up inspections, illicit discharge investigations, retrofits, or pollution prevention planning and education.

The overall pollution prevention potential for each hotspot site is assessed based on observed sources of pollution and the potential of the site to generate pollutants that would likely enter the storm drain network. A hotspot designation criterion set forth in Wright et al. (2004) was used to determine the status of each site based on field crew observations. Sites are classified into four initial hotspot status categories:

- Low no observed pollutant; few to no potential sources
- Potential hotspot no observed pollution; some potential sources present
- Confirmed hotspot pollution observed; many potential sources
- Severe hotspot multiple polluting activities directly observed



#### **Potential Pollutant Sources**

Sixteen sites were assessed for pollution potential; most of them were along Richmond Road. Six of them were rated low, meaning they were not considered a source. Six were rated as potential sources and four were confirmed with evidence of pollutants reaching the drainage system.

Seven of the sites were assessed for vehicle operations. These included two gas stations, two car dealers, a car wash, a church, and a RV park. With the exception of one, all were assessed for waste management and two of the sites rated confirmed based on this factor. Only one site had materials stored outdoors.

Detailed results of the HSI/NSA assessments are presented in the subwatershed write-ups which follow in Chapter 6.

#### Recommendations

Periodic follow-up inspections and education were recommended for three of the confirmed sites, dealing primarily with waste management activities. Inspection using the HSI form could help focus the review on specific pollutant sources.

#### 2.6.3 Pollutant Load Modeling

Pollutant loading models were developed for each of the six subwatersheds in Skimino Creek. The models are spreadsheet-based and have been developed using a customized version of the Watershed Treatment Model (WTM) published by the Center for Watershed Protection in 2010.

The model has been selected because it allows the watershed manager to assess loads from a wide range of wet weather and dry weather land uses found in urban and agricultural watersheds. It provides output on the sources of pollutants and estimates nitrogen, phosphorus, total suspended solids and bacterial loads in the watershed.

It is also capable of estimating the effects of future developments on pollutant loads and assessing the effects of stormwater facilities, retrofits, and some non-structural measures on reducing pollutant loads.

The model is set up with worksheets to report loads for three scenarios: Existing Conditions, as of the date of the watershed assessment; New Development Conditions, which is forecast from zoning, build out, or other land planning data; and Proposed Conditions, which includes proposed changes resulting from stormwater management, stream restoration projects, or non-structural programs.

The loads are calculated using several input worksheets, as follows (Caraco, 2010):



#### **Primary Sources**

This worksheet summarizes the loads from sources that can be determined solely by land cover of land use. It requires basic land use information and calculates surface runoff loads. In addition, it requires basic watershed data, such as annual rainfall, stream length, and soils distribution. The loads calculated in this worksheet incorporate data from the "turf management" section of the "Existing Management Practices" tab, and model default values reflect typical lawn care practices.

#### **Secondary Sources**

Secondary sources are pollutant sources that cannot be calculated based on land use information alone. Many of these sources, such as CSOs and sanitary sewer overflows (SSOs), are at least partially composed of wastewater.

#### **Existing Management Practices**

This sheet reflects programs currently in place to control loads from urban land. Users need to input information about the effectiveness and level of implementation of various programs and practices.

#### **Proposed Management Practices**

This sheet reflects the planned extent of programs to control loads from urban land. By default, the model populates this sheet with values from the "Existing Management Practices" sheet. The user then enters data that describe proposed or "future" management practices.

#### **Retrofit Worksheet**

Stormwater retrofits are stormwater facilities put in place after development has occurred. The retrofit worksheet allows the user to input individual stormwater retrofit practices. These are then reported in the "Proposed Management Practices" sheet.

#### **Future Land Use**

In this sheet, the user enters the projected future land use in the watershed. Land use can be determined from comprehensive planning or zoning documents or forecasted using other methods. If no data are entered in this tab, the model default is to assume no growth in the watershed.

#### **New Development**

This sheet calculates the loads from future development, based on future development in the watershed, and proposed future treatment. The sheet calculates new "primary source" loadings based on the increase in area of certain land uses, then asks the user to describe the types of stormwater controls on new development. Next, it adds secondary sources,



such as loads from new septic customers and wastewater treatment plant loads. Finally, it calculates the loads from active construction as land is developed.

#### **Display Sheets**

Three sheets display final loads and runoff volumes: Existing Loads, Loads with Proposed (renamed from Future) Practices, Loads with New Development. These sheets simply sum up the loading from other sheets, and partition them into surface (both storm- and non-storm) and groundwater loads.

One additional display sheet has been added in order to simplify creating tables for the watershed plan: *Surface\_Loads\_Table4Rpt*. It simply transfers results from the other display sheets into an easy-to-print format.

#### **Model Input**

#### Primary Sources

- Land Use and Percent Impervious: Existing land use for the Skimino Creek watershed plan and the modeling was developed using analysis of GIS layers, including parcels, subdivisions, and zoning, along with overlays of orthophotography. Imperviousness was developed from the GIS layer provided by Sanborn for James City County.
- Pollutant Loading Concentration: For urban land use Event Mean Concentrations (EMCs) were derived from the National Stormwater Quality Database (Pitt et al, 2004). For rural land use, default data from the Watershed Treatment Model was used for export coefficients.
- Active Construction: The worksheet includes a line to replace a portion of the other existing land uses with construction. While there is considerable activity in the watershed, construction sediment loads were not modeled for this draft of the model.

#### Secondary Sources

- Septic systems: Loads from septic systems were based on the number of dwellings in the watershed not connected to the sanitary sewer system, estimated from GIS analysis of residential parcels.
- SSO: Sanitary overflows loads are calculated by estimating the number of overflows per 1000 miles of sewer. Local information on dwelling units and sewer length was calculated from GIS layers. Default data were used for estimating the rate of overflows in lieu of local information.
- o Illicit connections: Loads from illicit connections are calculated separately for residential and commercial land uses. For residential areas they are calculated as the fraction of population illicitly connected to the storm drains. Loads from commercial are calculated by counting the number of businesses illicitly connected. In lieu of local data, default values were used.



- Stream erosion: The model estimates the sediment from streams as a fraction of the overall watershed load. Based on the assessment that channels were largely stable, the lowest value of 25% was selected.
- Livestock: Information from the TMDL report for bacterial impairments in Ware Creek, Taskinas Creek, and Skimino Creek indicated that there were 14 horses and 12 cattle in the UTC subwatershed.
- o Marinas: There were no loads from marinas.
- Road sanding: There were no loads from road sanding.
- Point sources: These include loads from NPDES dischargers like wastewater treatment plants and they can be estimated from flow and concentration data reported in Discharge Monitoring Reports required under NPDES regulations. No point sources were identified in the watershed.

#### • Existing Management Practices

- Turf Condition and Management Practices Residential: Three inputs are required for this calculation. Percent of bare or compacted lawns and percent of highly managed lawns was averaged from the NSA assessment for the subwatershed. Percent of homes less than 10 years old was derived from "YrBuilt" in the parcel coverage.
- Turf Condition and Management Practices Other: Commercial, roadway, and industrial turf management can be entered as a comparison to residential turf. The default of "same" was used.
- o Pet Waste Education: Input is available to describe the program and its effectiveness. For this modeling, it was assumed no program was in place.
- Erosion and Sediment Control: Inputs are available to describe program effectiveness. Assumptions were made that 90% of building permits were regulated, and that monthly inspections were conducted.
- Street Sweeping: Area swept, frequency, and type of equipment can be input. For York River, no street sweeping is currently conducted, and no swept area was input.
- Impervious Area Disconnection: Disconnection for residential parcels was estimated from the number of dwellings in each subwatershed, along with information from the NSA assessment for the percent of roofs and downspouts disconnected.
- Structural Stormwater Management Practices: Drainage area and impervious area for each type of treatment was derived from GIS layers created for the watershed plan. Removal efficiencies are based on current Chesapeake Bay Program standards.
- Riparian Buffers: Buffer length and width can be estimated from GIS layers. For this modeling, no benefits from buffers were assumed.
- Catch Basin Cleanouts: No program was modeled.
- Marina Pumpouts: No program was modeled.



**Table 2-5: Land Cover Breakdown for Each Type of Land Use** 

		%	% Woods /	
LU Code	Description	Impervious	Landscaping	% Turf
SFW	Single-family, rural, wooded	7.5%	74.0%	18.5%
SFR	Single-family, rural, turf	7.5%	18.5%	74.0%
SFL	Single-family, large lot	10.0%	18.0%	72.0%
SFS	Single-family, small lot	20.0%	16.0%	64.0%
MFR	Multi-family and townhouse	35.0%	6.5%	58.5%
СОМ	Commercial	25.0%	15.0%	60.0%
INS	Institutional	20.0%	16.0%	64.0%
IND	Industrial	35.0%	13.0%	52.0%
TRNS	Transportation	50.0%	10.0%	40.0%
FUTURE LAND USE				
PDR	PUD - Residential	20.0%	48.0%	32.0%
PDC	PUD - Commercial	32.0%	38.0%	30.0%

• Stormwater Controls on New Development and Construction. Options are provided to set the assumptions for stormwater management. The option to meet a specific removal rate was selected, and the rates used were the Bay Programs SWM to the Maximum Extent Practical (MEP) values, TN = 50%, TP = 6%, and TSS = 90%. Bacteria removals were the average of the WTM defaults for wet ponds and LID: FC = 80%.

The option to require channel protection was selected.

 Data to Quantify Wastewater Loads: SSO and septic system loads were based on an assumed number of dwelling units (DU) to be constructed with new development. Using the area of additional development calculated by the model, along with an assumed density for each residential land use, the total number of DUs could be estimated. For purposes of calculating loads, it was assumed that all new residential development would be on septic.

**Table 2-6: Estimated Residential Densities in Skimino Creek Watershed** 

LU Code	Description	Density (DU/ac)
SFW	Single-family, rural, wooded	0.33
SFR	Single-family, rural, turf	0.33
SFL	Single-family, large lot	0.5
SFS	Single-family, small lot	2.0
MFR	Multi-family and townhouse	8.0
PDR	PUD - Residential	2.4



## 2.7 Future Land Use and Imperviousness

Future land use is forecast for the rural residential areas to continue to be rural. The higher density commercial area along Richmond Road is forecast to expand with mixed uses. Overall, forest cover will be reduced by about 38 with the construction of residential uses which will double compared to existing residential acreage. Table 2-7 shows a comparison of existing conditions, the forecast changes and the resulting future land use and imperviousness. The impervious cover in the watershed is forecast to almost double, from 3.8% to 6.4%.

Table 2-7: Future Land Use and Imperviousness in Skimino Creek Watershed

		Existing	Changed	Future	Existing	Changed	Future	EX %	FUT %
Land Use		Area	Area	Area	IA	IA	IA	lmp	lmp
URBAN									
Single-family,									
rural, woods	SFW	1,183.4	522.6	1705.8	49.1	78.8	127.9	4.1%	7.5%
Single-family,									
rural, turf	SFR	166.9	404.3	571.2	9.8	33.0	42.8	5.9%	7.5%
Single-family,									
large lot	SFL	427.3	30.8	458.2	35.0	10.8	45.8	8.2%	10.0%
Single-family,									
small lot	SFS	146.9	30.7	177.4	21.1	14.4	35.5	14.3%	20.0%
Multi-family /									
townhouse	MFR	-	-	-	-	-	-	-	34.4%
PUD, residential	PDR	-	-	-	-	-	-	-	20.0%
Commercial	COM	172.8	198.0	370.2	80.0	12.6	92.6	46.3%	25.0%
Institutional	INS	283.2	-	283.2	8.3	0	8.3	2.9%	2.9%
PUD, commercial	PDC	-	-	-	_	-	-	_	32.0%
Industrial	IND	20.6	10.0	30.6	1.6	9.1	10.7	7.5%	35.0%
Transportation	TRANS	367.6	-	367.6	119.5	64.3	183.8	32.5%	50.0%
Urban Open Space		209.3	34.0	175.3	12.2	-3.4	8.8	5.8%	5.0%
RURAL									
Agriculture	AGR	701.9	(414.5)	287.4	11.7	(9.9)	1.8	1.7%	1.0%
Open space,									
meadow	TURF		-	-	-	-	-	0.4%	-
Forest	FOR	4,847.8	(764.8)	4,101.0	18.8	-	18.8	0.1%	0.1%
Harvested Forest		168.0	-	168.0	0.2	-	0.2	0.5%	0.1%
Water	WAT	128.2	-	128.2	0.1	-	0.1	0.1%	0.1%
Wetland	WETL	830.9	-	830.9	1.2	_	1.2	0.1%	0.1%
TOTAL		9,654.9	(0.0)	9,654.9	368.6	246.9	615.5	3.8%	6.0%



3

# Watershed Goals and Strategic Actions

Through the process of completing each previous Watershed Management Plan, including those for Powhatan Creek, Yarmouth Creek, Gordon Creek, and Mill Creek, JCC has distilled four overarching goals for watershed protection and restoration of the Skimino Creek Watershed. These are:

- 1. Minimize the further degradation of water quality and preserve, restore and maintain the outstanding quality of all streams within the watershed as well as tidal and nontidal wetlands.
- 2. Develop in a manner that is consistent with the protection of living resources: avoid habitat fragmentation and encourage the preservation of riparian and wildlife corridors.
- 3. Promote active stewardship among residents, community associations, businesses, and seasonal visitors.
- 4. Promote viable traditional and emerging rural economic initiatives (production of local agricultural and forestry commodities, agri-tourism, eco-tourism, etc.).

Having these fundamental goals allows for a consistent and focused approach to planning. Recognizing that each watershed has unique characteristics, JCC developed a Baseline Assessment Report (summarized in Chapter 2) and solicited stakeholder input. Armed with this information, the eight tools of watershed protection (CWP 1998) and a review of actions included in previous watershed management plans, a suite of **Strategic Actions** for the Skimino Creek watershed was developed to achieve these Watershed Goals. JCC staff from various departments collaborated on the development and refinement of the Strategic Actions. This process ensured input from a broad pool of individuals having knowledge and experience in different disciplines and thus made certain all aspects of watershed management planning were addressed.

The process of establishing the Strategic Actions for the Skimino Creek watershed was governed by four basic principles. Strategic Actions should:



- be cost-effective and capable of being readily executed by JCC Staff;
- encourage responsible development;
- promote transparent interactions between JCC and stakeholders and foster a sense of community and shared responsibility in watershed stewardship; and
- address known problem areas with effective and long-term solutions.

A total of 20 Strategic Actions were developed and are included in Table 3-1, cross-referenced with the Watershed Goal(s) to which they address. Many of the resulting Strategic Actions that are considered as Programmatic / **Technical and Educational Efforts** are universal, amounting to a County doctrine for watershed protection and restoration. Others, particularly the **Watershed Protection Projects**, are watershed-specific.

The 20 Strategic Actions are discussed below and grouped according to how they address six of the eight tools of watershed protection (CWP 1998), which are:

- Land Use Planning;
- Better Site Design (BSD);
- Aquatic Buffers;
- Watershed Education and Stewardship Programs; and
- Stormwater Treatment Practices.
- Conservation Areas

The tools of watershed protection that have been omitted are:

- Non-Stormwater Discharges: There are no point source discharges from wastewater treatment plants within the Skimino Creek watershed.
- Erosion and Sediment Control, which is already regulated by JCC and the State.

As per previous watershed plans, the Strategic Actions presented in Table 3-1 have been prioritized based on stakeholder input and their importance to successful watershed management. Planning level cost estimates are provided along with the JCC departments that will be required to coordinate to enact each Strategic Action. An estimated \$25,000 to \$30,000 per year would be required over four years to implement these Strategic Actions, plus the costs of watershed restoration project design and permitting (costs of which are dependent on final prioritization and number of projects selected at a given time). Additional details are provided in Chapter 5, *Strategic Action Plan*.



### Table 3-1: Skimino Creek Watershed Protection and Restoration Goals and Strategic Actions

	Strategic Actions
1	Provide incentives for new development (and redevelopment) to add intermittent stream buffers, expanded RPA and mainstem buffers, preserve identified conservation areas, minimize impervious cover, and maximize contiguous open space.
2	Identify areas within the watershed where riparian corridors are in an unnatural condition and seek ways, including incentives, to restore those areas to their natural condition.
3	Implement Special Stormwater Criteria for all new plans for development (except those with approved plans or in review)
4	Promote alternative funding sources for special resource areas (e.g., riparian buffers and conservation areas). Determine how much buildable land is in the watershed.
5	Identify key stakeholders within the watershed (landowners, schools, etc.) that can help implement watershed planning objectives. Work with them to develop a shared vision for preserving natural resources through community actions and provide opportunities for them to contribute to the attainment of watershed management goals.
6	Continue to fully implement the requirements of the County's MS4 permit in relation to watershed management throughout County.
7	Update or develop new Better Site Design (BSD) educational materials to be made available to developers, homeowner's associations, and citizens and conduct training.
8	Continue to work with County departments to incorporate BSD requirements into applicable ordinances and into state/county stormwater management regulations, and to develop consistent review procedures.
9	Use subwatershed maps to ensure James City County staff and stakeholder awareness of existing locations for restoration and potential conservation areas.
10	Continue to support and grow a citizen/volunteer-based team of individuals to routinely perform assessments of stream health, including sampling for benthic macroinvertebrates, water quality indicators, and photodocumentation.
11	Improve the availability of educational materials by developing materials for use by HOA's and neighborhood associations. Educate people about watershed awareness including proper disposal of fats, oils, grease, and other chemicals, pet waste, onsite waste disposal systems, trash, on-lot rainwater harvesting, and biofiltration techniques. Utilize the county website and other social media.
12	Conduct additional feasibility assessments, validate, and carry out the stormwater retrofits, outfall repairs and stream restorations identified in this watershed plan.



13	Continue to utilize available regional / state / federal data in the County GIS database, including but not limited to data from the DHR-DSS, DCR-DNH and DGIF to: a) assist in prioritizing conservation areas; b) ensure that potential development opportunities fully appreciate the cultural and natural resources within the footprint; and c) be sensitive to potential resources when and where any emergency action is needed.
14	Consider participation in the Virginia Big Tree or similar recognition program to identify historic and specimen trees and promote the importance of trees to the landscape
15	Develop an inter-departmental rapid response protocol and team to deal with unforeseen and emergency threats to water quality and infrastructure (e.g., leaking sewer lines, storm-related or unpredictable channel and bank erosion, hazmat spills, etc.)
16	Develop guidelines to lessen steep slope threshold to 15% from 25% in areas with highly erodible soils
17	Develop guidelines for the management of invasive plant species
18	Promote the use of nutrient management planning for existing residential areas
19	Promote responsible agriculture or forestry land uses, including coordination with the Colonial Soil and Water District, USDA-NRCS and VDOF



## 3.1 Land Use Planning

Since the Skimino Creek watershed is only moderately developed, the need for responsible development and careful land use planning is critical to achieving the watershed goals. By understanding where known watershed issues occur and the sensitive resources are located, proposed new development and redevelopment activities can proceed in the most informed way possible. Where applicable, watershed restoration opportunities can be realized as part of these developments.

**Priority #10 - Strategic Action:** Use subwatershed maps to ensure James City County staff and stakeholder awareness of existing locations for restoration and potential retrofits.

Mapping developed during the Baseline Assessment overlain with the locations of recommended Watershed Restoration Projects constitutes a key tool of this watershed management plan: subwatershed management planning maps. These maps synthesize the elements of the planning process in a stand-alone product that can be used by JCC staff to gain a snapshot of subwatershed conditions and recommendations. They also represent valuable tools for stakeholder interaction and outreach.

**Priority #1- Strategic Action:** Provide incentives for new development and redevelopment to add intermittent stream buffers, expanded RPA and mainstem buffers (including slopes of 15% or greater), minimize impervious cover, and maximize remaining contiguous open space.

This watershed management plan includes no new requirements for enhanced riparian buffers. Rather, JCC recognizes that incentives are effective for establishing or enhancing buffers for new development and redevelopment, as well as the maximizing of remaining open spaces, especially in headwater locations. Such areas would only include those not already subject to regulatory protection of some kind (e.g., Chesapeake Bay Protection Areas and their buffers). Similarly, incentives could also be sought for the restoration of previously disturbed areas. Two Strategic Actions are included to address such an approach:

**Priority #2 - Strategic Action:** Identify areas within the watershed where riparian corridors have been damaged, disturbed or are in an unnatural condition and seek ways, including incentives, to restore those areas to their natural condition.

The Conservation Area Report included in Appendix A identified potential tracts of contiguous forest in the Skimino Creek watershed. Because of the level of development in the York River subwatersheds, five tracts of forested land meeting the general screening criteria of being 100 m [330 feet (ft)] square were identified in the Skimino Creek watershed. Based on forest structure, condition and intactness, a total of eight tracts provide conservation opportunities.

In 1970, the 4-H and Future Farmers of America initiated the Virginia Big Tree Program, aimed at locating and recognizing the importance of large specimen trees in the landscape. This program continues at present and may provide an educational opportunity that can introduce



potential stewards to the breadth of their watershed. Moreover, the search for and identification of big trees may uncover particular value in the surrounding woods.

In keeping with the conservation minded recommendations discussed above, the following Strategic Action is included with respect to the Virginia Big Tree Program:

**Priority #16 - Strategic Action:** Consider participation in the Virginia Big Tree or similar recognition program to identify historic and specimen trees and promote the importance of trees to the landscape.

### 3.2 Better Site Design (BSD)

Better Site Design (BSD) is a development technique used to maintain existing hydrology, preserve contiguous open space and minimize impacts from impervious surfaces. The Local Site Planning Roundtable in JCC was modeled after the National Site Planning Roundtable, the 22 Model Development Principles and four basic objectives:

- Reduce overall site impervious cover
- Preserve and enhance existing natural areas
- Integrate stormwater management
- Retain a marketable product

The JCC Local Site Planning Roundtable was established to review existing development codes and identify regulatory barriers to environmentally sensitive residential and commercial development at the site level. The Roundtable recommendations include suggested general and specific code and ordinance revisions that will increase flexibility for site design standards and promote the use of open space and flexible design development in JCC (JCC 2007a). This process was focused on model development principles at the site level and did not include discussions on zoning or land use.

Better Site Design in James City County: Report and Findings from the Better Site Design Implementation Committee, dated September 2007, summarizes the 24 model principles and the Committee's proposed implementation recommendations. The Committee noted that knowledge of BSD principles and techniques varies among JCC staff, legislators, planners and engineers within the development community. This inconsistency and lack of knowledge and training is a major hurdle in implementing the BSD principles. Opportunities are lost during the design review process if staff or legislators do not request inclusion of BSD features in a development plan. The Committee recommended that JCC conduct a one-day internal BSD training seminar to educate staff, Planning Commissioners and the Board of Supervisors that was recommended by the BSD Committee. This internal seminar should train attendees on the benefits of BSD; how to encourage applicants, early in the design and approval process, to apply BSD techniques; and how to respond to typical misconceptions associated with BSD techniques (JCC 2007a).



Many of the principles have been implemented already, but the following items are still pending

- Develop a BSD checklist;
- Incorporate stormwater facility manual revisions for Low Impact Development (LID) and BSD elements;
- Consider ordinance changes (Cluster Ordinance) and policy development regarding street widths; and
- Develop or continue using a variety of educational materials.

Considering the preceding points, the following Strategic Actions regarding BSD are included:

**Priority #7- Strategic Action:** Update or develop new Better Site Design (BSD) educational materials to be made available to developers and homeowner's associations and conduct training.

**Priority #8- Strategic Action:** Continue to work with County departments to incorporate BSD requirements into applicable ordinances and into the County Best Management Practices Manual, and to develop consistent review procedures.

JCC realizes that the responsibility for the implementation of BSD cannot necessarily lie solely with developers and their engineers and that JCC must be proactive about staying abreast of current technology and methods and trends in BSD. This is especially true with respect to redevelopment, which presents particular challenges due to site constraints (i.e., site size, abutters, location of existing infrastructure and utilities). JCC recognizes that internal training is also necessary to ensure staff members in various government divisions are familiar with BSD tenets and applications and that they recognize the importance of BSD in watershed protection, especially early in the site design process. Once a site is developed with BSD, the property owner takes over responsibility for maintenance of the systems. Often, homeowners, business owners and owner associations do not understand how to best maintain BSD measures.

## 3.3 Aquatic Buffers

**Priority # 1 - Strategic Action:** Provide incentives for new development and redevelopment to add intermittent stream buffers, expanded RPA and mainstem buffers, preserve identified conservation areas, minimize impervious cover and maximize contiguous open space.

**Priority # 2 - Strategic Action:** Identify areas within the watershed where riparian corridors are in an unnatural condition and seek ways, including incentives, to restore those areas to their natural condition.

Unexpected failures of road surfaces, embankments, stormwater management facilities and sanitary sewer lines can occur in response to major storm events, transportation accidents and inadequate monitoring and maintenance. For instance, many residences continue to dispose



of cooking-related oils, fats, and grease by flushing it down sink drains. These materials can cause sanitary sewer line blockages that result in surcharges of untreated sewage from manholes where it can migrate to nearby watercourses.

Roadbed and stormwater facility failures and SSOs can have dramatic and cascading effects on stream and wetland heath, including stream channel and bank erosion, excessive sediment deposition and associated habitat loss, downstream transportation of bacteriological hazards or other hazardous materials. These impacts, along with the potential loss of infrastructure, are compounded if the problems are not quickly identified and addressed and responsible parties held accountable for reparations to failed facilities and the restoration of affected natural resources. For this reason, the following Strategic Action has been included:

**Priority # 17 - Strategic Action:** Develop an inter-departmental rapid response protocol and team to deal with unforeseen and emergency threats to water quality and infrastructure (e.g., leaking sewer lines, storm-related or unpredictable channel and bank erosion, hazmat spills, etc.)

# 3.4 Watershed Education and Stewardship Programs

**Priority #12 - Strategic Action:** Improve the availability of educational materials by developing materials for use by HOA's and neighborhood associations. Educate people about watershed awareness including proper disposal of fats, oils, grease and other chemicals, pet waste, onsite waste disposal systems, trash, on-lot rainwater harvesting and biofiltration techniques.

**Priority #15 - Strategic Action:** Enhance stewardship by specifically addressing litter and shoreline erosion.

The Skimino Creek watershed is an actively developing watershed. As such, there are many pathways by which household and commercial waste material can enter the stormwater and/or sanitary sewer networks. Careless disposal of rubbish can result in serious blockages in stormwater drains, manholes, pipes, and culverts. These blockages can create flooding in upstream areas and erosion where floodwaters cascade over road surfaces or the sides of stormwater facilities. Illicit dumping of hazardous materials poses a considerable water quality problem at locations within the Skimino Creek watershed and in JCC in general. Items such as car batteries, antifreeze and spent motor oil have been observed along with less noxious but nevertheless undesirable refuse such as washers, water heaters and so on.

Direct deposit of feces from wildlife into streams and deposition in neighboring forested areas represents a relatively minor non-point source of bacteria to Skimino Creek at 3% and 6%, respectively (DEQ 2008). Management of wildlife so as to limit such occurrences is difficult. The long stretches of contiguous forest and hence preferred corridors for wildlife correspond with streams and their floodplains, most of which are protected by RPAs. Therefore, wildlife



preferentially inhabit these areas and opportunities for direct deposit are higher than in relatively undeveloped watersheds.

JCC is not proposing any reduction of wildlife populations or natural background conditions as a means of decreasing non-point sources of bacteria in the watershed. Alternately, the TMDL Implementation Plan proposes Wildlife Contribution Controls such as reducing turf and open areas around ponds to discourage resident wildlife populations, particularly geese and other waterfowl.

Providing educational materials for property and business owners would provide a sense of the importance of water quality issues to the overall environmental health within the Skimino Creek watershed and instruction on the proper disposal of both hazardous materials and those items which may have previously been considered relatively benign (e.g., cooking oils and animal fats). Actively engaging watershed residents can promote feelings of ownership and responsibility for local resources, a number of which have already been impacted by land development.

Specific areas to be addressed through an education program should include: preferred practices for lawn and garden care, invasive species management/control, pet waste disposal, environmentally sensitive car maintenance practices, septic system inspections and repair when necessary, and the proper disposal of household hazardous wastes, including cooking oils and animal fats. Many riparian buffer areas within the watershed are located on private property and are often subject to encroachment, homeowners should be educated on the benefits of maintaining undisturbed vegetated buffers along stream and wetland areas.

Specific actions that JCC can take to maximize the potential success of an educational watershed program include:

- Continue to support and promote the JCC Turf Love program to educate property owners on preferred lawn and garden care;
- support and help promote volunteer litter prevention efforts;
- utilize existing communication tools for the residents of the watershed to distribute educational materials on actions residents can take to protect their waterresources;
- provide workshops for residents to showcase on-going restoration projects, best management practices examples and daily practices they can implement to protects water quality;
- expand the use of social media to reach a broad range of County citizens and to promote workshops and volunteer opportunities; and
- support volunteer water quality monitoring efforts (both for baseline data collection and in areas of concern).

A specific Strategic Action has been added with respect to this last point:

**Priority #11 - Strategic Action:** Continue to support and grow a citizen/volunteer-based team of individuals to routinely perform rudimentary assessments of stream health, including sampling for benthic macroinvertebrates, water quality indicators and photodocumentation.



JCC has carried out semi-annual sampling for benthic macroinvertebrates using JCC specific protocol. Volunteers trained by JCC staff have been engaged in monitoring activities since 2008. In 2009, JCC began monthly Coliscan Easygel monitoring at five locations in the Mill Creek watershed to screen for the presence of fecal coliform in the waterway. In 2010, volunteers took over this effort and JCC is looking to expand the number of sites.

Performing routine assessments of stream health offers multiple benefits, including:

- baseline information against which future studies can be compared, offering the ability to link trends in water quality improvement / decline to activities in the contributing subwatershed; and
- educate the public with respect to wildlife habitat and biodiversity, stream health, vectors for water quality degradation and the importance of watershed stewardship.

The continued promotion of watershed education would also provide residents with a voice in County decision making processes concerning development within their watershed. Providing landowners with adequate information regarding the role they can play in protecting their aquatic resources can potentially offset the level of effort required by JCC in the form of stormwater retrofits and stormwater facility maintenance.

**Priority #20 - Strategic Action:** Promote the use of nutrient management planning for existing residential areas.

#### 3.5 Stormwater Treatment Practices

**Priority #13 - Strategic Action:** Conduct additional feasibility assessments, validate and carry out the stormwater retrofits and stream restoration opportunities identified in this watershed plan.

The methodology for identifying and ranking the candidate Watershed Restoration Projects is provided in Chapter 4, *Watershed Restoration* and the selected sites are summarized and mapped for easy reference in Chapter 6, *Subwatershed Management Plans*.

**Priority #9 - Strategic Action:** Work with private landowner(s) to develop feasibility plans for the dam at Richardson's Mill Pond, including but not limited to evaluating potential funding sources for the repair, monitoring and maintenance of the dam and associated roadway, assessment for archaeological resources, potential impacts to archaeological and environmental resources and public health and safety associated with dam failure.

The Richardson's Mill Pond serves as a major stormwater facility providing water quality treatment for the Stonehouse development including the residential and commercial phases. Repair, monitoring and maintenance of the pond and dam are imperative to the water quality downstream of the dam.



**Priority #3 - Strategic Action:** Implement Special Stormwater Criteria for all new plans for development (except those with approved plans or in review). One example would be the evaluation of outfall stilling basins, the design and construction of them, and if the state standard is adequate given the erosion at these locations within the watershed.

**Priority #6 - Strategic Action:** Continue to fully implement the requirements of the County's MS4 permit in relation to watershed management throughout the County.

JCC is required to have a Virginia Stormwater Management Program (VSMP) permit to discharge stormwater into local waterways. The specific permit is referred to as the Municipal Separate Storm Sewer System (MS4) General Permit and is issued by the State Department of Environmental Quality (DEQ). The State program was established in response to federal requirements under the Clean Water Act and is administered by the Environmental Protection Agency (EPA).

The permit requires JCC to develop a stormwater management program that addresses six specified minimum control measures. The six minimum control measures to be used in the County's program are the following:

- Public Education and Outreach on Stormwater Impacts
- Public Involvement/Participation
- Illicit Discharge Detection and Elimination (IDDE)
- Construction Site Stormwater Runoff Control
- Post-Construction Stormwater Management in New Development and Redevelopment
- Pollution Prevention/Good Housekeeping for Municipal Operations

Each control measure has an extensive list of initiatives with measurable goals, metrics for determining success and timelines. JCC's plan to implement the MS4 permit can be found at http://www.jamescitycountyva.gov/992/MS4-Permit.

#### 3.6 Conservation Areas

Additional watershed management recommendations include actions to support conservation areas identified in this watershed plan. JCC should play an active role in facilitating discussions between stakeholders and strategic partners such as the Williamsburg Land Conservancy, The Nature Conservancy, The Virginia Outdoors Foundation and James River Association.

**Priority #4 - Strategic Action:** Promote alternative funding sources with regards to special resource areas (e.g., buffers and conservation areas), working with the stakeholder watershed group to identify and conserve these lands.

**Priority #5 - Strategic Action:** Identify key stakeholders within the watershed (landowners, schools, etc.) that can help implement watershed planning objectives. Work with them to develop



a shared vision for preserving natural resources through community actions and provide opportunities for them to contribute to the attainment of watershed management goals.



4

## **Watershed Restoration**

#### 4.1 Stream Restoration Assessment

Field data collected during the Baseline Assessment represent the foundation for decision-making with respect to potential stream restoration and enhancement activities aimed at addressing unstable drainages within the watershed. The habitat assessments and field notes associated with all mapped SARs and point impacts were processed to identify locations for potential remedial action and to determine the best course of action. The following sections describe the methodology used to evaluate the data and select appropriate watershed restoration projects.

# 4.1.1 Methodology for Identifying Candidate Projects: Stream Assessment Reaches

As previously described in Section 2.4, each SAR was assessed utilizing both the Habitat Assessment and Floodplain Assessment and then placed into one of four Assessment Rating categories: EXCELLENT, GOOD, FAIR or POOR. To determine the breakpoints between Assessment Rating categories, the three highest scores in the watershed for both the Habitat and Floodplain Assessments were averaged. Scores totaling over 90 percent of that value are considered EXCELLENT; between 81 and 90 percent are GOOD; between 61 and 80 are FAIR; and below 60 are POOR. This procedure was applied to both the Habitat and Floodplain Assessment scores. Only those SARs which received POOR or FAIR scores for either Habitat or Floodplain were evaluated for potential remedial action. The suite of potential remedial actions is described in the following three sections below, as defined by the Wilmington District of the U.S. Army Corps of Engineers (USACE 2003):



#### 4.1.1.1 Stream Restoration

Stream restoration is generally considered the process of converting an unstable, altered or degraded stream corridor, including adjacent riparian zone and flood-prone areas, to its natural stable condition considering recent and future watershed conditions. This process should be based on a reference condition/reach for the valley type and includes restoring the appropriate geomorphic dimension (cross-section), pattern (sinuosity) and profile (channel slopes), as well as reestablishing the biological and chemical integrity, including transport of the water and sediment produced by the stream's watershed in order to achieve dynamic equilibrium.

#### 4.1.1.2 Stream Enhancement

Stream rehabilitation activities undertaken to improve water quality or ecological function of a fluvial system are considered stream enhancement. Enhancement activities generally will include some activities that would be required for restoration. These activities may include instream or stream-bank activities and often are used to improve functions on an already adequately functioning stream. In other situations, enhancement activities may fall short of restoring one or more of the geomorphic variables: dimension, pattern and profile. Any proposed stream enhancement activity must demonstrate long-term stability.

#### 4.1.1.3 Streambank Stabilization

The in-place stabilization of an eroding streambank can utilize a number of stabilization techniques, which include primarily natural materials, like root wads and log crib structures, as well as sloping stream banks and revegetating the riparian zone. In addition to performing the Habitat and Floodplain Assessments, field scientists also used best professional judgment to categorize each SAR for both Restoration Potential (High, Moderate, Low or None) and Restoration Access (Difficult, Moderate or Good). The former metric considered a variety of non-quantitative criteria (e.g., potential damage to private property and infrastructure, etc.) and represented a means for the field scientist to identify potential candidate sites in instances where the more formal field protocols may otherwise suggest benign conditions are present. Similarly, this same option allowed scientists to call out stream reaches that may score as FAIR or POOR, but clearly have little or no need for remediation.

## 4.1.1.4 Considering Local Conditions in Floodplain Scoring

As described in Section 2.4, the floodplain connectivity is typically optimal or suboptimal wherever E-type streams were found. The overall floodplain score was often diminished by low scores for "Flood Flow Status" and "Floodplain Surface Scouring". This is because concentrated flow outside the channel is common, particularly with the high degree of seepage typical in these valleys and frequency of beaver activity noted in the watershed. Moreover, the "Floodplain Habitat" metric was often scored as marginal because a diversity of wetland and



upland settings are rare in the bottomlands, with the former being dominant. This should not be considered a detraction but merely a reflection of local conditions. Lower scores for these metrics occasionally brought the overall floodplain score into the FAIR category and thus triggered an evaluation for stream restoration potential.

# 4.1.2 Methodology for Identifying Candidate Projects: Point Impacts

As noted in the Stream and Floodplain Assessment / Conservation Area Report, all assessed point features (e.g., stormwater outfalls, utility and stream crossings, etc.) were assigned a severity score from one to five based on the perceived degree of instability or impact on stream resources. Any point impact with a severity score of three, four or five was deemed to warrant consideration of some means of remediation, while features with a severity score of one or two were considered relatively fairly stable and required no action. Exceptions were made if the judgment of the field scientist determined that the point impact may have consequences not fully categorized by the method of assessment on the field data form.

# 4.1.3 Selection of Candidate Watershed Restoration Projects

Candidate projects were determined based on the methodologies listed above. The following sections discusses the results of the assessment, culminating with the list of potential watershed restoration projects.

#### 4.1.3.1 Stream Assessment Reaches

A total of 62 SARs were determined to have Habitat and/or Floodplain Assessment Ratings of POOR or FAIR and therefore were earmarked for further investigation. Also, SARs that score as having POOR or FAIR Habitat or Floodplain Assessment Ratings, but which exhibit a Restoration Potential rating of Low or None, were re-evaluated as well. This process trimmed the list of SARs warranting potential remediation to 8, encompassing a total of 5,249 linear feet or 1 mile. The entire list of candidate SARs is presented in Table C-1 in Appendix C and organized by subwatershed, including the specific action identified as most appropriate based on the preliminary field assessment. The locations of the 62 final candidates are provided in Figures 6-1 through 6-4 in Chapter 6 Subwatershed Management Plans.

#### 4.1.3.2 Point Impacts

A total of 17 stormwater outfalls were assessed as part of the study and while there were some stormwater issues in the Skimino Creek watershed, three (3) outfalls were given a severity of 4 or 5 (Table C-2). More detailed plans specific to each outfall are subject to additional studies. This is especially true if they are associated with a SAR that is proposed for remediation, as the



conceptual design for the restored stream may have implications on the design location and elevation of the outfall as it ties into the restored stream reach. Outfall stabilization techniques may include pipe replacement, velocity dissipaters such as plunge pools or step pools, bank grading and stabilization, and regenerative stormwater conveyance applications. Twelve (12) stream crossings (Table C-2) identified as requiring restoration treatment to remove sediment and debris from the upstream end of the culvert. The potential for stream bank stabilization was identified for four (4) severe bank erosion locations (Table C-2) requiring spot treatments. For each of the eight (8) trash and debris impact locations, the specific action is simply "Local Clean-up" (Table C-2, Figures 6-1 and 6-4). The majority of the sites are small (local dumping of household trash, paint cans, etc.).

#### 4.2 Stormwater Retrofit Assessment

# 4.2.1 Methodology for Identifying Stormwater Retrofits: Desktop Assessment

A desktop assessment of the watershed was conducted to identify preliminary locations for potential stormwater retrofit opportunities. The desktop assessment involved reviewing GIS and aerial imagery for individual parcels or locations where stormwater retrofit opportunities may be ideal given readily available data and without considering site-specific constraints or other feasibility issues that require an on-the-ground site assessment to be identified. Candidate retrofit sites were identified in the following manner.

#### 4.2.1.1 Retrofit Existing Ponds

Pond retrofit sites were identified using the County's GIS database of stormwater facilities. Both dry ponds and wet ponds were included. Goals for pond retrofits included adding storage volume, converting dry ponds to wet ponds, revising outlet characteristics to trade quantity storage for water quality or adding internal design features to increase pollutant removal.

#### 4.2.1.2 Storage Above Roadway Crossings

Also known as culvert retrofits, these sites can provide water quality storage upstream of existing road culverts through installation of an embankment and excavation of a micropool. Sites were identified with topographic mapping by looking for headwater or intermittent streams flowing through a culvert.



#### 4.2.1.3 Storage or Other Treatment at Outfalls

Outfall retrofits include off-line storage, bioretention or other treatment for smaller storms, adding energy dissipation or level spreaders to reduce impacts on the stream system, or constructing a step-pool storm conveyance (SPSC) treatment system. The desktop assessment focused on outfalls with sufficient distance between the outfall and the stream system to provide treatment.

#### 4.2.1.4 Parking Lot Retrofits

Parking lot retrofits include a mix of treatment alternatives for water quality treatment, including bioretention, sand filters, infiltration or swales. Sites include islands, medians or perimeter areas. Sites were identified with GIS coverages of impervious area, topography and drainage. Municipal or institutional ownership was also considered.

#### 4.2.1.5 Treatment in the Conveyance System

Conveyance retrofits create storage or water quality treatment in existing ditches or swales by installing checkdams or conversion to wetland, bioretention or wet swale cells. Potential sites were identified with GIS coverages of the drainage network and topography to identify flow paths upstream of mapped streams.

# 4.2.2 Methodology for Identifying Stormwater Retrofits: Field Assessment

The field assessment was performed using the Retrofit Reconnaissance Investigation (RRI) protocol developed by Schueler et al. (2007). The primary focus of the RRI was to develop design concepts in the field and identify constraints to design and implementation.

For most projects, design concepts were focused on providing water quality treatment for areas which were either untreated or treated with quantity controls alone. Onsite retrofits were assessed to determine if the topography and existing conveyance system was suitable for adding filtration, infiltration or bioretention to capture flow from untreated impervious areas.

New ponds and culvert retrofits were assessed to estimate if the topography, particularly valley walls, would be suitable for detention storage without significant excavation. Culvert location and elevation were checked to see if the required secondary embankment was feasible at the site.

Existing ponds were assessed to estimate if it was feasible to add additional volume through excavation or revising the embankment height. Where it was easily accessible, the downstream



channel was inspected to assess if there were channel erosion problems immediately downstream, in which case a note was made that channel protection storage should also be considered in the retrofit design.

Field assessment of constraints was performed for all sites and included the following information:

#### 4.2.2.1 Adjacent Land Use

Impacts to adjacent landowners are variable but depend to a large extent on how successfully the stormwater control is designed into its site and the aesthetic value of its landscaping. Land use conflicts can include potential safety issues in residential areas or loss of parking area in commercial areas. Potential benefits from adjacent land use are primarily for public outreach and education. Several treatment options can be sited and designed to improve public access and can be provided with signs and outreach materials which educate visitors about the benefits of the stormwater management system. If properly landscaped, wetlands, marshes and buffers can provide passive recreation opportunities, particularly if combined with bike paths, picnic areas or playgrounds.

.....

#### 4.2.2.2 Construction Access

The ability to move construction equipment to the site and to perform the work safely once there is an important constraint. Access constraints included physical factors such as steep slopes and soft ground which could cause difficulty bringing in construction equipment and supplies. Potential environmental impacts also were noted, particularly where the field scientist believed that the impacts might outweigh the benefits of the treatment system. Any readily observable utility conflicts along the access to the site were noted.

#### **4.2.2.3 Utility Conflicts**

Utilities, which include water and sewer lines, gas lines, pipelines and electric or communications cables, may preclude construction of any of the proposed treatment systems if they are located on or adjacent to the site. Utility conflicts may not necessarily prevent the use of a particular system. However, in many cases they can be relocated as part of the project at an additional cost in design, coordination and construction. Notes were made for readily observable evidence of existing utilities at the project site. These included aboveground indicators of water lines, such as fire hydrants, sewer manholes, cable, power, telephone connections and pipeline markers.



#### 4.2.2.4 Permitting Factors

Candidate sites were assessed to determine if the project could require environmental permitting. Permitting may be triggered by impoundment of a free-flowing stream, impacts to existing wetlands, fill or excavation of floodplains, tree removal or other forest impacts. If work would be required on an existing pond embankment, the potential for a dam safety permit was noted, regardless of the size of the pond.

#### 4.2.3 Selection of Candidate Retrofits

A total of 8 individual sites were identified as being candidates for improvements based on the desktop assessment and NSA survey. Table C-3 in Appendix C describes the sites and the preliminary assessment of potential retrofit approaches. A total of 3 of the 8 individual sites were considered suitable for additional study and retrofit. Recommendations with detailed notes are provided for each site based on the feasibility assessment. The locations of the retrofit sites are provided on Figures 6-1 to 6-4 in Chapter 6 Subwatershed Management Plans.

## 4.3 Prioritizing Candidate Watershed Enhancement Projects

Once the distilled list of feasible stream and stormwater retrofit projects was finalized, the next step in the evaluation process was to rank the 9 SARs and 3 retrofit sites in terms of priority. To accomplish this goal, a Decision Support System (DSS) was developed to support organizational decision-making activities based on a consideration of watershed goals and the degree to which a project can satisfy these goals based on eight Prioritization Factors and eight Possible Conflicts. These are provided in Table 4-1.

**Table 4-1: DSS Prioritization Factors and Possible Conflicts** 

Prioritization Factors	Possible Conflicts
Water Quality / Runoff Quantity	Utility Conflicts
Restore Floodplain Connectivity	Construction Access
Aquatic Habitat	Neighborhood Impact
Sedimentation	Physical Feasibility
Environmental Awareness	Level of Design
Project Size / Scope	Private Property
Channel Condition	Permitting Issues
Condition of Contributing Watershed	Negative Environmental Impacts

The full text of the DSS, including procedures for determining scores associated with each Prioritization Factor and Possible Conflict, is included as Appendix D.



The DSS employs five general categories or "Proposed Treatments" for watershed restoration activities. These are provided in Table 4-2, along with the "Specific Actions" that can fall under each category.

**Table 4-2: DSS Proposed Treatment Categories and Related Specific Actions** 

Proposed Treatment	Speci	fic Actions
Categories	Stream Projects	Stormwater Retrofit Projects
	Stream Enhancement	Regenerative Stormwater
Restoring Degraded Channel	Stream Restoration	Conveyance
Channel Stabilization /	Stream Bank Stabilization	Regenerative Stormwater
Energy Dissipation	Stream Channel Stabilization	Conveyance
		Culvert Retrofit
		Extended Detention Wet Pond
		Extended Detention Dry Pond
Stormwater Facility Retrofit	N/A	Stormwater Wetland
		Bioretention
Infiltration	N/A	Dry Swale
Water Capture / Reuse	N/A	None Proposed for Skimino Creek

For the purposes of the Skimino Creek Watershed Management Plan, a spreadsheet matrix was created that will allow JCC to rank and prioritize stream and stormwater retrofit projects using the DSS. This is provided as Table 4-3. The projects contained therein are summarized and mapped within Chapter 6, *Subwatershed Management Plans*. Ranking is preliminary and was carried out using the scores for the Prioritization Factors only. Assigning scores for Possible Conflicts requires the collection of additional information that is beyond the scope of this watershed management plan. This information will be gathered and incorporated by JCC during subsequent feasibility studies and the ranking as provided in Table 4-3 may change accordingly.



TABLE 4-3
YORK RIVER WATERSHED MANAGEMENT PLAN
SELECTED AND PRIORITIZED STREAM AND STORMWATER RETROFIT PROJECTS

				Propo	sed Tre		t				Pric	oritizati	ion Fac	tors				F	otenti	ial Con	straint	s			
Project ID	Watershed/ Subwatershed	Associated Point Features Requiring Treatment	Drainage Area Land Use	Restore Degraded Channel Enhance Degraded Channel	Channel Stabilization/ Energy	BMP Retrofit	Infiltration	Estimated Cost	Water Quality / Runoff Quantity	Restore Floodplain Connectivity	Restore Aquatic Habitat	Reduce Sedimentaion	Project Size / Scope	Channel Condition	Condition of Contributing	Increase Environmental	SCORE: Level of Benefit	Conflicts with Existing Utilities	Construction Access	Neiborhood Impact	Physical Feasibility	Level of Design	SCORE: Degree of Complexity	SCORE: Prioritizatio n Level	Prioritizati on Level Rank
BMP-A1	York River / Barlow's Mill Pond		TRNS		Х			\$284,389	4	4	4	3	3	3	3	1	25	0	2	0	2	3	7	18	2
BMP-A-1L-A	York River / Barlow's Mill Pond	OT-1	FOR		х			\$69,854	3	2	2	3	1	2	2	1	16	1	1	1	2	2	7	9	11
BMP-A2	York River / Barlow's Mill Pond		FOR		Х			\$330,328	4	4	5	4	4	4	4	1	30	0	2	0	2	4	8	22	1
BMP-B-2L-A	York River / Barlow's Mill Pond	OT-1	FOR		Х			\$34,153	3	3	2	2	1	2	2	2	17	0	1	0	1	1	3	14	5
UTC-A2	York River / Barlow's Mill Pond	OT-1	SFW		Х			\$550,383	3	4	4	4	3	3	3	3	27	1	2	3	2	3	11	16	3
UTC-A3	York River / Barlow's Mill Pond		SFW		х			\$563,169	3	4	4	4	3	3	3	3	27	1	2	3	2	3	11	16	4
UTC-A-L2	York River / Upper Taskinas	OT-1	SFW		Х			\$235,360	3	2	2	2	2	2	3	3	19	1	2	3	2	1	9	10	9
UTC-A-R1	York River / Upper Taskinas	OT-1	SFW		Х			\$55,247	3	2	2	2	2	2	3	3	19	1	2	3	2	1	9	10	10
YR-FMP-R06	York River / Fenton Mill Pond	OT-1	СОМ			Х		\$1,000	3	1	1	2	1	3	4	3	18	1	1	1	1	1	5	13	6
YR-FMP-R07	York River / Fenton Mill Pond	OT-1	СОМ			Χ		\$62,000	3	1	1	2	2	3	4	3	19	1	1	1	1	2	6	13	7
YR-FMP-RO8	York River / Fenton Mill Pond	OT-1	СОМ			Х		\$70,000	3	1	1	2	2	3	4	3	19	1	1	1	1	2	6	13	8



5

## **Strategic Action Plan**

A draft Strategic Action Plan is provided in tabular format in Tables 5-1, 5-2 and 5-3. Table 5-1 includes goals and planning level cost estimates for Year 1, with Table 5-2 providing the same information for Years 2 through 10. Table 5-3 includes goals and planning level cost estimates for Annual Goals (Year 1-4). Costs associated with Year 1 are largely attributable to relatively inexpensive administrative and land use planning goals that set the stage for carrying out more involved and costly retrofit projects in subsequent years. The emphasis in Year 1 is establishing working alliances and making a concerted effort to promote watershed education and facilitate citizen involvement on the ground.



Table 5-1 Strategic Action Plan and Order of Magnitude Cost Estimate: Annual Goals

Watershed Protection Tool	Strategic Action or Evaluation Measure	Level of County Effort and Expense	Funding Stream	Estima	ated Cost
	ANNUAL GOALS				
Land Use Planning	Consider participation in the Virginia Big Tree or similar recognition program to identify historic and specimen trees and promote the importance of trees to the landscape. Develop guidelines for management of invasive species.	SMALL: - County will solicit volunteer support	within realm of current staff responsibilities?	\$	
Land Use Planning	Provide incentives for new development to add intermittent stream buffers, expanded RPA and mainstem buffers, preserve identified conservation areas (include slopes of 15% or greater), minimize impervious cover, and maximize contiguous open space. See Appendix A.	SMALL: - already underway, but may be necessary to update existing codes and ordinances to support incentives	within realm of current staff responsibilities	\$	20,000
Land Use Planning	Identify areas within the watershed where riparian corridors are in an unnatural condition and seek ways, including incentives, to restore those areas to their natural condition. See Appendix A.	MODERATE: - may have consultant provide watershedwide assessment - may be opportunity to have developer propose with plan(s) of development	General Fund, SLAF grants	\$	
Stormwater Treatment Practices	Continue to fully implement the requirements of the County's MS4 permit in relation to watershed management throughout County. Strongly consider infiltration practices for flow reduction and adequately sized and positioned energy dissipation at the transition from concentrated stormwater flow to the natural systems.	SMALL: - already underway	within realm of current staff responsibilities	\$	
Restoration Practices	Implement stream restoration and channel stabilization projects when opportunities present themselves. Include riparian corridor restoration as an acceptable and desirable practice.	SMALL to HIGH: - overall Management Options encapsulate high expense items such as watershed restoration projects - administrative actions are already underway	within realm of current staff responsibilities	\$	
			TOTAL	\$	20,000



Table 5-2. Strategic Action Plan and Order of Magnitude Cost Estimate: Year 1

Watershed Protection Tool	Strategic Action or Evaluation Measure	Level of County Effort and Expense	Funding Stream	Estim	ated Cost
	YEAR 1				
Land Use Planning	Use of subwatershed maps to ensure local staff and stakeholder awareness of existing locations for restoration and potential conservation areas.	SMALL: - internal coordination, distribution of paper maps and County GIS database updated	within realm of current staff responsibilities	\$	
Watershed Education / Stewardship	Improve the availability of educational materials by developing materials for use by HOA's and neighborhood associations. Educate people about watershed awareness including proper disposal of fats, oils, grease, and other chemicals, pet waste, onsite waste disposal system, rubbish, and boat wakes.	SMALL: - public notices - development and distribution of printed materials - assistance identifying permanent funding stream	General Fund	\$	5,000
Better Site Design	Update or develop new Better Site Design (BSD) educational materials to be made available to developers and homeowner's associations and conduct training.  Continue to work with County departments to incorporate BSD requirements into applicable ordinances and into the County BMP Manual, and to develop consistent review procedures.	SMALL: - public notices - development and distribution of printed materials - administrative actions	General Fund	\$	5,000
Stormwater Treatment Practices	Complete final ranking of watershed restoration projects and select highest priority projects to move forward as the Skimino Creek Integrated Stormwater Master Plan	SMALL: - coordinate review with Stormwater Program Advisory Committee - complete DSS for Possible Conflicts scoring	within realm of current staff responsibilities	\$	-
Watershed Education / Stewardship	Continue to support and grow a citizen/volunteer-based team of individuals to routinely perform rudimentary assessments of stream health, including spot erosion identification and photodocumentation.	SMALL: - explore academic and volunteer input from consulting community	within realm of current staff responsibilities	\$	
			TOTAL COST	\$	10,000



Table 5-3. Strategic Action Plan and Order of Magnitude Cost Estimate: Years 2 - 10

Watershed Protection Tool	Strategic Action or Evaluation Measure	Level of County Effort and Expense	Funding Stream	Estim	ated Cost
	YEAR 2				
Stormwater Treatment Practices	Incorporate capital projects into the Skimino Creek Integrated Stormwater Master Plan and submit as part of the JCC 6-year Capital Improvement Program for funding and phased implementation	MODERATE - completed plan set - all permits secured or in process - construction-ready plans ready for bid	CIP: Stormwater Projects	\$	250,00
Aquatic Buffers	Commence the process of developing an inter-departmental rapid response protocol and team to deal with unforeseen and emergency threats to water quality and infrastructure.	SMALL: - select County representative from each dept - hold kick-off meetings to discuss goals	within realm of current staff responsibilities	\$	
			TOTAL	\$	250,000
	YEAR 3				
Stormwater Treatment Practices	Submit the Skimino Creek Integrated Stormwater Master Plan as part of the JCC 6-yr Capital Improvement Program for funding and phased implementation	HIGH: - completed plan set - all permits secured or in process construction ready plans submitted for bid	CIP stormwater Projects	\$	250,00
Aquatic Buffers	Complete and apply the inter-departmental rapid response protocol and team to deal with unforeseen and emergency threats to water quality and infrastructure.  (also included in Strategic Actions for the Gordon Creek Watershed, but is anticipated to be a one-time fee)	SMALL: - systems in place for proper coordination among team members (administrative, mapping, telecommunications, etc.)	within realm of current staff responsibilities	\$	
			TOTAL	\$	250,000
	YEARS 4 through 10				
Stormwater Treatment Practices	Implement the Skimino Creek Integrated Stormwater Master Plan as part of the JCC 6-yr Capital Improvement Program for funding and phased implementation	HIGH: - completed plan set - all permits secured or in process construction ready plans submitted for bid	CIP stormwater Projects	\$	250,00
			TOTAL (per annum)	\$	250,000



6

# Subwatershed Management Plans

# 6.1 Barlow's Mill Pond (BMP) Subwatershed

#### 6.1.1 General Description

Barlow's Mill Pond subwatershed is the second largest of the six evaluated subwatersheds in the Skimino Creek watershed at 2,313.5 acres (Figure 2-1). It has a low percentage of impervious area at 4.2% (96.2 acres). The southern boundary is located along the boundary of James City County boundary. The BMP watershed flows to Barlow's Pond which has an outlet at Newman Road (SR 646) where it becomes the headwaters of Skimino Creek in the LSC subwatershed.

The majority of BMP subwatershed is forest, with single family rural wooded residential land and making up other significant land uses. Residential subdivisions within the subwatershed include North Cove, Broughton Tract, Westbank Farms, and Wexford Hills. The majority of the impervious surface within the BMP subwatershed is associated with transportation, primarily roads. Almost half of the subwatershed is mapped as wetlands and forested area.

#### **6.1.2** Soils

Sixty eight percent of the soils in BMP subwatershed are poorly drained type C soils, primarily Craven-Uchee complex, Emporia and Slagle soils. Type B soils make up 17.6 percent of the total and are largely comprised of Kempsville, Norfolk and Suffolk complex soils. The remaining



soils include type A soils at 5.7 percent and type D soils at 6.6 percent. Type A soils include the Kenansville and Uchee complexes while the D soils are dominated by the Johnston complex.

## 6.1.3 Land Use and Impervious Area

#### **6.1.3.1** Existing Conditions

BMP subwatershed consists of 2,313.5 acres, with a varied mixture of land use. Natural lands include 43 percent forested land and eight percent water and wetlands. Developed areas include 21 percent in single-family residential, seven percent in transportation, and one percent in industrial use. Agricultural use makes up 13 percent of the total watershed. There are no commercial areas in the subwatershed.

Total impervious cover is 96.2 acres, or 4.2 percent. Fifty-seven percent of the impervious cover is represented by paved roads. A summary of the land use within the subwatershed is shown in Table 6.1-1 and a breakdown of the impervious area is in Table 6.1-2.

Table 6.1-1: BMP Subwatershed Existing Land Use

Land Use	Area (ac)	Percent of Subwatershed	Impervious Area (ac)
Urban			
Single-family, rural, wooded	317.9	13.7%	15.1
Single-family, rural, turf	37.3	1.6%	1.7
Single-family, large lot	102.1	4.4%	8.8
Single-family, small lot	33.2	1.4%	4.6
Multi-family and townhouse	0.00	0.0%	4.0
Commercial	0.9	0.0%	0.5
Institutional (churches, schools)	4.7	0.2%	1.5
Industrial	20.6	0.9%	1.6
Transportation (roads, RR, parking)	165.7	7.2%	49.1
Urban open space	168.4	7.3%	7.7
Rural			
Agriculture (cropland and pasture)	294.1	12.7%	4.1
Forest	993.4	42.9%	1.3
Water	47.3	2.0%	0.0
Wetland	128.1	5.5%	0.2
TOTAL	2313.5	100.0%	96.2



**Table 6.1-2: BMP Subwatershed Impervious Area** 

Importious Type	Avec (24)	Percent of
Impervious Type	Area (ac)	Subwatershed
Building	14.1	0.6%
Road	55.1	2.4%
Other	27.0	1.2%
TOTAL	96.2	4.2%

#### **6.1.3.2** Future Conditions

Forested lands are projected to decrease by 38 percent and agricultural lands by 77 percent. Rural residential areas will increase to account for 37 percent of the subwatershed with planned commercial development increasing from just under one percent to a total of 8.4 percent of the watershed.

Total impervious cover is projected to increase from 96.2 acres to 224.9 acres, or 9.7 percent of the watershed. Impervious area will increase based on a mixture of future land uses with transportation, single-family small lot and industrial, accounting for the majority of future impervious acreage. A summary of the future land use within the subwatershed is shown in Table 6.1-3.

Table 6.1-3: BMP Subwatershed Future Land Use

	Area	Percent of	Impervious
Land Use	(ac)	Subwatershed*	Area (ac)
Urban			
Single-family, rural, wooded	581.86	25.15%	43.6
Single-family, rural, turf	166.10	7.18%	12.5
Single-family, large lot	107.01	4.63%	10.7
Single-family, small lot	48.33	2.09%	9.7
Multi-family and townhouse			
Planned development, residential			
Commercial	193.44	8.36%	48.4
Institutional (churches, schools)	4.72	2.04%	0.9
Planned development, commercial			
Industrial	20.57	0.89%	7.2
Transportation (roads, RR, parking)	165.69	7.16%	82.9
Rural			
Agriculture (cropland and pasture)	67.54	2.92%	0.1
Open space, meadow	165.36	7.15%	8.3
Forest	617.59	26.69%	0.6
Water	47.26	2.04%	0.1
Wetland	128.06	5.53%	0.1
TOTAL	2313.53	100.0%	224.9

<sup>\*</sup>Percentages may not add up to 100 due to rounding errors.



#### 6.1.4 Stormwater Management

There are 5 stormwater management facilities in the subwatershed, consisting of 2 infiltration basins, 1 infiltration trench and 2 wet ponds, shown in Table 6.1-4. They treat approximately 294.3 acres of the subwatershed, or 13% of the area. Fifteen percent of the subwatershed's impervious area (96.6 acres) is treated by some stormwater management, all of it for water quality. Wet ponds make up the majority of the treatment by both treated and treated impervious area.

**Table 6.1-4: BMP Subwatershed Stormwater Management** 

Stormwater Facility Type	Water Quality Treatment	Number of Systems	Treated Area (ac) *	Treated Impervious Area (ac) *
Infiltration Basin	Υ	2	5.8	1.7
Infiltration Trench	Υ	1	0.9	0.5
Wet Pond	Υ	2	287.7	12.4
Total		5	294.4	14.6

<sup>\*</sup>Area is calculated assuming that stormwater facility drainage areas are not overlapping (i.e. no additional treatment is provided by downstream stormwater facilities) as a conservative approach to avoid duplicate treatment accounting.

#### 6.1.5 Stream Assessment

Approximately 25,400 linear feet of streams were evaluated in the Barlow's Mill Pond subwatershed (Figure 6-1). The BMP subwatershed has a percent of impervious cover of 4.2 percent and while that figure is lower than other subwatersheds, its impervious areas are concentrated in each end of the subwatershed, with high impervious cover in the southwest associated with Interstate 64 and high impervious cover in the northeast associated with the Wexford Hill residential development. Most SARs had a fair or poor score for stream habitat. Pool Variability scored relatively high, most likely because flows in those channels are accentuated by concentrated (diverted) stormwater runoff. However, the metrics for substrate, available cover, sediment deposition, bank stability and vegetative protection scored lower on average for the assessed streams. The BMP subwatershed experienced a much higher degree of in-stream sediment deposition exacerbated by local development. By default, increased sedimentation also lowers in-stream habitat quality. Erosion causes bank stability, which in turn, depreciates the vegetation protection and vice versa.

The majority of the stream reaches scored good to excellent in the floodplain assessment rating. Although, the overall floodplain score was often lowered because of floodplain surface scouring and lack of vegetative diversity.

All four prioritized SAR's were assessed as Rosgen Stream Type G and exhibited vertical or lateral instability or some instances both. For these SAR's, stream restoration was recommended as the proposed treatment. The proposed treatment involves restoration of the



stream pattern, dimension and profile to provide stream stability, bed form diversity and improve habitat conditions. The prioritized stream projects for the BMP subwatershed are presented in Table 6.1-5.

Table 6.1-5: Prioritized Stream Projects and Associated Cost Estimates: BMP Subwatershed

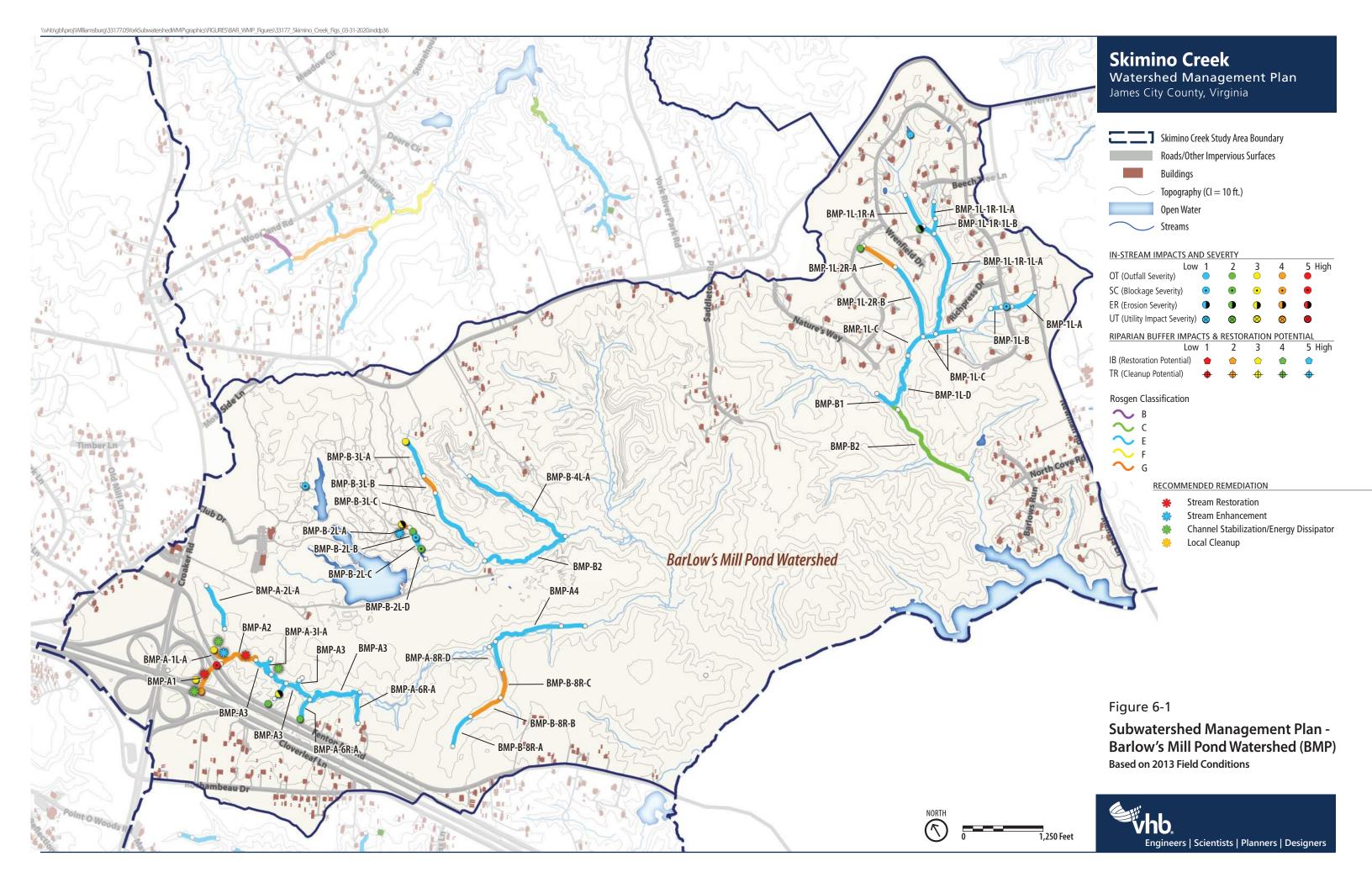
	Associated Point	Drainage Area	Priority	Overall	Specific	Estimated
	Impacts	Land Use	in FRS	Priority*	Action	Cost
BMP-A1		TRNS	2	2	Restoration	\$284,389
BMP-A-1L-A	OT-1	FOR	8	11	Restoration	\$69,854
BMP-A2		FOR	1	1	Restoration	\$330,328
BMP-B-2L-A	OT-1	FOR	5	5	Restoration	\$34,153

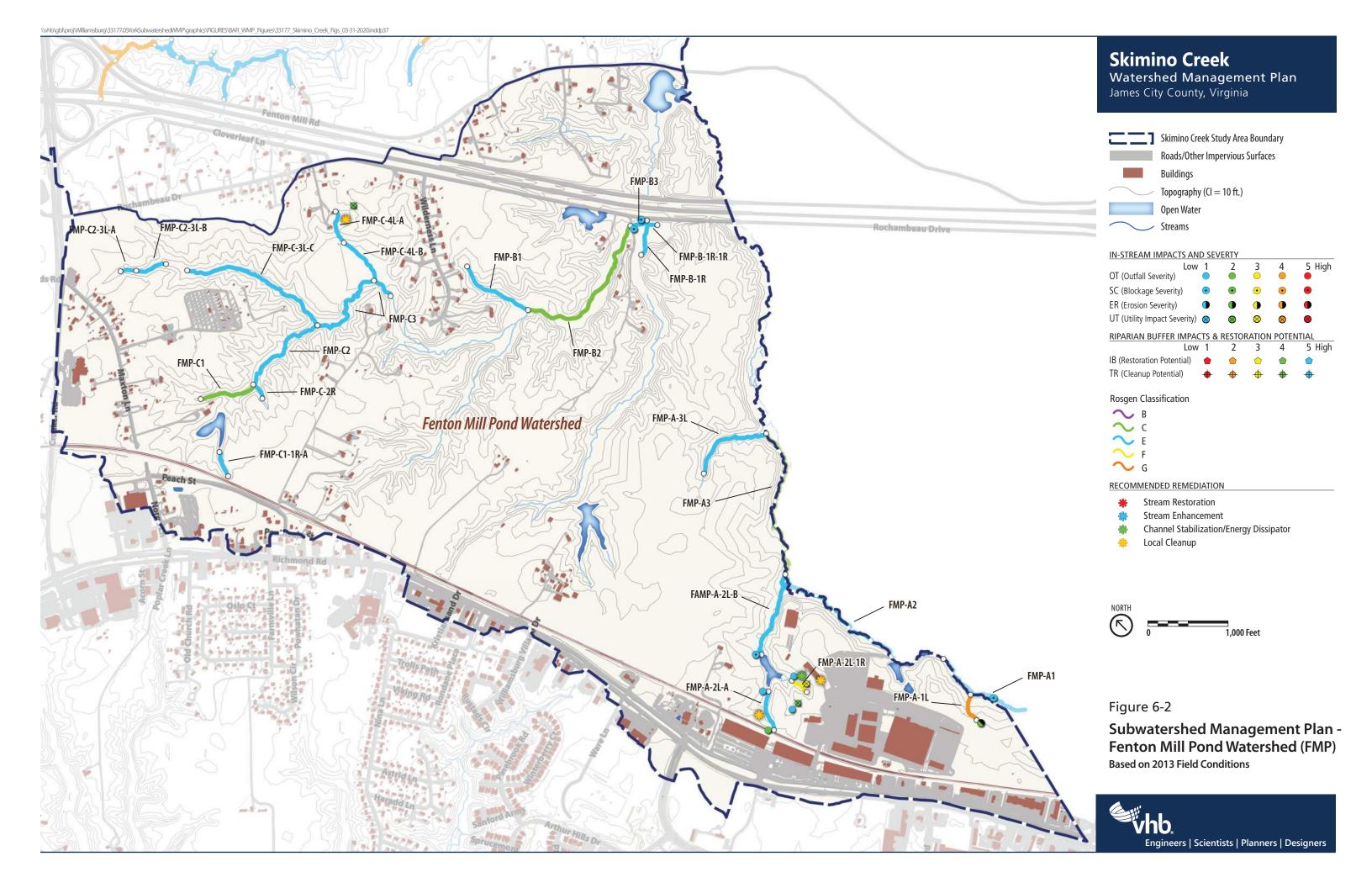
<sup>\*10</sup> total projects prioritized include 4 streams in UTC subwatershed and 2 stormwater retrofits in FMP subwatershed.

Additionally, eighteen point impacts have been prioritized for treatment in BMP. Treatment measures were proposed for the following point impacts: Storm Water Outfalls (OT), Stream Crossing (SC) and Severe Bank Erosion (ER). These prioritized point impacts are summarized in Table 6.1-6.

Table 6.1-6: Occurrences of Point Impacts within BMP Subwatershed

SAR ID	Object ID	Severity	Proposed Treatment	Specific Action
BMP-A-2L-A	OT-1	2	No Action	-
BMP-A-2L-A	OT-1	1	No Action	-
BMP-A-2L-A	OT-1	1	No Action	-
BMP-A-2L-1R	OT-1	1	No Action	-
BMP-A1-3L-A	OT-1	3	Channel Stabilization/ Energy Dissipator	Local Repair
BMP-A1-3L-B	OT-1	2	No Action	-
BMP-A-4R-A	OT-1	2	No Action	-
BMP-A1	OT-1	3	Channel Stabilization/ Energy Dissipator	Local Repair
BMP-A-A1-A	OT-1	3	Channel Stabilization/ Energy Dissipator	Local Repair
BMP-A-1R-A	SC-1	1	No Action	-
BMP-B-2L-C	SC-2	2	No Action	-
BMP-B-2L-B	SC-1	1	No Action	-
BMP-A1	SC-1	5	Restore Degraded Channel	Larger Stream Initiative
BMP-1L-A	SC-1	1	No Action	-
BMP-A-1R-A	SC-1	1	No Action	-
BMP-A1-1L-A	ER-1	3	Restore Stream Banks	Local Stream Repair
BMP-A-4F-A	ER-1	3	Restore Stream Banks	Local Stream Repair
BMP-1L-1R-A	ER-1	2	Restore Stream Banks	Local Stream Repair







#### 6.1.6 Upland Reconnaissance

Most of the residential land use in Barlow's Mill Pond was evaluated during 4 NSA assessments. The NSA Sites evaluated are presented on Table 6.1-7. They were all developed in different decades and at different densities and did not have a lot of characteristics in common. The neighborhoods in this study rely on grass ditches to convey stormwater instead of curb and gutter and closed storm drain systems. Impervious cover ranged from a low of 10% to a high of 20% in the single-family neighborhoods. Roof drains were substantially disconnected in every area assessed.

There were no significant pollutant sources in the neighborhoods assessed. Two neighborhoods had a high proportion of lawn cover; however, none of the neighborhoods had a high enough percentage of high-maintenance lawns to be identified as a pollutant source.

Tree canopy ranged from a low of 15% in the Westbank Farms neighborhood to a high of 75% in the Wexford Hills neighborhood. The areas with low canopy cover had a high portion of lawn, so there is a potential for a tree planting to improve cover over time.

Table 6.1-7: NSA Sites: BMP Subwatershed

Site ID	Location	Туре	Lot Size	Age	Curb and Gutter	% Infill	<b>WI%</b>	% Lawn	% Canopy	% High Mgmt. Lawns	% Disconnected Downspouts
YR-BMP-N01	North Cove	SFL	1-3 ac	1980s	N	None	15	15	70	5	90
YR-BMP-N02	Broughton Tract	SFS	1/2	1980s	N	None	20	60	20	0	100
YR-BMP-N03	Westbank Farms	SFS	2-3 ac	1980- 2000s	Ν	None	15	70	15	0	90
YR-BMP-N04	Wexford Hills	SFW	>3 ac	1990- 2000s	N	None	10	10	75	25	85

Pollution sources, severity, and restoration actions are shown in Table 6.1-8. Both pollution severity and restoration ranked in the lowest two categories. The neighborhoods were in good condition with few opportunities for restoration improvements.

Pollution sources varied. These neighborhoods rely on septic systems for sanitation, which are a source of nitrates in groundwater and could potentially be a source for bacteria if they fail. Two areas had high turf cover and a low amount of canopy coverage. Bare soil was a factor in one area.



Tree planting was a recommended outreach program that could be applied throughout this subwatershed. A program to encourage rain gardens to intercept roof runoff would improve water quality treatment from the existing downspout disconnection.

Table 6.1-8: NSA Results: BMP Subwatershed

Site ID	Location	Pollution Severity	Pollution Sources	Restoration Potential	Potential Action
YR-BMP-N01	North Cove	NO	None	LOW	onsite retrofit
YR-BMP-N02	Broughton Tract	MOD	None	MOD	tree planting, rain garden
YR-BMP-N03	Westbank Farms	MOD	None	MOD	tree planting, rain garden
YR-BMP-N04	Wexford Hills	MOD	None	MOD	Lawn Care, onsite retrofit

#### **6.1.7 Pollutant Loads**

#### **6.1.7.1 Existing Conditions Pollutant Loads**

Urban runoff is the largest source of pollutants and runoff volume in Barlow's Mill Pond, as shown in Table 6.1-9. Forest cover and channel erosion both contributed sediment loads as well. Bacteria from all sources of runoff generated about 87% of the total in the watershed, with septic systems contributing all but a minor portion of the remainder.

Table 6.1-9: Existing Condition Pollutant Loads: BMP Subwatershed

EXISTING CONDITIONS	Acres	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)	FC (billion/yr)	Runoff (ac-ft)
URBAN SOURCES						
Urban Runoff	850.8	3,900	939	100,947	33,815	718
Septic Systems		474	79	3,162	9,070	-
SSOs		-	-	-	-	-
Illicit Connections		3	2	26	341	-
Active Construction	_	-	-	-	-	-
Channel Erosion		67	26	83,834	-	-
TOTAL URBAN	850.8	4,444	1,046	187,969	43,226	718
RURAL SOURCES						
Rural	294.1	1,353	206	29,406	11,468	29
Forest	1,121.5	2,804	224	112,145	13,457	113
Water	47.3	605	24	7,325	-	-
Wetlands			included	l w/ forest		
Livestock		-	-	-	-	-
TOTAL RURAL	1,462.8	4,761	454	148,876	24,926	141



EXISTING CONDITIONS	Acres	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)	FC (billion/yr)	Runoff (ac-ft)
POINT SOURCES						
Municipal / Industrial		-	-	-	-	-
Marinas		-	_	-	-	-
TOTAL POINT SOURCES		_	-	_	_	
TOTAL	2,313.5	9,205	1,500	336,845	68,152	860

The totals for urban runoff shown above are the net amounts of pollutants after treatment. Existing treatment systems reduce the urban runoff load through stormwater facilities already in place by about 4-6%.

Table 6.1-10: Load Reductions from Existing Runoff Treatment: BMP Subwatershed

TREATMENT TYPE	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)	FC (billion/yr)
Impervious Area	243	36	5.822	4.284
Disconnection	243	30	5,022	4,204
Structural Stormwater	122	CO	10.012	4 170
Management Practices	133	68	10,012	4,179

#### **6.1.7.2** Future Conditions

Pollutant loading will change from existing conditions as areas are converted from forest to residential and commercial uses. No loss of wetlands or water is forecast, as they are entirely within the preservation areas.

Table 6.1-11 shows the effect of build-out on the pollutant loads. All the loads are expected to increase where a reduction from the loss of rural land uses is not matched by an urban increase. Septic system and SSO loads will increase as a function of additional residents in the watershed. All other sources were assumed to remain the same.

Table 6.1-11: Forecast Change in Pollutant Loading from Future Development: BMP Subwatershed

CHANGED LOADS					FC	Runoff
<b>EXISTING TO FUTURE</b>	Acres	TN	TP	TSS	(billion/yr)	(ac-ft)
URBAN SOURCES						
Urban Runoff	1,453.1	7,598	1,553	165,245	77,227	1,486
Septic Systems		789	132	5,261	15,088	-
SSOs		<del>-</del>	-	-	-	-
Illicit Connections		76	44	713	9,493	-
Active Construction		_	_	-	-	-
Channel Erosion		74	29	92,847	_	-



CHANGED LOADS EXISTING TO FUTURE	Acres	TN	ТР	TSS	FC (billion/yr)	Runoff (ac-ft)
TOTAL URBAN	1,453.1	8,537	1,758	264,065	101,808	1,486
RURAL SOURCES	1,433.1	0,551	1,7 30	204,003	101,000	1,400
Rural	67.5	311	47	6,754	2,634	45
Forest	745.7	1,864	149	74,565	8,948	424
Water	47.3	605	24	7,325	_	-
Wetlands			Included	l w/ forest		
Livestock	-	-	-	-	-	-
TOTAL RURAL	860.5	2,780	220	88,644	11,582	469
POINT SOURCES						
Municipal / Industrial	-	_	-	-	-	-
Marinas	-	<del>-</del>	-	-	-	-
TOTAL POINT SOURCES		-	-	-	-	
TOTAL LOAD	2,314	11,317	1,978	352,710	113,390	1,955

### **6.1.8 Candidate Sites for Improvements**

Two stormwater retrofit sites were identified from the NSA assessments. They included retrofit of one existing SWM pond and conversion of ditches to dry swales. Table 1 describes the sites and the preliminary assessment of potential retrofit approaches.

Table 6.1-12: Candidate Sites for Retrofits: BMP Subwatershed

Site ID	Location	Type of Site	Ownership	Goal	Desktop Assessment
YR-BMP-R01	Wexford Hills	Existing pond	Unknown	WQ	ID during NSA. Potential dry to wet pond Retrofit.
YR-BMP-R02	North Cove	Conveyance	Unknown	WQ	ID during NSA. Street runoff is conveyed with grass ditches. Conversion to swales would provide filtration.

A field assessment was conducted to establish whether it would be feasible to construct the projects. The results showed neither site was recommended, either because it was unnecessary or because site constraints precluded an effective design.



Table 6.1-13: Results of Field Assessment: BMP Subwatershed

Site ID	Adjacent Land Use	Land use Conflicts	Access Constraints	Potential Utility Conflicts	Potential Permitting Factors	Feasible	Recommendation
YR-BMP-R01	N/A	N/A	N/A	N/A	N/A	No. Unnecessary, existing stormwater facility is holding water and functional.	No project
YR-BMP-R02	RES	No	Trees	Possible	No	No. Construction impacts to mature trees.	No project

#### 6.1.9 Pollutant Loads

Modeling of proposed conditions included implementation of the four stream restoration reaches. No other watershed retrofits were proposed. The table below shows an estimate of the load reductions in total.

Table 6.1-14: Load Reductions for Stream Restoration Sites: BMP Subwatershed

LOAD REDUCTION	Treated Acres	Treated IA	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)
	(ac)	(ac)			
BMP-A-1	-	-	46	21	40,760
BMP-A-1L-A	-	-	14	4	4,030
BMP-A2	-	-	80	37	70,100
BMP-B-2L-A	-	-	7	2	1,980
TOTAL			147	64	116,870

# 6.2 Fenton Mill Pond (FMP) Subwatershed

### **6.2.1 General Description**

The Fenton Mill Pond subwatershed is the fourth largest of the six evaluated subwatersheds in the Skimino Creek watershed at 1,406.6 acres (Figure 2-2). It has the highest percentage of impervious area of the York River subwatersheds at 10.5 percent. The western boundary follows Richmond Road and the northern boundary meets the Ware Creek watershed at Croaker Road and Maxton Lane. The flow from the watershed drains to Fenton Mill Pond, which has an outlet through a culvert under Fenton Mill Road. It subsequently drains to Skimino Creek and the downstream subwatersheds of Barlow's Mill Pond and Lower Skimino Creek.



The majority of FMP subwatershed is single family, forest and agriculture, though it also includes a portion of commercial and institutional land uses. Residential subdivisions within the subwatershed include Remington, Pineridge, and the Paul Carrithers Estate. The majority of the impervious surface within the FMP subwatershed is associated with buildings, roads, and parking facilities. Overall, it is 56 percent rural and 44 percent urbanized.

#### **6.2.2** Soils

Sixty-four percent of the soils in FMP subwatershed are poorly drained type C soils, primarily complexes of Caroline, Craven, Emporia and Slagle soils. Type A soils make up 17.9 percent of the total and are largely comprised on Kenansville and Uchee complex soils. The remaining soils include type B soils at 9.2 percent and type D soils at 8.6 percent. Type B soils include the Kempsville, Norfolk and Suffolk complexes while the D soils are dominated by the Johnston complex.

#### 6.2.3 Land Use and Impervious Area

### **6.2.3.1 Existing Conditions**

FMP subwatershed consists of 1,406.6 acres, with a highly varied mixture of land use. Natural lands include 34 percent forested land, and six percent water and wetlands. Developed areas include 20 percent in single-family residential, eight percent in transportation, and 14 percent in commercial and industrial use. Agricultural use makes up 16 percent of the total watershed.

Total impervious cover is 147.7 acres, or 10.5 percent. Fifty-two percent of the impervious cover is represented by paved roads and parking lots. A summary of the land use within the subwatershed is shown in Table 6.2-1 and a breakdown of the impervious area is in Table 6.2-2.

Table 6.2-1: FMP Subwatershed Existing Land Use

Land Use	Area (ac)	Percent of Subwatershed*	Impervious Area (ac)
Urban			
Single-family, rural, wooded	168.9	12.0%	6.1
Single-family, rural, turf	24.1	1.7%	2.1
Single-family, large lot	74.6	5.3%	7.2
Single-family, small lot	15.7	1.1%	2.3
Multi-family and townhouse	0.0	0.0%	0.0
Commercial	171.2	12.1%	79.3
Institutional (churches, schools)	22.1	1.5%	4.3
Industrial	0.0	0.0%	0.0
Transportation (roads, RR, parking)	118.1	8.4%	36.6
Urban open space	27.8	2.0%	4.2



Land Use	Area (ac)	Percent of Subwatershed*	Impervious Area (ac)	
Rural				
Agriculture (cropland and pasture)	219.4	15.6%	4.3	
Forest	484.9	34.5%	1.3	
Water	10.7	0.0%	0.0	
Wetland	69.1	0.8%	0.1	
TOTAL	1,406.6	100.0%	147.8	

<sup>\*</sup>Percentages may not add to 100 due to rounding errors.

Table 6.2-2: FMP Subwatershed Existing Impervious Area

Impervious Type	Area (ac)	Percent of Subwatershed	
Building	34.2	2.4%	
Road	49.6	3.5%	
Other	64.0	4.5%	
TOTAL	147.8	10.5%	

#### **6.2.3.2 Future Conditions**

Forested lands are projected to decrease by 27 percent, with agricultural uses decreasing by over 85% primarily to be replaced by residential development. Total impervious cover is projected to increase to 154.8 acres, or 11.0 percent. Impervious area will increase based on a mixture of future land uses with transportation, single-family small lot and industrial, accounting for over half of the future impervious acreage. A summary of the future land use within the subwatershed is shown in Table 6.2-3.

**Table 6.2-3: FMP Subwatershed Future Land Use** 

		Percent of	Impervious
Land Use	Area (ac)	Subwatershed*	Area (ac)
Urban			
Single-family, rural, wooded	284.57	20.23%	21.3
Single-family, rural, turf	115.01	8.18%	8.6
Single-family, large lot	80.69	5.74%	8.1
Single-family, small lot		0.00%	5.0
Multi-family and townhouse		0.00%	0
Planned development, residential		0.00%	0
Commercial	176.73	12.56%	44.2
Institutional (churches, schools)	22.05	1.57%	4.4
Planned development, commercial		0.00%	0
Industrial		0.07%	3.5
Transportation (roads, RR, parking)	118.10	8.40%	59.5



Land Use Rural	Area (ac)	Percent of Subwatershed*	Impervious Area (ac)
Agriculture (cropland and pasture)	133.49	9.49%	0.1
Open space, meadow	0.99	0.07%	0.1
Forest	359.99	25.59%	0.4
Water	10.67	0.76%	0.0
Wetland	69.09	4.91%	0.1
TOTAL	1406.6	100.0%	154.8

<sup>\*</sup>Percentages may not add up to 100 due to rounding errors.

# 6.2.4 Stormwater Management

There are ten stormwater management facilities in the subwatershed, consisting of 5 infiltration basins, 1 infiltration trench, 3 wet ponds, and 1 extended detention facility shown in Table 6.2-3. They treat 200.0 acres of the subwatershed, or 14% of the area. About ten percent of the subwatershed's impervious area is treated by some stormwater management. Wet ponds make up the majority of the treatment by both treated area and treated impervious area.

**Table 6.2-4: FMP Subwatershed Stormwater Management** 

Stormwater	Water Quality	Number of	Treated Area	Treated Impervious
Facility Type	Treatment	Systems	(ac) *	Area (ac) *
Infiltration Basin	Υ	5	10.3	3.9
Infiltration Trench	Υ	1	4.2	2.2
Wet Pond	Υ	3	182.5	73.4
Extended Detention	Υ	1	3.0	1.5
Total		10	200.0	81.0

<sup>\*</sup>Area is calculated assuming that stormwater facility drainage areas are not overlapping (i.e. no additional treatment is provided by downstream stormwater facilities) as a conservative approach to avoid duplicate treatment accounting.

#### 6.2.5 Stream Assessment

Approximately 21,091 linear feet of streams were evaluated in the FMP subwatershed (Figure 6-2, Table C-1). The FMP subwatershed is the most impervious subwatershed in the Skimino Creek watershed with an impervious cover of 10.5 percent. Like Barlow's Mill Pond, the impervious areas are concentrated within distinct areas of the subwatershed and thus have only isolated impacts on stream conditions. The SAR's had stream habitat ratings ranging from poor to excellent, and floodplain ratings of fair to excellent. The FMP subwatershed experienced a higher degree of in-stream sediment deposition exacerbated by local development within the Richmond Road corridor.



By default, increased sedimentation also lowers in-stream habitat quality. Erosion causes bank stability, which in turn, depreciates the vegetation protection and vice versa.

All SARs were identified as stable C or E-type streams, except for two short reaches, one G and one F-type stream, located within the Williamsburg Pottery property and not recommended for further action at this time.

While no SARs were recommended for treatment, twelve point impacts have been prioritized for treatment in FMP. Treatment measures were proposed for the following point impacts: Storm Water Outfalls (OT), Severe Bank Erosion (ER), Stream Crossing (SC), and Trash and Debris (TR). These prioritized point impacts are summarized in Table 6.2-5.

Table 6.2-5: Occurrences of Point Impacts within FMP Subwatershed

SAR ID	Object ID	Severity	Proposed Treatment	Specific Action
FMP-A2-2L-A	OT-1	2	No Action	-
FMP-A-2I -1R	OT-1	4	Channel Stabilization/	Local Popair
FIVIF-A-ZL-TK	U1-1	4	Energy Dissipator	Local Repair
FMP-A-2L-B	OT-1	1	No Action	-
FMP-A2-2L-A	OT-1	2	No Action	-
FMP-A1	SC-1	1	No Action	-
FMP-A-2L-B	SC-1	1	No Action	-
FMP-B3	SC-2	1	No Action	-
FMP-B2	SC-1	1	No Action	-
FMP-A-1L	ER-1	2	Restore Stream Banks	Local Stream Repair
FMP-A-2L-A	TR-1	2	Remove Trash	Local Clean-up
FMP-C-4L-A	TR-4	2	Remove Trash	Local Clean-up
FMP-A-2L-1R	TR-2	3	Remove Trash	Local Clean-up

# **6.2.6 Upland Reconnaissance**

Most of the residential land use in Fenton Mill Pond was evaluated during 3 NSA assessments. The NSA Sites evaluated are presented on Table 6.2-6. Two were developed 30 to 40 years ago and one is a recent development. All three relied on grass ditches to convey stormwater instead of curb and gutter and closed storm drain systems. Impervious cover ranged from a low of 10% to a high of 25%. Roof drains were substantially disconnected in all of the areas.

Tree canopy ranged from a low of 40% in the Carrithers neighborhood to a high of 75% in the Remington neighborhood. The area with low canopy cover had a somewhat higher portion of lawn. The lots were smaller; however, which may reduce the opportunity to improve tree cover in the future.

None of the neighborhoods had a high enough percentage of high-maintenance lawns to be identified as a pollutant source, ranging from 0% to 20%.



Table 6.2-6: NSA Sites: FMP Subwatershed

Site ID	Location	Туре	Lot Size	Age	Curb and Gutter	% Infill	WI %	% Lawn	% Canopy	% High Mgmt. Lawns	% Disconnected Downspouts
YR-FMP-N01	Remington	SFW	>1	2000s	N	None	10	15	70	20	90
YR-FMP-N02	Pineridge	SFL	>1	70s/80s	N	<5	20	15	60	5	95
YR-FMP-N03	Carrithers, Paul	SFS	1/2	70s/80s	N	None	25	35	40	0	95

Pollution sources, severity, and restoration actions are shown in Table 6.2-7. Both pollution severity and restoration ranked in the lowest two categories. The neighborhoods were in good condition with few opportunities for restoration improvements. All of the neighborhoods use septic systems for sanitation, which are a source of nitrates in groundwater and could potentially be a source for bacteria if they fail.

Recommendations include onsite retrofits and rain gardens in the Remington and Carrithers neighborhoods. The restoration potential was low or moderate for all three areas.

Table 6.2-7: NSA Results: FMP Subwatershed

Site ID	Location	Pollution Severity	Pollution Restoration Sources Potential		Potential Action
YR-FMP-N01	Remington	MOD	None	LOW	Onsite retrofit
YR-FMP-N02	Pineridge	NO	None	LOW	None
YR-FMP-N03	Carrithers, Paul	NO	None	MOD	Rain Garden

#### **6.2.7 Pollutant Loads**

#### **6.2.7.1** Existing Conditions

Urban runoff is the largest source of pollutants and runoff volume in Fenton Mill Pond, as shown in Table 6.2-8. Runoff from rural land use and forest cover contributed loads as well. Two other sources shown from the model results were septic systems from residential areas and illicit discharges from commercial sites, which contributed to nutrient, sediment, and bacteria pollutant loads.



Table 6.2-8: Existing Condition Pollutant Loads: FMP Subwatershed

EXISTING CONDITIONS	Acres	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)	FC (billion/yr)	Runoff (ac-ft)
URBAN SOURCES						
Urban Runoff	622.6	4,188	698	88,933	35,406	734
Septic Systems		223	37	1,490	4,273	-
SSOs		-	_	_	-	-
Illicit Connections	_	31	18	287	3,825	-
Active Construction	_	-	-	-	-	-
Channel Erosion	_	47	18	58,631	-	-
TOTAL URBAN	622.6	4,489	771	149,341	43,504	734
RURAL SOURCES						
Rural	219.4	1,009	154	21,940	8,557	20
Forest	554.0	1,385	111	55,396	6,648	50
Water	10.7	137	5	1,654	-	-
Wetlands			included	l w/ forest		
Livestock		-	-	-	-	-
TOTAL RURAL	784.0	2,531	270	78,990	15,204	70
POINT SOURCES						
Municipal / Industrial		-	-	-	-	_
Marinas		-	-	-	-	-
TOTAL POINT						
SOURCES		<u> </u>	<u> </u>	<u>-</u>	<u> </u>	
TOTAL	1,406.6	7,020	1,041	228,331	58,708	804

The totals for urban runoff shown above are the net amounts of pollutants after treatment. Existing treatment systems reduce the urban runoff load through stormwater facilities already in place by about 5-10%.

Table 6.2-9: Load Reductions from Existing Runoff Treatment: FMP Subwatershed

TREATMENT TYPE	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)	FC (billion/yr)
Impervious Area				
Disconnection -	134	20	3,222	2,371
Residential				
Structural Stormwater	220	72	12.402	Г 7Г0
Management Practices	228	73	12,482	5,758

#### **6.2.7.2** Future Conditions

Pollutant loading will change from existing conditions as areas zoned for Planned Unit Development and other areas are converted from forest to residential and commercial uses. No loss of wetlands or water is forecast, as they are entirely within the preservation areas.



Table 6.2-10 shows the effect of build-out on the pollutant loads. All the loads are expected to increase where a reduction from the loss of rural land uses is not matched by an urban increase. Septic system and SSO loads will increase as a function of additional residents in the watershed. All other sources were assumed to remain the same.

Table 6.2-10: Forecast Change in Pollutant Loading from Future Development: FMP Subwatershed

CHANGED LOADS	Acres	TN	TP	TSS	FC (1:11)	Runoff
EXISTING TO FUTURE URBAN SOURCES					(billion/yr)	(ac-ft)
Urban Runoff			823	99,146	42,812	863
Septic Systems		400	67	2,666	7,645	-
SSOs						
Illicit Connections		31	18	287	2,825	-
Active Construction	-	-	-	-	-	-
		47		58,631	-	-
Road Sanding		-	-	-	-	-
TOTAL URBAN	833.3	5,308	926	160,729	54,282	863
RURAL SOURCES						
Rural	133.5	614	93	13,349	5,206	12
Forest	429.1	1,073	86	42,908	5,149	39
Water	10.7	137	5	1,654	-	-
Wetlands			Included	l w/ forest		
Livestock	-	-	-	-	-	-
TOTAL RURAL	573.2	1,823	185	57,911	10,355	51
POINT SOURCES						
Municipal / Industrial	-	-	-	-	-	-
Marinas	-	-	-	-	-	-
TOTAL POINT SOURCES		-	-	-	-	
TOTAL LOAD	1,407	7,131	1,111	218,640	64,637	914

# **6.2.8** Candidate Sites for Improvements

Seven stormwater retrofit sites were identified from the NSA and HSI assessments. They included retrofit of existing SWM ponds, conversion of ditches to dry swales, and implementation of bioretention. Table 6.2-11 describes the sites and the preliminary assessment of potential retrofit approaches.



Table 6.2-11: Candidate Sites for Retrofits: FMP Subwatershed

Site ID	Location	Type of Site	Ownership	Goal	Desktop Assessment
YR-FMP-R01	Remington	Conveyance	Private	WQ	ID during NSA. Street runoff is conveyed
					with grass ditches. Conversion to swales
					would provide filtration
YR-FMP-R02	Farm Fresh	Existing pond	Private	WQ	ID during HSI. Bioretention in this area
					would treat the rear parking lot, Norge
					Lane, and roof drains.
YR-FMP-R03	Trailer Sales	Existing pond	Private	WQ	ID during HSI. The existing basin is
	(Former				landscaped. Conversion to bioretention
	Hyundai)	<u> </u>			could improve nutrient uptake.
YR-FMP-R04	Kristiansand	Conveyance	Private	WQ	ID in field. This site may be an existing
	Business				infiltration trench. The project would
	Park				convert channels to dry swales to
		- - - - -			increase filtration.
YR-FMP-R05	Jimmy's	Small Parking	Private	WQ	ID during HSI. Conversion of the ditch
	Oven	Lot			to bioretention would improve pollutant
					removal.
YR-FMP-R06	Colonial Car	Existing Pond	Private	WQ	ID during HSI. Retrofit dry pond for trash
	Wash				and litter control.
YR-FMP-R07	The Gallery	Existing Pond	Private	WQ	ID during HSI. Conversion of existing dry
	Shops				pond for water quality treatment.
YR-FMP-R08	Hardee's	Small Pkg Lot	Private	WQ	ID during HSI. Site for potential
					bioretention or dry swale.

A field assessment was conducted to identify constraints and determine the feasibility of design and construction. The results showed four sites were feasible for retrofit projects. Permitting would not be required for most of the sites and there were no access constraints for ones which were recommended sites.

Table 6.2-12: Results of Field Assessment: FMP Subwatershed

Site ID	Adjacent Land Use	Land use Conflicts	Access Constraints	Potential Utility	Potential Permitting		
				Conflicts	Factors	Feasible	Recommendation
YR-FMP-R01	COM	Yes	No	Possible	No	No. Private	No project
						development, no	
						public R/W	
YR-FMP-R02	COM	No	No	No	No	No. Unnecessary,	No project
						existing stormwater	
						facility is functional.	
YR-FMP-R03	COM	No	No	No	No	No. Unnecessary,	No project
						existing stormwater	
						facility is functional.	



Site ID	Adjacent Land Use	Land use Conflicts	Access Constraints	Potential Utility Conflicts	Potential Permitting Factors	Feasible	Recommendation
YR-FMP-R04	RES, COM	No	Yes	Yes	No	No. Outside Watershed	No project
YR-FMP-R05	СОМ	No	No	No	No	No. May be an existing stormwater facility.	No project
YR-FMP-R06	СОМ	No	No	No	No	Yes.	Trash Rack
YR-FMP-R07	СОМ	No	No	No	No	Yes.	Micropool ED Pond
YR-FMP-R08	СОМ	No	No	Yes	Yes	Yes. May be an existing stormwater facility.	Bioretention

## 6.2.8.1 Recommendation for Improvements

This section provides a brief description of each recommended project. Appendix C includes fact sheets which give more detailed information on each project, including benefits, constraints and costs.

#### YR-FMP-R06

This site was identified during the HSI assessment. It is an existing dry pond receiving drainage from an adjacent car wash on Richmond Road. The pond is receiving litter and trash from the property. In order to prevent the litter from being conveyed downstream, a more functional trash rack should be installed. No pollutant load reductions or cost estimates were prepared for this option.

# YR-FMP-R07

This site was identified during the HSI assessment. It is an existing dry pond with a mowed grass bottom which takes drainage from parking lot inlet and roof drains from a property on Richmond Road. It does not appear that the drainage area is large enough to support a wet pond conversion. Conversion to a filter or bioretention system is probably not feasible because of the low inlet from the building. The site has the potential for a retrofit to micropool ED wet pond. It is also treated by stormwater facility YR009 downstream







#### YR-FMP-R08

This site was identified during the HSI assessment. It is an existing ditch between Hardee's and Exxon on Richmond Road which drains half of parking lot. There were no monitoring wells observed; however, because there appears to be a concrete riser near Richmond Road, this may be an existing stormwater facility which is not in the database. Because of elevation, water will flood parking lot before reaching top of riser.



The retrofit concept would covert the ditch to bioretention unless conveyance is needed, then a dry swale could be used. The site is also treated by YR013/YR009 downstream.

#### 6.2.9 Pollutant Loads

Modeling of proposed conditions included implementation of the two structural controls for urban runoff identified during the retrofit inventory. No other watershed retrofits were proposed. The table below shows an estimate of the load reductions for each retrofit option.

Table 6.2-13: Load Reductions for Retrofit Sites: FMP Subwatershed

LOAD REDUCTION	Treated Area (ac)	Treated IA (ac)	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)
YR-FMP-R07	2.36	1.58	6.3	2.5	452.5
YR-FMP-R08	0.75	0.55	9.3	1.5	245.5
TOTAL	3.11	2.13	15.6	4.0	698.0

#### 6.2.10 Cost Estimates

Construction costs for stormwater management and stream restoration projects were developed with a conceptual design to provide an estimate of quantities, and unit prices for direct costs, such as excavation, underdrains, riser structure, topsoil, seeding, and planting. Indirect costs, including site prep and erosion / sediment control, mobilization, and maintenance of traffic or streamflow were estimated based on a percent of project construction costs, with a minimum cost of \$4,000. Environmental studies, permitting, engineering, and surveys were estimated similarly, with a minimum cost of \$45,000. The total estimated cost is shown in the table below.



Table 6.2-14: Cost Estimates for Candidate Sites for Retrofits: FMP Subwatershed

	Base			Engineering,	
	Construction			Survey,	<b>Total (rounded</b>
PROJECT ID	Cost	Indirects	Contingency	Permitting	up to \$000)
YR-FMP-R07	\$9,437	\$4,000	\$3,359	\$45,000	\$62,000
YR-FMP-R08	\$15,236	\$4,544	\$4,940	\$45,000	\$70,000
TOTAL	\$24,673	\$8,524	\$8,299	\$90,000	\$132,000

#### **6.2.11 Cost Effectiveness**

YR-FMP-R07, which is a retrofit of a dry pond by adding a micropool is the most cost-effective of the two recommended projects because it requires less construction, material, and effort than implementing the bioretention option. It also is more cost-effective because it treats a larger area and as a result has a greater amount of pollutant reduction.

Table 6.2-15: Cost Effectiveness for Retrofit Sites: FMP Subwatershed

LOAD		Treated	Treated	TP				
REDUCTION	<b>Project Type</b>	Area (ac)	IA (ac)	(lb/yr)	<b>Total Cost</b>	\$/acre	\$/IA	\$/lb, TP
YR-FMP-R07	Micropool ED	2.36	1.58	2.5	\$62,000	\$26,300	\$39,277	\$24,755
YR-FMP-R08	Bioretention	0.75	0.55	1.5	\$70,000	\$93,299	\$127,140	\$47,009
TOTAL		9.20	2.61	4.0	\$132,000	\$14,343	\$50,583	\$33,053

# 6.3 Lower Skimino Creek (LSC) Subwatershed

# **6.3.1 General Description**

Lower Skimino Creek is 1,049.9 acres in size (Figure 2-3). It has the lowest percentage of impervious area of the six evaluated subwatersheds at 1.0% (10.5 acres). The southern boundary is the James City County line that follows Lower Skimino Creek. The western border is roughly along Newman Road (SR 646) and the northern boundary follows Riverview Road

The majority of LSC subwatershed is forest, including an area of harvested forest. Other major land uses are agriculture and water/wetlands. There are small areas of single family residential in the most northern portion of the subwatershed and along the western border. There are no residential subdivisions located within the subwatershed. The majority of the impervious surface within the LSC subwatershed is associated with roads.



#### 6.3.2 **Soils**

Seventy two percent of the soils in LSC subwatershed are poorly drained type C soils, primarily complexes of Caroline, Craven, Emporia and Slagle soils. Type A soils make up 0.4 percent of the total and are largely comprised of Kenansville and Uchee complex soils. The remaining soils include type B soils at 14.8 percent and type D soils at 12.3 percent. Type B soils include the Kempsville, Norfolk and Suffolk complexes while the D soils are dominated by the Johnston complex.

# 6.3.3 Land Use and Impervious Area

#### **6.3.3.1** Existing Conditions

LSC subwatershed consists of 1,049.9 acres, with a mixture of land uses. Natural lands include 77 percent forested land and 11 percent water and wetlands. Developed areas include two percent in single-family residential, one percent in transportation and 12 percent in commercial use. Agricultural use makes up 16 percent of the total watershed. There are no commercial or industrial areas in the subwatershed.

Total impervious cover is 10.5 acres, or 1.0 percent. Eighty-four percent of the impervious cover is represented by paved roads and parking lots. A summary of the land use within the subwatershed is shown in Table 2-20 and a breakdown of the impervious area is in Table 6.3-1.

Table 6.3-1: LSC Subwatershed Existing Land Use

Land Use	Area	Percent of	Impervious
Land Use	(ac)	Subwatershed*	Area (ac)
Urban			
Single-family, rural, wooded	11.0	1.0%	0.3
Single-family, rural, turf	4.1	0.4%	0.3
Single-family, large lot	14.4	1.4%	1.2
Single-family, small lot	1.5	0.1%	0.2
Multi-family and townhouse	0.00	0.0%	0.0
Commercial	0.00	0.0%	0.0
Institutional (churches, schools)	0.00	0.0%	0.0
Industrial	0.00	0.0%	0.0
Transportation (roads, RR, parking)	12.8	1.2%	4.3
Urban open space	0.00	0.0%	0.0
Rural			
Agriculture (cropland and pasture)	78.9	7.5%	1.5
Forest	641.3	61.1%	2.4
Harvested Forest	167.9	16.0%	0.2
Water	25.7	2.5%	0.0



Land Use	Area (ac)	Percent of Subwatershed*	Impervious Area (ac)	
Wetland	92.3	8.8%	0.1	
TOTAL	1,049.9	100.0%	10.5	

<sup>\*</sup>Percentages may not add to 100 due to rounding errors.

**Table 6.3-2: LSC Subwatershed Existing Impervious Area** 

Impervious Type	Area (ac)	Percent of Subwatershed	
Building	1.7	0.2%	
Road	6.8	0.6%	
Other	2.0	0.2%	
TOTAL	10.5	1.0%	

#### **6.3.3.2** Future Conditions

This rural subwatershed is projected for forested lands to decrease by 13 percent and agricultural lands by almost 9 percent. Residential is projected to increase, with single family rural increasing by over 22 percent.

Total impervious cover is projected to increase to 20, or 1.9 percent. Impervious area will increase based on a mixture of future land uses with single-family small lot accounting for the majority of future impervious acreage. A summary of the future land use within the subwatershed is shown in Table 6.3-3.

Table 6.3-3: LSC Subwatershed Future Land Use

		Percent of	Impervious	
Land Use	Area (ac)	Subwatershed	Area (ac)	
Urban				
Single-family, rural, wooded	18.5	1.8%	1.39	
Single-family, rural, turf	19.5	1.9%	1.47	
Single-family, large lot	15.6	1.5%	1.56	
Single-family, small lot	2.4	0.2%	0.48	
Multi-family and townhouse				
Planned development, residential				
Commercial				
Institutional (churches, schools)				
Planned development, commercial				
Industrial				
Transportation (roads, RR, parking)	12.8	1.2%	6.4	
Rural				
Agriculture (cropland and pasture)	70.0	6.7%	0.1	
Open space, meadow	164.9	15.7%	8.2	



Land Use	Area (ac)	Percent of Subwatershed	Impervious Area (ac)
Forest	628.2	59.8%	0.6
Water	25.7	2.4%	0.0
Wetland	92.3	8.8%	0.1
TOTAL	1049.9	100.0%	20.4

<sup>\*</sup>Percentages may not add to 100 due to rounding errors.

# 6.3.4 Stormwater Management

There are no stormwater management facilities located in this subwatershed.

#### 6.3.5 Stream Assessment

Approximately 1,133 linear feet of streams were evaluated in the LSC subwatershed (Figure 2-3, Table C-1). The LSC subwatershed has a very low impervious cover and is mostly forested, thus while there are many stream systems within the subwatershed, only a few were identified to be evaluated given that impacts would be minimal.

All three SARs scored excellent in the floodplain assessment rating. Habitat ratings were fair due to the limited channel definition, lack of bed material or pool and riffle sequence. Floodplain connectivity was optimal for each of these E-type streams.

No prioritized stream projects are proposed.

# 6.3.6 Upland Reconnaissance

There were no NSA Sites evaluated within the Lower Skimino Creek subwatershed.

#### **6.3.7 Pollutant Loads**

# **6.3.7.1** Existing Conditions

Despite the fact that forested land use has some of the lowest pollutant loading rates in lb/ac, it is the single highest source of pollutants and runoff volume in Lower Skimino Creek, as shown in Table 6.3-4. The reason is that forest makes up about 90 percent of the land area in LSC.



Table 6.3-4: Existing Condition Pollutant Loads: LSC Subwatershed

EXISTING CONDITIONS	Acres	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)	FC (billion/yr)	Runoff (ac-ft)
URBAN SOURCES						
Urban Runoff	43.7	239	54	6,262	2,225	40
Septic Systems		38	6	253	57	-
SSOs		-	-	-	-	-
Illicit Connections		-	-	-	-	-
Active Construction	-	-	-	-	-	-
Channel Erosion		26	10	32,988	-	-
TOTAL URBAN	43.7	303	71	39,503	2,282	40
RURAL SOURCES						
Rural	78.9	363	55	7,888	3,076	8
Forest	901.6	2,254	180	90,164	10,820	357
Water	25.7	329	13	3,982	-	-
Wetlands			included	w/ forest		
Livestock		-	-	-	-	-
TOTAL RURAL	1,006.2	2,946	248	102,034	13,896	365
POINT SOURCES						
Municipal / Industrial		-		-	-	-
Marinas	-	_	_	-	_	-
TOTAL POINT SOURCES	-	_	_	-	_	
TOTAL	1,049.9	3,249	319	141,537	16,178	405

The totals for urban runoff shown above are the net amounts of pollutants after treatment. While there are no structural SWM facilities in the watershed, existing downspout disconnection.

Table 6.3-5: Load Reductions from Existing Runoff Treatment: LSC Subwatershed

TREATMENT TYPE	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)	FC (billion/yr)	Runoff (ac-ft)
Impervious Area Disconnection	20	3	475	349	N/A

#### **6.3.7.2** Future Conditions

Pollutant loading will change slightly from existing conditions as areas are converted from forest or agricultural to residential. No loss of wetlands or water is forecast, as they are entirely within the preservation areas.

Table 6.3-6 shows the effect of build-out on the pollutant loads. All the loads are expected to increase where a reduction from the loss of rural land uses is not matched by an urban increase.



Septic system and SSO loads will increase as a function of additional residents in the watershed. All other sources were assumed to remain the same.

Table 6.3-6: Forecast Change in Pollutant Loading from Future Development: LSC Subwatershed

CHANGED LOADS EXISTING TO FUTURE	Area	TN	TP	TSS	FC	Runoff
URBAN SOURCES	(acres)	(lb/yr)	(lb/yr)	(lb/yr)	(billion/yr)	(ac-ft)
Urban Runoff	833.3	4,887	 892	106,205	46,974	808
Septic Systems		250	42	1,666	378	-
SSOs		-	- -	-	-	-
Illicit Connections		-	-	-	-	-
Active Construction		-	-	-	-	-
Channel Erosion		45	17	56,114	-	-
Road Sanding		-	-	-	-	-
TOTAL URBAN	833.3	5,182	951	163,985	47,353	808
RURAL SOURCES						
Rural	133.5	614	93	13,349	5,206	13
Forest	429.1	1,073	86	42,908	5,149	42
Water	10.7	137	5	1,654	-	-
Wetlands			Include	d w/ forest		
Livestock	-	-	-	-	-	-
TOTAL RURAL	573.2	1,823	185	57,911	10,355	55
TOTAL LOAD	1,407	7,005	1,135	221,896	57,708	863

# 6.4 Upper Taskinas Creek (UTC) Subwatershed

# **6.4.1 General Description**

Upper Taskinas Creek is 1,465.26 acres in size (Figure 2-4), with an impervious area of 6.4%. The subwatershed southern boundary is located at along Riverview Road. The western boundary is approximately Croaker Road (SR 607) and the York River State Park is the approximately border to the north and east.

The majority of UTC subwatershed is single family rural wooded and forest. Residential subdivisions within the subwatershed include the Benamine Fenton Estate, Henry Tyssen, Ware Creek Manor, and Woodland Farms. The majority of the impervious surface within the UTC subwatershed is associated with roads and parking facilities. Thirty five percent of the subwatershed is mapped as water, wetlands and forested area.



#### 6.4.2 **Soils**

Seventy percent of the soils in UTC subwatershed are poorly drained type C soils, primarily complexes of Caroline, Craven, Emporia and Slagle soils. Type B soils make up 22.7 percent of the total and are largely comprised on Kempsville, Norfolk and Suffolk complex soils. The remaining soils include type A soils at 1.4 percent and type D soils at 6.4 percent. Type A soils include the Kenansville and Uchee complexes while the D soils are dominated by the Johnston complex.

# 6.4.3 Land Use and Impervious Area

## **6.4.3.1 Existing Conditions**

The UTC subwatershed consists of 1,465.26 acres, with a varied mixture of land use. Natural lands include 29 percent forested land and six percent water and wetlands. Developed areas include 53 percent in single-family residential and 3 percent in transportation. Agricultural use makes up 7 percent of the total watershed. There are no commercial or industrial areas.

Total impervious cover is 67.3 acres, or 4.6 percent. Forty nine percent of the impervious cover is represented by paved roads and parking lots. A summary of the land use within the subwatershed is shown in Table 2-24 and a breakdown of the impervious area is in Table 6.4-1.

Table 6.4-1: UTC Subwatershed Existing Land Use

Land Use	Area (ac)	Percent of Subwatershed*	Impervious Area (ac)
Urban			
Single-family, rural, wooded	450.8	30.8%	20.5
Single-family, rural, turf	101.4	6.9%	5.7
Single-family, large lot	164.4	11.2%	10.8
Single-family, small lot	53.8	3.7%	7.9
Multi-family and townhouse	0.00	0.0%	0.00
Commercial	0.00	0.0%	0.00
Institutional (churches, schools)	5.3	0.4%	0.8
Industrial	0.0	0.0%	0.00
Transportation (roads, RR, parking)	48.3	3.3%	18.8
Urban open space	12.6	0.9%	0.3
Rural			
Agriculture (cropland and pasture)	109.6	7.5%	1.8
Forest	428.4	29.2%	0.9
Water	10.9	0.7%	0.0
Wetland	79.8	5.4%	0.0
TOTAL	1,465.3	100.0%	67.6

<sup>\*</sup>Percentages may not add up to 100 due to rounding errors



**Table 6.4-2: UTC Subwatershed Existing** 

luon omiossa Tema	Avec (c.s)	Percent of
Impervious Type	Area (ac)	Subwatershed
Building	17.8	1.2%
Road	25.1	1.7%
Other	24.4	1.7%
TOTAL	67.3	4.6%

#### **6.4.3.2** Future Conditions

Additional conversion from forest and agricultural lands to residential is projected. Total impervious cover is projected to increase to 116 acres, or 8.0 percent. A summary of the future land use within the subwatershed is shown in Table 6.4-3.

**Table 6.4-3: UTC Subwatershed Future Land Use** 

	Area	Percent of	Impervious
Land Use	(acres)	Subwatershed	Area (acres)
URBAN			
Single-family, rural, wooded	560.06	38.2%	42.0
Single-family, rural, turf	270.54	18.5%	20.3
Single-family, large lot	179.02	12.2%	17.9
Single-family, small lot	57.07	3.9%	11.4
Multi-family and townhouse			
Planned development, residential			
Commercial			
Institutional (churches, schools)	5.27	0.4%	1.1
Planned development, commercial			0.0
Industrial			0.0
Transportation (roads, RR, parking)	48.27	3.3%	24.1
RURAL			
Agriculture (cropland and pasture)	16.36	1.1%	0.0
	10.31	0.7%	0.5
Forest	227.63	15.5%	0.2
Water	10.92	0.7%	0.0
Wetland	79.81	5.4%	0.1
TOTAL	1,465.3	100.00%	117.6



# **6.4.4** Stormwater Management

There are no stormwater management facilities in the subwatershed.

#### 6.4.5 Stream Assessment

Approximately 9,964 linear feet of streams were evaluated in the UTC subwatershed (Figure 2-4, Table C-1). The UTC subwatershed is the third most impervious subwatershed in the Skimino Creek watershed and has an impervious cover at 4.6 percent. Similar to Barlow's Mill Pond subwatershed, the impervious areas are focused within distinct areas of the subwatershed, with most of the impervious areas resulting from residential developments. The SAR's had a poor to excellent score for stream habitat, with most falling within the poor to fair range. The metrics for substrate, available cover, sediment deposition, bank stability and vegetative protection scored lower on average for the assessed streams. This subwatershed experienced a much higher degree of in-stream sediment deposition exacerbated by local development. By default, increased sedimentation also lowers in-stream habitat quality. Erosion causes bank stability, which in turn, depreciates the vegetation protection and vice versa.

Floodplain assessment ratings also ranged from poor to excellent, with most streams scoring either a fair or excellent rating. Unstable G and F-type streams were observed and were scored as fair for floodplain assessment since the channels were not completely incised and disconnected from the floodplain.

Two of the four prioritized SAR's exhibited stream bed and bank stability but lacked adequate habitat conditions. For these SAR's, stream enhancement was recommended as the proposed treatment. The enhancement involves the installation of habitat grade control structures, constructing riffles and excavating pools to enhance the stream bed form and improve habitat conditions.

The remaining two prioritized SAR's were assessed as G or F Rosgen Stream Types and exhibited varying instability throughout their lengths, with areas of vertical instability, lateral instability, or in some instances both for these SAR's; stream restoration was recommended as the proposed treatment. The proposed treatment involves restoration of the stream pattern, dimension and profile to provide stream stability, bed form diversity and improve the habitat conditions. The prioritized stream projects for UTC are presented in Table 6.4-4.

Table 6.4-4: Prioritized Stream Projects and Associated Cost Estimates: UTC Subwatershed

Site ID	Associated Point Impacts	Drainage Area Land Use	Priority in UWC	Overall Priority	Specific Action	Estimated Cost
UTC-A2	OT-1	SFW	3	3	Restoration	\$550,383
UTC-A3		SFW	4	4	Restoration	\$563,169
UTC-A-L2	OT-1	SFW	7	9	Enhancement	\$235,360
UTC-A-R1	OT-1	SFW	6	10	Enhancement	\$55,247



Additionally, eight point impacts have been prioritized for treatment in UTC. Treatment measures were proposed for the following point impacts: Storm Water Outfalls (OT) and Trash and Debris (TR). These prioritized point impacts are summarized in Table 6.4-5.

Table 6.4-5: Occurrences of Point Impacts within UTC Subwatershed

SAR ID	Object ID	Severity	Proposed Treatment	Specific Action
	OT 1	4	Channel Stabilization/	Local Danain
UTC-A-L2	OT-1	4	Energy Dissipation	Local Repair
UTC-A-L3	OT-1	1	No Action	-
UTC-A-L5	OT 1	4	Channel Stabilization/	Local Repair
	OT-1	4	Energy Dissipation	
UTC-B2	TR-5	3	Remove Trash	Local Clean-up
UTC-B1	TR-4	4	Remove Trash	Local Clean-up
UTC-B-1L	TR-2	4	Remove Trash	Local Clean-up
UTC-B1	TR-3	2	Remove Trash	Local Clean-up
UTC-B1	TR-1	4	Remove Trash	Local Clean-up

## 6.4.6 Upland Reconnaissance

Most of the residential land use in Upper Taskinas Creek was evaluated during the five Neighborhood Site Assessments, presented on Table 6.4-6. They were developed at various times from the 1970s to the 2000s. Residential densities vary, but all have lots that are 1 acre or greater in size. There was no curb gutter or storm drains in any of the neighborhoods. Impervious cover ranged from a low of 10% to a high of 35% in the single-family neighborhoods. Roof drains were substantially disconnected in every area assessed.

There were no significant pollutant sources. The only neighborhood with high maintenance lawns, Woodland Farms, only had ten percent of the lots rated high.

Tree canopy ranged from a low of 15% in the Tyssen neighborhood to a high of 65% in the Woodland Farms neighborhood. All but one of the areas reached the target threshold of 40 percent. Tyssen had low canopy cover and a high portion of lawn, so there is a potential for tree planting to improve cover over time.



Table 6.4-6: NSA Sites: UTC Subwatershed

Site ID	Location	Туре	Lot Size	Age	Curb and Gutter	% Infill	% IA	% Lawn	% Canopy	% High Mgmt. Lawns	% Disconnected Downspouts
YR-UTC-N01	Benjamin W. Fenton Estate	SFW/SFR	>1	80s/90s	N	<5%	10	40	40	0	100
YR-UTC-N02	Tyssen, Henry	SFW/SFR	>1	1980- 2000	N	None	15	70	15	0	100
YR-UTC-N03	Ware Creek Manor	SFS	1				35	15	45	0	90
YR-UTC-N04	Woodland Farms	SFW	>1	70s/80s	N	None	10	40	50	0	90
YR-UTC-N05	Woodland Farms	SFW	>1	70s/80s	N	None	15	15	65	10	90

Pollution sources, severity, and restoration actions are shown in Table 6.4-7. Both pollution severity and restoration ranked in the lowest two categories. The neighborhoods were in good condition with few opportunities for restoration improvements.

These neighborhoods rely on septic systems for sanitation, so there is a potential source of nitrates in groundwater, and if they fail, they could potentially be a source for bacteria. Bare soil was a minor factor at 9730 Sycamore Landing Road.

Rain gardens or onsite retrofits were recommended in almost every neighborhood. Tree planting was another recommended outreach program that could be applied throughout this subwatershed.

Table 6.4-7: NSA Results: UTC Subwatershed

Site ID	Location	Pollution Severity	Pollution Sources	Restoration Potential	Potential Action	
YR-UTC-N01	Benjamin W.	NO	None	IOW	Gravel driveway	
	Fenton Estate				maintenance, rain garden	
YR-UTC-N02	Tyssen, Henry	MOD	None	MOD	tree planting, rain garden	
YR-UTC-N03	Ware Creek	NO	None	IOW	Onsite retrofit, rain garden	
TK-OTC-NOS	Manor	INO	None	LOVV	Orisite retrollit, falli garden	
VD LITC NO4	Woodland	MOD	Nama	LOW	rain garden, onsite retrofit,	
YR-UTC-N04	Farms	MOD	None	LOW	pond retrofit	
VD LITC NOT	Woodland	NO	NI	LOW	Oittfiti	
YR-UTC-N05	Farms	NO	None	LOW	Onsite retrofit, rain garden	



**6.4.7 Pollutant Loads** 

# **6.4.7.1 Existing Conditions**

Urban runoff is the largest source of pollutants and runoff volume in Upper Taskinas Creek, as shown in Table 6.4-8. Forest cover and channel erosion both contributed sediment loads as well. Bacteria sources are primarily from runoff, with septic systems and illicit connections contributing a minor amount.

Table 6.4-8: Existing Condition Pollutant Loads: UTC Subwatershed

EXISTING					FC	Runoff
CONDITIONS	Acres	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)	(billion/yr)	(ac-ft)
URBAN SOURCES						
Urban Runoff	836.6	3,526	844	80,674	47,575	569
Septic Systems		62	10	414	94	-
SSOs		-	-	-	-	-
Illicit Connections		-	-	-	-	-
Active Construction	-	-	_	-	-	_
Channel Erosion		37	14	46,263	-	-
TOTAL URBAN	836.6	3,626	869	127,361	47,806	569
RURAL SOURCES						
Rural	109.6	504	77	10,958	4,274	11
Forest	508.2	1,270	102	50,818	6,098	52
Water	10.9	140	5	1,693	-	-
Wetlands			included	l w/ forest		
Livestock		-	525	71	1,305	-
TOTAL RURAL	628.7	2,439	255	63,469	11,677	63
POINT SOURCES						
Municipal / Industrial		-	_	-	-	-
Marinas		-	-	-	-	-
TOTAL POINT						
SOURCES						
TOTAL	1,465.3	6,065	1,124	190,830	59,483	633

The totals for urban runoff shown above are the net amounts of pollutants after treatment. While there are no structural stormwater facilities in the subwatershed, impervious disconnection provides some load reduction.



Table 6.4-9: Load Reductions from Existing Runoff Treatment: UTC Subwatershed

TREATMENT TYPE	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)	FC (billion/yr)
Impervious Area				
Disconnection –	34	5	823	606
Residential				

#### **6.4.7.2** Future Conditions

Pollutant loading will change from existing conditions as areas continue to be developed as single family residential. No loss of wetlands or water is forecast, as they are entirely within the preservation areas.

Table 6.4-10 shows the effect of build-out on the pollutant loads. All the loads are expected to increase where a reduction from the loss of rural land uses is not matched by an urban increase. Septic system and SSO loads will increase as a function of additional residents in the watershed. All other sources were assumed to remain the same.

Table 6.4-10: Forecast Change in Pollutant Loading from Future Development: UTC Subwatershed

	Area	TN	TP	TSS	FC	Runoff
FUTURE CONDITIONS	(ac)	(lb/yr)	(lb/yr)	(lb/yr)	(billion/yr)	(ac-ft)
URBAN SOURCES						
Urban Runoff	1,130.5	4,367	1,047	93,131	58,208	751
Septic Systems		248	41	1,655	376	-
SSOs		-	-	-	-	-
Illicit Connections		1	1	10	137	-
Active Construction		-	-	-	-	-
Channel Erosion		37	14	46,046	-	-
Road Sanding		-	-	-	-	-
TOTAL URBAN	1,130.5	4,653	1,104	140,842	58,720	751
RURAL SOURCES						
Rural	16.4	75	11	1,636	638	2
Forest	307.4	769	61	30,744	3,689	32
Water	10.9	140	5	1,693	-	-
Wetlands						
Livestock	-	420	54	-	1,253	-
TOTAL RURAL	334.7	1,404	132	34,073	5,580	33
TOTAL	1,465	6,057	1,236	174,915	64,300	784



Modeling of proposed conditions included implementation of the four stream restoration reaches. No other watershed retrofits were proposed. The table below shows an estimate of the load reductions in total.

Table 6.4-11: Load Reductions for Stream Restoration Sites: UTC Subwatershed

	Treated				
LOAD	Areas	Treated IA			
REDUCTION	(ac)	(ac)	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)
UTC-A2	-	_	55	14	15,900
UTC-A3	-	_	57	14	16,270
UTC-A-L2	-	-	8	4	6,800
UTC-A-R1	-	-	2	1	1,820
TOTAL	-	-	122	33	40,790

# 6.5 York River 1 (YR1) Subwatershed

# 6.5.1 General Description

The York River 1 (YR1) subwatershed is the smallest of the subwatersheds in the Skimino Creek watershed at 230.2 acres (Figure 2-4). Like the other subwatersheds, it has a low percentage of impervious area. The subwatershed southern boundary is located along the northern side of the York River State Park. The subwatershed's western boundary is along Landing Road and the eastern side is the York River.

The majority of YR1 subwatershed is single family rural wooded and forest. The only residential subdivision within the subwatershed is Ivey Dell. Twenty three percent of the subwatershed is mapped as wetlands and forested area.

#### 6.5.2 Soils

Eighty percent of the soils in YR1 subwatershed are poorly drained type C soils, primarily complexes of Craven and Emporia soils. Type B soils make up 7.2 percent of the total and are largely comprised on Kempsville, Norfolk and Suffolk complex soils. The remaining soils include type D soils at 12.7 percent, which are dominated by the Johnston complex. There are no A soils within this subwatershed.



# 6.5.3 Land Use and Impervious Area

#### **6.5.3.1** Existing Conditions

The YR1 subwatershed consists of 230.2 acres, with a highly varied mixture of land use. Natural lands include 21 percent forested land and 9.9 percent water and wetlands. Developed areas include 67.4 percent in single family residential, and 1.6 percent in transportation. There are no commercial, institutional, industrial or agricultural areas in the subwatershed.

Total impervious cover is 8.0 acres, or 3.5 percent. Seventy-four percent of the impervious cover is represented by paved roads and parking lots. A summary of the land use within the subwatershed is shown in Table 6.5-1 and a breakdown of the impervious area is in Table 6.5-2.

Table 6.5-1: YR1 Subwatershed Existing Land Use

Landlia	Area	Percent of	Impervious
Land Use	(ac)	Subwatershed*	Area (ac)
Urban			
Single-family, rural, wooded	135.4	58.8%	3.8
Single-family, rural, turf	0.0	0.0%	0.0
Single-family, large lot	11.3	4.9%	1.2
Single-family, small lot	8.7	3.8%	0.9
Multi-family and townhouse	0.0	0.0%	0.0
Commercial	0.0	0.0%	0.0
Institutional (churches, schools)	0.0	0.0%	0.0
Industrial	0.0	0.0%	0.0
Transportation (roads, RR, parking)	3.6	1.6%	1.7
Urban open space	0.0	0.0%	0.0
Rural			
Agriculture (cropland and pasture)	0.0	0.0%	0.0
Forest	48.4	21.0%	0.3
Water	0.4	0.2%	0.0
Wetland	22.4	9.7%	0.1
TOTAL	230.2	100.0%	8.0

<sup>\*</sup>Percentages may not add to 100 due to rounding errors.

Table 6.5-2: YR1 Subwatershed Existing Impervious Area

Impervious Type	Area (ac)	Percent of Subwatershed	
Building	2.1	0.9%	
Road	1.6	0.7%	
Other	4.3	1.9%	
TOTAL	8.0	3.5%	



**6.5.3.2** Future Conditions

Pollutant loading will change from existing conditions as this small, already developed subwatershed adds residential units to the limited remaining forested areas. No loss of wetlands or water is forecast, as they are entirely within the preservation areas.

Table 6.5-3 shows the effect of build-out on the pollutant loads. All the loads are expected to increase where a reduction from the loss of rural land uses is not matched by an urban increase. Septic system and SSO loads will increase as a function of additional residents in the watershed. All other sources were assumed to remain the same.

Table 6.5-3: YR1 Subwatershed Future Land Use

	Area	Percent of	Impervious
Land Use	(acres)	Subwatershed*	Area (acres)
URBAN			
Single-family, rural, wooded	161.61	70.2%	0.0
Single-family, rural, turf	0.02	0.0%	0.0
Single-family, large lot	14.97	6.5%	1.5
Single-family, small lot		3.8%	1.8
Multi-family and townhouse			
Planned development, residential			
Commercial			
Institutional (churches, schools)			
Planned development, commercial			
Industrial			
Transportation (roads, RR, parking)	3.61	1.6%	1.8
RURAL			
Agriculture (cropland and pasture)	0.0	0.0%	0.0
Open space, meadow	0.0	0.0%	0.0
Forest	18.31	8.0%	0.0
Water	0.44	0.2%	0.0
Wetland	22.44	9.7%	0.0
TOTAL	230.22	100%	17.2

<sup>\*</sup>Percentages may not add to 100 due to rounding errors.

# 6.5.4 Stormwater Management

There are no stormwater management facilities in the subwatershed.



#### 6.5.5 Stream Assessment

No streams were evaluated in the YR1 subwatershed (Figure 2-4, Table C-1). The YR1 subwatershed has a percent impervious of 3.5% and is mostly developed in a rural single-family lot residential setting. At this time, given the limited number of stream systems within the subwatershed and its low impervious cover, streams were not evaluated.

# 6.5.6 Upland Reconnaissance

Most of the residential land use in York River 1 was evaluated during the NSA assessments with one assessment of Ivey Dell, presented in Table 6.5-4. The neighborhood was developed in the 2000's, and like others in the Skimino Creek watershed, drainage is provided by grass ditches instead of curb and gutter and storm drains. Impervious cover was estimated at 10% and roof drains were substantially disconnected. Tree canopy was substantial, noted at 75%.

Table 6.5-4: NSA Site: YR1 Subwatershed

Site ID	Location	Туре	Lot Size	Age	Curb and Gutter	% Infill	%I <b>A</b>	% Lawn	% Canopy	% High Mgmt. Lawns	% Disconnected Downspouts
YR-YR1-N01	Ivey Dell	SFL	>1	2000s	N	None	10	5	75	-	100

Pollution sources, severity, and restoration actions are shown in Table 6.5-5. Both pollution severity and restoration ranked in the lowest two categories. The neighborhood was in good condition with few opportunities for restoration improvements.

Table 6.5-5: NSA Results: YR1 Subwatershed

Site ID	Location	Pollution Severity	Pollution Sources	Restoration Potential	Potential Action
YR-YR1-N01	Ivey Dell	None	None	LOW	-

#### 6.5.7 Pollutant Loads

# 6.5.7.1 Existing Conditions

Urban runoff is the largest source of pollutants and runoff volume in York River 1, as shown in Table 6.5-6. Forest cover and channel erosion both contributed sediment loads as well.



Table 6.5-6: Existing Condition Pollutant Loads: YR1 Subwatershed

EXISTING CONDITIONS	Acres	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)	FC (billion/yr)	Runoff
URBAN SOURCES					(billion/yr)	(ac-ft)
Urban Runoff	158.9	411	99	9,277	5,938	77
Septic Systems	130.3	93	15	618	140	-
SSOs		_	_	_	_	_
Illicit Connections		-	-	-	-	_
Active Construction	-	-	_	-	-	-
Channel Erosion		5	2	5,690	-	-
TOTAL URBAN	158.9	508	117	15,585	6,078	77
RURAL SOURCES						
Rural	-	-	-	-	-	-
Forest	70.9	177	14	7,085	850	8
Water	0.4	6	0	68	-	_
Wetlands			included	l w/ forest		
Livestock		-	-	-	-	-
TOTAL RURAL	71.3	183	14	7,153	850	8
POINT SOURCES						
Municipal / Industrial			-	-		
Marinas		_	_	-	-	_
TOTAL POINT						
SOURCES						
TOTAL	230.2	691	131	22,738	6,928	85

The totals for urban runoff shown above are the net amounts of pollutants after treatment. While there are no structural stormwater facilities in the subwatershed, existing impervious disconnection provides some load reduction.

Table 6.5-7: Load Reductions from Existing Runoff Treatment: YR1 Subwatershed

TREATMENT TYPE	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)	FC (billion/yr)
Impervious Area Disconnection - Residential	56	8	1,348	992

#### **6.5.7.2** Future Conditions

Pollutant loading will change from existing conditions as additional areas are developed or redeveloped as residential. No loss of wetlands or water is forecast, as they are entirely within the preservation areas.



Table 6.5-8 shows the effect of build-out on the pollutant loads. All the loads are expected to increase where a reduction from the loss of rural land uses is not matched by an urban increase. Septic system and SSO loads will increase as a function of additional residents in the watershed. All other sources were assumed to remain the same.

Table 6.5-8: Forecast Change in Pollutant Loading from Future Development: YR1 Subwatershed

FUTURE	Area	TN	TP	TSS	FC	Runoff
CONDITIONS	(ac)	(lb/yr)	(lb/yr)	(lb/yr)	(billion/yr)	(ac-ft)
URBAN SOURCES						
Urban Runoff	189.0	475	112	10,318	6,771	92
Septic Systems		115	19	767	174	-
SSOs		_	-	-	-	-
Illicit Connections		-	-	-	-	-
Active Construction		_	-	-	-	-
Channel Erosion		5	2	5,690	-	-
Road Sanding		_	-	-	-	-
TOTAL URBAN	189.0	595	133	16,775	6,946	92
RURAL SOURCES						
Rural	-	_	-	-	-	-
Forest	40.8	102	8	4,075	489	5
Water	0.4	6	0	68	-	_
Wetlands		•••				
Livestock	-	_	-	-	-	-
TOTAL RURAL	41.2	108	8	4,143	489	5
TOTAL	230	702	142	20,918	7,435	96

# 6.6 York River 2 (YR2) Subwatershed

# 6.6.1 General Description

The York River 2 (YR2) is the second smallest of the six subwatersheds evaluated in the Skimino Creek watershed at 308.5 acres (Figure 2-3). It has a percentage of impervious area at 6.8%. The subwatershed southern boundary is south of the York River State Park and north of Camp Peary. The subwatershed lies just to the west of the York River, to which it drains.

The majority of the YR2 subwatershed is single family residential land use at over 60 percent. There is only one residential subdivision: Riverview Plantation. Thirty one percent of the subwatershed is mapped as wetlands and forested area.



#### 6.6.2 **Soils**

The YR2 subwatershed consists of 308.5 acres, with both developed and natural land uses. Natural lands include 22 percent forested land and 10.3 percent water and wetlands. Developed areas include 62.7 percent in single-family residential and 4.6 percent in transportation. There are no commercial, institutional, industrial or agricultural areas in the subwatershed.

# 6.6.3 Land Use and Impervious Area

#### **6.6.3.1** Existing Conditions

The YR2 subwatershed consists of 230.2 acres, with a highly varied mixture of land use. Natural lands include 21 percent forested land and 9.9 percent water and wetlands. Developed areas include 67.4 percent in single-family residential and 1.6 percent in transportation. There are no commercial, institutional, industrial or agricultural areas in the subwatershed.

Total impervious cover is 8.0 acres, or 3.5 percent. Seventy-four percent of the impervious cover is represented by paved roads and parking lots. A summary of the land use within the subwatershed is shown in Table 6.6-1 and a breakdown of the impervious area is in Table 6.6-2.

Table 6.6-1: YR2 Subwatershed Existing Land Use

Land Use	Area (ac)	Percent of Subwatershed*	Impervious Area (ac)
Urban			
Single-family, rural, wooded	99.2	32.1%	3.3
Single-family, rural, turf	0.0	0.0%	0.0
Single-family, large lot	60.6	19.6%	5.7
Single-family, small lot	33.8	11.0%	5.0
Multi-family and townhouse	0.0	0.0%	0.0
Commercial	0.0	0.0%	0.0
Institutional (churches, schools)	0.1	0.0%	0.0
Industrial	0.0	0.0%	0.0
Transportation (roads, RR, parking)	14.2	4.6%	6.5
Urban open space	0.5	0.2%	0.0
Rural			
Agriculture (cropland and pasture)	0.0	0.0%	0.0
Forest	68.4	22.2%	0.5
Water	4.7	1.5%	0.0
Wetland	27.0	8.8%	0.1
TOTAL	308.5	100.0%	21.1



\*Percentages may not add to 100 due to rounding errors.

Table 6.6-2: YR2 Subwatershed Existing Impervious Area

Impervious Type	Area (ac)	Percent of Subwatershed	
Building	6.0	1.9%	
Road	6.7	2.2%	
Other	8.4	2.7%	
TOTAL	21.1	6.8%	

# **6.6.3.2** Future Conditions

Single family small lot land use is projected to increase within the YR2 subwatershed, but at a very limited scale given the already developed nature of the subwatershed. Forested lands are projected to decrease by only 2 percent. Wetlands will remain at 27 percent.

A summary of the future land use within the subwatershed is shown in Table 6.6-3.

Table 6.6-3: YR2 Subwatershed Future Land Use

	Area	Percent of	Impervious
Land Use	(acres)	Subwatershed	Area (acres)
URBAN			
Single-family, rural, wooded	99.19	32.15%	7.4
Single-family, rural, turf	0.0	0.00%	0.0
Single-family, large lot	60.97	19.76%	6.1
Single-family, small lot	35.62	11.55%	7.1
Multi-family and townhouse	0.0	0.00%	0.0
Planned development, residential	0.0	0.00%	0.0
Commercial	0.0	0.00%	0.0
Institutional (churches, schools)	0.11	0.04%	0.0
Planned development, commercial	0.0	0.00%	0.0
Industrial	0.0	0.00%	0.0
Transportation (roads, RR, parking)	14.20	4.60%	7.1
RURAL			
Agriculture (cropland and pasture)	0.0	0.00%	0.0
Open space, meadow	0.51	0.17%	0.0
Forest	66.17	21.45%	0.1
Water	4.72	1.53%	0.0
Wetland	27.04	8.76%	0.0
TOTAL	308.53	100%	27.8

<sup>\*</sup>Percentages may not add to 100 due to rounding errors.



# **6.6.4** Stormwater Management

There are no stormwater management facilities in the subwatershed.

#### 6.6.5 Stream Assessment

Approximately 4,060 linear feet of streams were evaluated in the YR2 subwatershed (Figure 6-3, Table C-1). SAR scores for habitat ranged from fair to good, limited by their lack of bed form, while floodplain ratings ranged from good to excellent, due to the limited channel bed form. Streams were identified as E-type, however, one SAR was identified as an unstable G-type stream.

While no SARs were recommended for treatment, eleven point impacts have been prioritized for treatment in YR2. Treatment measures were proposed for the following point impacts: Storm Water Outfalls (OT) and Stream Crossing (SC). These prioritized point impacts are summarized in Table 6.6-4.

Table 6.6-4: Occurrences of Point Impacts within YR2 Subwatershed

SAR ID	Object ID	Severity	Proposed Treatment	Specific Action
YR2-C	OT-1	1	No Action	-
YR2-D1	SC-1	1	No Action	-
YR2-D1	SC-2	1	No Action	-
YR2-D1	SC-3	1	No Action	-

# 6.6.6 Upland Reconnaissance

YR2, consisting primarily of Riverview Plantation, was evaluated during the NSA assessment. Similar to others in the Skimino Creek watershed, this neighborhood relied on grass ditches for stormwater drainage and there were no closed storm drain systems. Roof drains were substantially disconnected. Tree canopy, at 65 percent, was above the desired threshold of 40 percent.

Results of the assessment are shown in Table 6.6-5.



Table 6.6-5: NSA Site: YR2 Subwatershed

Site ID	Location	Туре	Lot Size	Age	Curb and Gutter	% Infill	<b>V</b> I %	% Lawn	% Canopy	% High Mgmt. Lawns	% Disconnected Downspouts
YR-YR2-N01	Riverview Plantation	SFW	>1 ac	1990- 2000s	N	None	10	20	65	20	90

Pollution sources, severity, and restoration actions are shown in Table 6.6-6. Both pollution severity and restoration ranked in the lowest two categories. The neighborhood was in good condition few opportunities for restoration improvements.

Rain gardens were recommended in this neighborhood, primarily as a method to improve treatment of disconnected roof drainage. There were also opportunities to provide onsite treatment.

Table 6.6-6: NSA Results: YR2 Subwatershed

Site ID	Location	Pollution Severity	Pollution Sources	Restoration Potential	Potential Action
YR-YR2-N01	Riverview Plantation	NO	None	LOW	onsite retrofit, rain garden

#### 6.6.7 Pollutant Loads

#### 6.6.7.1 Existing Conditions

Urban runoff is the largest source of pollutants and runoff volume in York River 2 subwatershed, as shown in Table 6.6-7. Forest land use and channel erosion also contribute to sediment loads.

Table 6.6-7: Existing Condition Pollutant Loads: YR2 Subwatershed

EXISTING CONDITIONS	Acres	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)	FC (billion/yr)	Runoff (ac-ft)
URBAN SOURCES						
Urban Runoff	208.4	868	211	19,555	11,062	154
Septic Systems		231	39	1,542	4,423	-
SSOs		-	-	-	-	-
Illicit Connections		_	_	-	-	_
Active Construction	_	_	_	-	-	_



EXISTING CONDITIONS	Acres	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)	FC (billion/yr)	Runoff (ac-ft)
Channel Erosion		8	3	10,506	-	-
TOTAL URBAN	208.4	1,108	252	31,603	15,485	154
RURAL SOURCES						
Rural						
Forest	95.4	239	19	9,543	1,145	10
Water	4.7	60	2	732	-	-
Wetlands			included w/fo	orest		
Livestock		_	-	-	-	_
TOTAL RURAL	100.2	299	21	10,275	1,145	10
POINT SOURCES						
Municipal / Industrial	-	-	-	-	-	-
Marinas	-	-	_	-	-	
TOTAL POINT						
SOURCES	-	-	-	-	-	-
TOTAL	308.5	1,407	274	41,878	16,631	164

The totals for urban runoff shown above are the net amounts of pollutants after treatment. While no existing structural SWM facilities were identified, some load reduction was modeled from impervious area disconnection.

Table 6.6-8: Load Reductions from Existing Runoff Treatment: YR2 Subwatershed

TREATMENT TYPE	TN (lb/yr)	TP (lb/yr)	TSS (lb/yr)	FC (billion/yr)
Impervious Area Disconnection - Residential	110	17	2,641	1,943

#### **6.6.7.2** Future Conditions

Pollutant loading will change from existing conditions as residential areas are added or redeveloped. No loss of wetlands or water is forecast, as they are entirely within the preservation areas.

Table 6.6-9 shows the effect of build-out on the pollutant loads. All the loads are expected to increase where a reduction from the loss of rural land uses is not matched by an urban increase. Septic system and SSO loads will increase as a function of additional residents in the watershed. All other sources were assumed to remain the same.



Table 6.6-9: Forecast change in pollutant loading from future development: YR2 Subwatershed

FUTURE	Area	TN	TP	TSS	FC	Runoff	
CONDITIONS	(ac)	(lb/yr)	(lb/yr)	(lb/yr)	(billion/yr)	(ac-ft)	
URBAN SOURCES							
Urban Runoff	210.6	878	213	19,707	11,184	156	
Septic Systems		241	40	1,605	4,604	-	
SSOs		-	-	-	-	-	
Illicit Connections		-	-	-	-	-	
Active Construction		-	-	-	-	-	
		8			-	-	
Road Sanding		=	-	-	-	-	
TOTAL URBAN	210.6	1,127	256	31,818	15,788	156	
RURAL SOURCES							
Rural	-	-	-	-	-	-	
Forest	93.2	233	19	9,321	1,119	10	
Water	4.7	60	2	732	-	-	
Wetlands							
Livestock	-	-	-	-	-	-	
TOTAL RURAL	97.9	293	21	10,053	1,119	10	
TOTAL	309	1,421	277	41,870	16,906	166	



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# **Appendix A: Conservation Area Report Summary**

The Conservation Area Assessment for the Skimino Creek subwatershed utilized the same format, methodology and substance as previous reports presented to the County for the Powhatan, Yarmouth, Gordon Creek and Mill Creek watersheds. The conservation area assessment includes VHBs findings for the Upland Contiguous Forest, Non-RPA Wetlands and Rare, Threatened or Endangered (RTE) Species field investigations.

Based on a review of the Department of Conservation and Recreation (DCR) Division of Natural Heritage (DNH) database, supporting information from other federal and state agencies and field reconnaissance, the following conclusions may be drawn regarding previously documented RTE species within the Skimino Creek watershed.

- the active and occupied **bald eagle** nests reported by natural resource agencies reflect
  the presence of suitable nesting and foraging habitat both in and around the Skimino
  Creek Watershed. Proactive regulatory agency coordination (e.g., Bald and Golden Eagle
  Protection Act, Migratory Bird Treaty Act) and proper conservation management
  techniques should be considered in advance of changes to land use;
- the presence of known small whorled pogonia populations and abundant potential
  forested upland habitat within the watershed indicate the need for regulatory agency
  coordination for this species prior to changes in land use within uplands;
- the presence of potential habitat for other federally listed (sensitive joint-vetch) and state-listed (Mabee's salamander, Henslow's sparrow, and loggerhead shrike) RTE species may trigger natural resources agency review of any proposed impacts to potential habitat.



#### A.1 Conservation Area 1

The Taskinas Creek Conservation Site - Conservation sites are areas known to contain one or more rare plants, animals, or natural communities. Within the Taskinas Creek Conservation Site, known natural heritage resources include mountain camelia and two unique forest community types. The Northern Coastal Plain / Piedmont / Coastal Plain Oak - Beech / Heath Forest community type is locally distributed in small to occasionally large patches across much of the Piedmont and dissected, inner Coastal Plain in Virginia. This community type is particularly common on steep ravine slopes and bluffs of dissected terrain with highly acidic soils. It occurs occasionally on steep bluffs of the Outer Coastal Plain, and occasionally occurs on elevated swamp islands with sandy, oligotrophic soils (NatureServe, 2013). Overstory trees include white oak (Quercus alba), northern red oak (Quercus rubra), and American beech (Fagus grandifolia). Blackgum (Nyssa sylvatica), red maple (Acer rubrum), and American holly (Ilex opaca var. opaca) are common understory trees. Dense colonies of mountain laurel (Kalmia latifolia) form a continuous shrub layer. Few herbaceous species occur in the stands and tree canopies may be quite open as the result of poor establishment and frequent downfalls (DCR 2014; Fleming et al., 2012).

Coastal Plain Calcareous Seepage Swamp community occurs on the Virginia Coastal Plain on groundwater-saturated stream bottoms in ravines that have cut into Tertiary shell deposits or lime sands. Braided streams and hummock-and-hollow microtopography are characteristic of the environmental setting. Soils are highly calcareous with pH values up to 7.4 and calcium levels that range up to 6000 ppm (DCR 2014; Fleming et al., 2012). The tree canopy consists of green ash (Fraxinus pennsylvanica) and red maple (Acer rubrum), and the shrub layer is typically open and contains northern spicebush (Lindera benzoin), wax myrtle (Morella cerifera), and American hornbeam (Carpinus caroliniana). The herb layer is often dense with golden ragwort (Packera aurea), lizard's tail (Saururus cernuus), brome-like sedge (Carex bromoides), jewelweed (Impatiens capensis), and fowl mannagrass (Glyceria striata).



# Appendix B: Stormwater Management in James City County

The JCC Environmental Division is responsible for review and approval of stormwater management practices, for compliance inspections of stormwater management facilities during construction, and for maintaining an updated database of stormwater facilities in JCC.

JCC has three ordinances regulating stormwater management:

- James City County Code Chapter 18A: Stormwater Management: prohibits illicit discharges to the storm sewer system.
- James City County Code Chapter 8: Erosion and Sediment Control: requires the control of erosion and sediment and includes measures to reduce stream channel erosion downstream of development projects. Erosion and Sediment Control plans must be submitted for all projects disturbing greater than 2,500 square feet and must conform to the James City County Guidelines for Design and Construction of Stormwater Management Best Management Practices (Guidelines) and to the Virginia Erosion and Sediment Control Regulations, including minimum standards, and the Virginia Erosion and Sediment Control Handbook. Single family residences are exempt from submitting plans but must have an Agreement in Lieu of a plan and a site plan showing erosion control measures is required before issuance of a Building Permit.
- James City County Code Chapter 23: Chesapeake Bay Preservation Ordinance: contains requirements for reducing pollutant loading associated with new impervious areas. The entire County is designated as Chesapeake Bay Preservation Area (CBPA); specifically, a Resource Management Area, or RMA. Those lands having an intrinsic water quality function based on their ecologic and biologic characteristics are classified as Resource Protection Areas (RPAs) in accordance with Section 23-3. These include tidal wetlands, tidal shores, non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow, as well as a 100-ft buffer extending from the limits of each of these features.

In addition to the ordinances and guidelines listed above, JCC regulates and tracks stormwater management practices through the following measures:



- Stormwater Drainage Conveyance Systems (Non-BMP [Best Management Practices] Related) General Design and Construction Guidelines (James City County Environmental Division, March 2001) provides design and installation criteria for private stormwater conveyance systems located outside VDOT right of way.
- Stormwater Management/BMP [Best Management Practices] Facilities, Record Drawing and Construction Certification, Standard Forms & Instructions (James City County Environmental Division) is used to ensure that stormwater facilities were designed and installed per JCC requirements and requires that as-built drawings be supplied to JCC to maintain their stormwater facility database.
- Special Stormwater Criteria (SSC) in James City County, Virginia (Special Stormwater Criteria Task Group, December 14, 2004 Revised July 1, 2014) was developed as a result of goals and priorities as established by approved watershed management plans in James City County and following a year long process involving a multi-disciplined stormwater task group. The criteria was approved by resolution of the Board of Supervisors by resolution date December 14, 2004 and revised administratively by the VESCP/VSMP authority due to local adoption of the Virginia Stormwater Management Program. Objectives of Special Stormwater Criteria (SSC) include:
  - o Protection of specific stream reaches from accelerated channel erosion;
  - o Protection of conservation areas from the impacts of stormwater runoff;
  - Protection of high-quality wetlands from the effects of altered water level fluctuation:
  - Developing more effective criteria and locations for stormwater practices in watersheds for new development;
  - Retrofitting of existing facilities and uncontrolled areas of the watershed to improve water quality.

Special Stormwater Criteria (SSC) was developed to achieve two primary goals. The first is to preserve pre-development hydrology to reduce impacts to high quality streams. The volume of recharge that occurs on a site depends on slope, soil type, vegetative cover, precipitation and evapotranspiration. Sites with natural ground cover, such as forests and meadows, have higher recharge rates, less runoff and greater transpiration losses under most conditions. This helps to preserve existing water table elevations thereby maintaining the hydrology of streams and wetlands during dry weather. Because development reduces natural cover and increases impervious surfaces, a net decrease in recharge rates is inevitable.

The second primary goal of Special Stormwater Criteria (SSC) is to provide enhanced water quality treatment of stormwater runoff. Current (traditional) stormwater management for water quality in watersheds is characterized by the use of a single structural stormwater facility practice, namely a wet or dry pond, to manage stormwater from a contributing drainage area. However, many of these practices have not been properly maintained, reducing their pollutant removal capability. In addition, although the County's codes and ordinances allow for reduced impervious cover and open space preservation in site design, it does not appear that developers consistently exercise those options. More sensitive site design can play a significant role in reducing water quality and hydrologic impacts resulting from development.



In general, Special Stormwater Criteria (SSC) are considered to be one step above and beyond traditional Virginia and County stormwater management criteria, focusing more on the aspects of site design and source control - as opposed to traditional stormwater treatment at the end of stormwater drainage collection and conveyance systems. Use of Special Stormwater Criteria (SSC) on a proposed development site does not remove the need to provide traditional stormwater quality treatment and quality control in accordance with current County Chesapeake Bay Preservation, Erosion and Sediment Control, and Virginia Stormwater Management Program ordinances, the Virginia stormwater management Best Management Practices clearinghouse, the Virginia DEQ Stormwater Design Specifications, and the Virginia Erosion and Sediment Control and Stormwater Management Handbooks. The use of additional measures in the drainage basin beyond traditional methods may, however, subsequently affect post- development site hydrology and reduce the peak rate and volume of runoff, thereby perhaps reducing the size or storage volume requirements of traditional end-of-pipe detention or retention facilities.

# B.1 Stormwater Management Requirements

The CBPA requires review and approval of a stormwater management plan for all new development and redevelopment sites over 2,500 square feet. Single family lots that are not part of a larger plan of development are typically exempt. Stormwater management plans must include location and design of stormwater controls and stormwater facilities conforming to the *Virginia BMP [Best Management Practices] Clearinghouse,* and "procedures for implementing non-structural stormwater control practices, and establishment of a long-term schedule for inspection and maintenance of stormwater management facilities."

Stormwater management requirements in JCC include the following:

- Provide Required Pollutant Load Removal
- Provide Required Virginia Runoff Reduction Method (VRRM)
- Meet Channel Protection Criteria
- Meet Flood Protection Criteria

#### **B.1.1** Allowable Stormwater Practices

For a development project to achieve compliance with water quality regulations, the "...County currently allows over 20 structural stormwater facility types, including wet ponds, wetland systems, infiltration practices, filtering systems, open channel systems and extended dry detention facilities." Each approved treatment practice is assigned a score, with all sites required to achieve a minimum of 10 points. Points are also available for non-structural stormwater facilities, including:

Preservation of dedicated natural open space through conservation easements;



- Open spaces which accept or treat stormwater from a development site; and
- Conservation areas directly adjacent to targeted environmentally sensitive areas such as wetlands, mature forest or RPAs.

# **B.1.2** Stormwater Practice Maintenance and Inspection

JCC requires an executed and recorded Declaration of Covenants – Inspection / Maintenance of Drainage System for all projects that involve the construction of stormwater management or drainage facilities, which are privately maintained. JCC requires facility-specific, long-term inspection and maintenance plans to be shown on the stormwater management plans for all stormwater management facilities.

JCC performs periodic stormwater facility inspections during construction and maintains a database of stormwater management practices in the County. JCC is currently inventorying stormwater facilities countywide to identify potential problems in order to provide technical assistance to the stormwater facility owners, to track on-going maintenance efforts, and to identify future stormwater facility maintenance needs.

#### **B.1.3** Watershed Education

James City County Stormwater and Resource Protection Division strives to engage citizens through public participation, outreach, and education. The Stormwater and Resource Protection Division is able to utilize citizen volunteer groups, such as the Stormwater Program Advisory Committee to attend events in which they are able to educate and create conversation around local water quality and provide a citizen voice regarding Stormwater Management in community decisions. Additionally, citizens are able to work with the Stormwater and Resource Protection Division to monitor the water quality within James City County by becoming involved in the water quality sampling program offered by county staff. Volunteers sample for chemical parameters such as Dissolved Oxygen, Bacteria, Clarity, pH, and temperature. Additionally, information on the James City County Stormwater and Resource Protection Division public outreach program is available on the county website: https://www.jamescitycountyva.gov/3588/Outreach-Programs.

#### **B.1.4** Watershed Maintenance

The JCC Stormwater Division has a drainage improvement program that works in partnership with property owners and residents to remedy drainage and erosion problems that are adversely affecting residents and/or County waterways. The Stormwater Division provides technical guidance and assistance and, where appropriate, may provide financial assistance in the design and implementation of improvements. Projects are prioritized and scheduled based on specific criteria and available funding. In cooperation with VHB, a Decision Support System (DSS) has been developed (see Appendix D) to assist JCC in prioritizing stormwater retrofit



opportunities based on a suite of criteria, including weighing projected water quality and natural resources benefits against potential project constraints.

#### To qualify for funding:

- The property must lie entirely within James City County.
- The problem must be located outside of the VDOT right-of-way.
- Prior to the use of any public funds, attempts will be made to resolve the problem within the private sector.
- The property must have an adequate maintenance/drainage easement, or the owner must be willing to grant such an easement.

#### **B.1.5** Watershed Restoration

JCC's Stormwater or Water Quality Improvement Fund is a capital improvement fund dedicated to stormwater treatment/management and drainage related issues. In the past, the fund has been used for the design and construction of regional stormwater facilities and to address drainage problems. However, watershed restoration approaches are watershed specific and can vary markedly depending on the degree to which the watershed is developed and other local conditions (e.g., topographic setting, hydrologic soil group, etc.). Approaches can include stream restoration and enhancement, stream bank and channel stabilization, stormwater outfall stabilization or retrofit for velocity dissipation, retrofitting stormwater facilities from dry ponds to wet ponds, increasing stormwater facility capacity, methods to increase infiltration in dry roadside swales, and so on.



# **Appendix C: Candidate Sites for Watershed Restoration Activities**



TABLE C-1: CANDIDATE LOCATIONS FOR STREAM REMEDIATION

SAR ID	SAR Length (ft)	CEM Stage	Rosgen	Habitat Score	Habitat Rating	Floodplain Score	Floodplain Rating	Restoration Potential	Restoration Access	Proposed Treatment	Specific Action	Notes
BMP-1L-1R-1L-A	273	Early II	E5b	97	Fair	57	Good	None	N/A	No Action	-	-
BMP-1L-1R-1L-B	238	I	E5	87	Poor	58	Good	None	N/A	No Action	-	-
BMP-1L-1R-A	563	I	E5b	116	Fair	60	Good	None	N/A	No Action	-	-
BMP-1L-1R-B	786	I	E5	95	Fair	56	Good	Low	N/A	No Action	-	-
BMP-1L-1R-C	1,088	I	E5	140	Excellent	66	Excellent	None	N/A	No Action	-	-
BMP-1L-2R-A	591	Early II	G5	96	Fair	55	Good	Low	N/A	No Action	-	-
BMP-1L-2R-B	1,200	I	E5b	110	Fair	59	Good	None	N/A	No Action	-	-
BMP-1L-A	436	I	E6b	110	Fair	57	Good	None	N/A	No Action	-	-
BMP-1L-B	178	I	E5	134	Good	63	Excellent	None	N/A	No Action	-	-
BMP-1L-C	984	Early II	E5b	120	Fair	60	Good	None	N/A	No Action	-	-
BMP-1L-D	943	I	E5	122	Good	61	Excellent	None	N/A	No Action	-	-
BMP-A1	569	11/111	G4	107.5	Fair	37	Poor	Moderate	Fair	Restore Degraded Channel	Stream Restoration	Stabilization required to prevent further incision upstream and aggradation downstream.
BMP-A-1L-A	279	11/111	G5	70.5	Poor	40	Poor	Moderate	Fair	Restore Stream Bed Form and Habitat	Stream Enhancement	Enhance stream riffle and pool complexes by incorporating grade control structures and constructing riffles, and excavating pools.
BMP-A-1R-A	53	I	E6	92	Fair	54	Good	None	N/A	No Action	-	-
BMP-A2	734	III	G5	93.5	Fair	49	Fair	Moderate	Fair	Restore Degraded Channel	Stream Restoration	Stabilization required to prevent further incision upstream and aggradation downstream.
BMP-A-2L-A	755	I	E6	70	Poor	43	Fair	Low	N/A	No Action	-	-
BMP-A3	2,160	I	E5	128	Good	58	Good	None	N/A	No Action	-	-
BMP-A-3L-A	277	I	E5	91	Fair	56	Good	None	N/A	No Action	-	-
BMP-A4	1,634	I	E5	138	Excellent	62	Excellent	None	N/A	No Action	-	-
BMP-A-4R-A	304	Early II	E5	80	Poor	58	Good	Low	N/A	No Action	-	-
BMP-A-5L-A	140	I	E5	88	Poor	56	Good	None	N/A	No Action	-	-
BMP-A-5L-A	61	Early II	E5b	65	Poor	40	Poor	Low	N/A	No Action	-	-
BMP-A-6R-A	367	I	E5	106	Fair	57	Good	None	N/A	No Action	-	-
BMP-A-6R-A	508	I	E5	107	Fair	55	Good	None	N/A	No Action	-	-
BMP-A-8R-D	447	I	E6	109	Fair	62	Excellent	None	N/A	No Action	-	-
BMP-B1	287	I	E5	147	Excellent	68	Excellent	None	N/A	No Action	-	-
BMP-B2	1,544	I	E5	133	Good	63	Excellent	None	N/A	No Action	-	-
BMP-B2	1,807	I	C5	130	Good	62	Excellent	None	N/A	No Action	-	
BMP-B-2L-A	137	11/111	<b>G</b> 5	69	Poor	42	Fair	Moderate	Fair	Restore Stream Bed Form and Habitat	Stream Enhancement	Enhance stream riffle and pool complexes by incorporating grade control structures and constructing riffles, and excavating pools.



TABLE C-1: CANDIDATE LOCATIONS FOR STREAM REMEDIATION

	ength (ft)	Stage	eu	Score	Rating	n Score	า Rating	Potential	n Access	reatment	Action	
SAR ID	SAR Len	CEMS	Rosgen	Habitat	Habitat	Floodplain	Floodplain	Restoration	Restoration	Proposed T	Specific	Notes
BMP-B-2L-B	203	I	E6	89	Poor	51	Fair	None	N/A	No Action	-	-
BMP-B-2L-C	209	1	E6	62.5	Poor	39	Poor	Low	N/A	No Action	-	-
BMP-B-2L-D	161	1	N/A	111	Fair	56	Good	None	N/A	No Action	-	-
BMP-B-3L-A	625	I	E5b	89	Poor	53	Fair	Low	N/A	No Action	-	-
BMP-B-3L-B	328	11/111	G5	109.5	Fair	50	Fair	Low	N/A	No Action	-	-
BMP-B-3L-C	1,092	1	E5	124.5	Good	57	Good	None	N/A	No Action	-	-
BMP-B-4L-A	1,862	1	E5	124	Good	66	Excellent	None	N/A	No Action	-	-
BMP-B-8R-A	568	1	E6	98	Fair	59	Good	None	N/A	No Action	-	-
BMP-B-8R-B	580	11/111	G6	90	Fair	56	Good	Low	N/A	No Action	-	-
BMP-B-8R-C	438	11/111	G6	97	Fair	57	Good	Low	N/A	No Action	-	-
FMP-A1	1,373	1	E5	136	Excellent	60	Good	None	N/A	No Action	-	-
FMP-A-1L	393	11/111	G5	0	N/A	N/A	N/A	None	N/A	No Action	-	-
FMP-A2	2,019	1	E5	151.5	Excellent	61	Excellent	None	N/A	No Action	-	-
FMP-A-2L-1R	260	11/111	F5	62	Poor	42	Fair	Low	N/A	No Action	-	-
FMP-A-2L-A	536	1	E6	98.5	Fair	46	Fair	Low	N/A	No Action	-	-
FMP-A-2L-B	1,241	1	E5	124	Good	61	Excellent	None	N/A	No Action	-	-
FMP-A3	2,174	1	C5	145	Excellent	60	Good	None	N/A	No Action	-	-
FMP-A-3L	1,163	I	E5b	101	Fair	58	Good	None	N/A	No Action	-	-
FMP-B1	1,029	I	E5	148	Excellent	66	Excellent	None	N/A	No Action	-	-
FMP-B-1R	459	1	E6	114	Fair	56	Good	None	N/A	No Action	-	-
FMP-B-1R-1R	138	1	E6	114	Fair	56	Good	None	N/A	No Action	-	-
FMP-B2	2,126	1	C6	120	Fair	65	Excellent	None	N/A	No Action	-	-
FMP-B3	203	1	E5	148	Excellent	66	Excellent	None	N/A	No Action	-	-
FMP-C1	747	I	C5	126	Good	63	Excellent	None	N/A	No Action	-	-
FMP-C-1R	342	I	E6	102	Fair	61	Excellent	None	N/A	No Action	-	-
FMP-C2	1,291	I	E6	149	Excellent	64	Excellent	None	N/A	No Action	-	-
FMP-C-2R	219	I	E6	96	Fair	50	Fair	Low	N/A	No Action	-	-
FMP-C3	1,594	I	E5	148	Excellent	63	Excellent	None	N/A	No Action	-	-
FMP-C-3L-A	207	I	E6	100	Fair	56	Good	None	N/A	No Action	-	-
FMP-C-3L-B	415	I	E5	122	Good	61	Excellent	None	N/A	No Action	-	-
FMP-C-3L-C	2,036	l	E5	132	Good	62	Excellent	None	N/A	No Action	-	-
FMP-C-4L-A	458	I	E6	102	Fair	60	Good	None	N/A	No Action	-	-
FMP-C-4L-B	666	I	E6	117	Fair	62	Excellent	None	N/A	No Action	-	-
LSC-A	417	I	E6b	108	Fair	61	Excellent	None	N/A	No Action	-	-
LSC-B	539	I	E5	97	Fair	62	Excellent	None	N/A	No Action	-	-



TABLE C-1: CANDIDATE LOCATIONS FOR STREAM REMEDIATION

SAR ID	SAR Length (ft)	CEM Stage	Rosgen	Habitat Score	Habitat Rating	Floodplain Score	Floodplain Rating	Restoration Potential	Restoration Access	Proposed Treatment	Specific Action	Notes
LSC-C	176	1	E6b	103	Fair	63	Excellent	None	N/A	No Action	-	-
UTC-A1	438	Early II	E6b	88	Poor	40	Poor	Low	N/A	No Action	-	-
UTC-A2	1,376	Ш	G5	101	Fair	47	Fair	High	Moderate	Restore Degraded Channel	Stream Restoration	Stabilization required to prevent further incision upstream and aggradation downstream.  Enhance stream riffle and pool complexes by
UTC-A3	1,408	Ш	F5	97	Fair	51	Fair	Moderate	Moderate	Restore Stream Bed Form and Habitat	Stream Enhancement	incorporating grade control structures and constructing riffles, and excavating pools.
UTC-A-L2	588	Ш	B5	83	Poor	44	Fair	Moderate	Moderate	Restore Stream Bed Form and Habitat	Stream Enhancement	Enhance stream riffle and pool complexes by incorporating grade control structures and constructing riffles, and excavating pools.
UTC-A-L3	500	1	E6	84	Poor	57	Good	None	N/A	No Action	-	-
UTC-A-L5	274	1	E5	72	Poor	51	Fair	None	N/A	No Action	-	-
UTC-A-R1	158	П	E5b	72	Poor	44	Fair	Moderate	Fair	Channel Stabilization/Energy Dissapator	Stream Restoration	Stabilization required to prevent further incision upstream and aggradation downstream.
UTC-A-R4-A	659	I	E5	111	Fair	61	Excellent	None	N/A	No Action	-	-
UTC-A-R4-B	1,118	I	E5b	119	Fair	64	Excellent	None	N/A	No Action	-	-
UTC-B1	2,256	I	E5b	138	Excellent	67	Excellent	None	N/A	No Action	-	-
UTC-B-1L	221	I	E6b	108	Fair	66	Excellent	None	N/A	No Action	-	-
UTC-B2	557	I	C6	132	Good	59	Good	None	N/A	No Action	-	-
UTC-B-2R	411	I	E6b	108	Fair	66	Excellent	None	N/A	No Action	-	-
YR2-A1	240	I	E6b	112	Fair	64	Excellent	None	N/A	No Action	-	-
YR2-A2	323	l	E6	118	Fair	62	Excellent	None	N/A	No Action	-	-
YR2-B	452	l ·	E6	113	Fair	59	Good	None	N/A	No Action	-	-
YR2-C	345	<u> </u>	E6	108	Fair	60	Good	None	N/A	No Action	-	<del>-</del>
YR2-D1	449	Early II	E6	122	Good	62	Excellent	None	N/A	No Action	-	-
YR2-D-1R	102	<u> </u>	E6b	97	Fair	62	Excellent	None	N/A	No Action	-	<del>-</del>
YR2-D2	281	11/111	G6	125	Good	56	Good	Low	N/A	No Action	-	-
YR2-D-2R	199	l l	E6	104	Fair	62	Excellent	None	N/A	No Action	-	<del>-</del>
YR2-D3 YR2-D-3L-A	904 244	l I	E5 E6b	129 100	Good Fair	65	Excellent	None	N/A	No Action	-	<del>-</del>
YR2-D-3L-A	525	<u> </u>	E60	112	Fair	60 61	Good Excellent	None None	N/A N/A	No Action	-	-
INZ-U-3L-D	525	I	Ľ0	112	ГdII	ΩŢ	EXCEILETT	none	IN/A	No Action	-	-



## TABLE C-2: CANDIDATE LOCATIONS FOR STREAM REMEDIATION

SAR ID	SAR Length (ft)	CEM Stage	Rosgen	Habitat Score	Habitat Rating	Floodplain Score	Floodplain Rating	Restoration Potential	Restoration Access	Proposed Treatment	Specific Action	Estimated Cost	Notes
BMP-A1	569	II/III	G4	107.5	Fair	37	Poor	Moderate	Fair	Restore Degraded Channel	Stream Restoration	\$284,389	Stabilization required to prevent further incision upstream and aggradation downstream.
BMP-A-1L-A	279	II/III	G5	70.5	Poor	40	Poor	Moderate	Fair	Restore Degraded Channel	Stream Enhancement	\$69,854	Stabilization required to prevent further incision upstream and aggradation downstream.
BMP-A2	734.06	III	G5	93.5	Fair	49	Fair	Moderate	Fair	Restore Degraded Channel	Stream Restoration	\$330,328	Stabilization required to prevent further incision upstream and aggradation downstream.
BMP-B-2L-A	136.61	II/III	G5	69	Poor	42	Fair	Moderate	Fair	Restore Degraded Channel	Stream Enhancement	\$34,153	Stabilization required to prevent further incision upstream and aggradation downstream.
UTC-A2	1376	III	G5	101	Fair	47	Fair	High	Moderate	Restore Degraded Channel	Stream Restoration	\$550,383	Stabilization required to prevent further incision upstream and aggradation downstream.
UTC-A3	1408	III	F5	97	Fair	51	Fair	Moderate	Moderate	Restore Degraded Channel	Stream Restoration	\$563,169	Stabilization required to prevent further incision upstream and aggradation downstream.
UTC-A-L2	588	II	В5	83	Poor	44	Fair	Moderate	Moderate	Restore Stream Bed Form and Habitat	Stream Enhancement	\$235,360	Enhance stream riffle and pool complexes by incorporating grade control structures and constructing riffles, and excavating pools.
UTC-A-R1	158	II	E5b	72	Poor	44	Fair	Moderate	Fair	Restore Stream Bed Form and Habitat	Stream Enhancement	\$55,247	Enhance stream riffle and pool complexes by incorporating grade control structures and constructing riffles, and excavating pools.



#### TABLE C-3: CANDIDATE LOCATIONS FOR REMEDIATION OF POINT IMPACTS

#### STORMWATER OUTFALLS (OT)

Subwatershed	Object ID	SAR ID	Severity	Proposed Treatment	Specific Action	Notes
Barlows Mill Pond	OT-1	BMP-A-2L-A	2	No Action	-	
Barlows Mill Pond	OT-1	BMP-A-2L-A	1	No Action	-	
Barlows Mill Pond	OT-1	BMP-A-2L-A	1	No Action	-	
Barlows Mill Pond	OT-1	BMP-A-2L-1R	1	No Action	-	
Barlows Mill Pond	OT-1	BMP-A1-3L-A	3	Channel Stabilization/Energy Dissipator	Local Repair	
Barlows Mill Pond	OT-1	BMP-A1-2L-B	2	No Action	-	
Barlows Mill Pond	OT-1	BMP-A-4R-A	2	No Action	-	
Barlows Mill Pond	OT-1	BMP-A1	3	Channel Stabilization/Energy Dissipator	Local Repair	
Barlows Mill Pond	OT-1	BMP-A-A1-A	3	Channel Stabilization/Energy Dissipator	Local Repair	
Fenton Mill Pond	OT-1	FMP-A2-2L-A	2	No Action	-	
Fenton Mill Pond	OT-1	FMP-A-2L-1R	4	Channel Stabilization/Energy Dissipator	Local Repair	
Fenton Mill Pond	OT-1	FMP-A-2L-B	1	No Action	-	
Fenton Mill Pond	OT-1	FMP-A2-2L-A	2	No Action	-	
Upper Taskinas Creek	OT-1	UTC-A-L2	4	Channel Stabilization/Energy Dissipator	Local Repair	
Upper Taskinas Creek	OT-1	UTC-A-L3	1	No Action	-	
Upper Taskinas Creek	OT-1	UTC-A-L5	4	Channel Stabilization/Energy Dissipator	Local Repair	
York River 2	OT-1	YR2-C	1	No Action	-	

#### STREAM CROSSINGS (SC)

Subwatershed	Object ID	SAR ID	Severity	Proposed Treatment	Specific Action	Notes
Barlows Mill Pond	SC-1	BMP-A-1R-A	1	No Action	-	
Barlows Mill Pond	SC-2	BMP-B-2L-C	2	No Action	-	
Barlows Mill Pond	SC-1	BMP-B-2L-B	1	No Action	-	
Barlows Mill Pond	SC-1	BMP-A1	5	Restore Degraded Channel	Larger Stream Initiative	
Barlows Mill Pond	SC-1	BMP-1L-A	1	No Action	-	
Fenton Mill	SC-1	FMP-A1	1	No Action	-	
Fenton Mill	SC-1	FMP-A-2L-B	1	No Action	-	
Fenton Mill	SC-2	FMP-B3	1	No Action	-	
Fenton Mill	SC-1	FMP-B2	1	No Action	-	
York River 2	SC-1	YR2-D1	1	No Action	-	
York River 2	SC-2	YR2-D1	1	No Action	-	
York River 2	SC-3	YR2-D1	1	No Action	-	



#### TABLE C-3: CANDIDATE LOCATIONS FOR REMEDIATION OF POINT IMPACTS

#### SEVERE BANK EROSION (ER)

Subwatershed	Object ID	SAR ID	Severity	Proposed Treatment	Specific Action	Notes
Barlows Mill Pond	ER-1	BMP-A1-1L-A	3	Restore Stream Banks	Local Stream Repair	
Barlows Mill Pond	ER-1	BMP-A-4R-A	3	Restore Stream Banks	Local Stream Repair	
Barlows Mill Pond	ER-1	BMP-1L-1R-A	2	Restore Stream Banks	Local Stream Repair	
Fenton Mill Pond	ER-1	FMP-A-1L	2	Restore Stream Banks	Local Stream Repair	

#### TRASH AND DEBRIS (TR)

Subwatershed	Object ID	SAR ID	Severity	Proposed Treatment	Specific Action	Notes
Fenton Mill	TR-1	FMP-A-2L-A	2	Remove Trash	Local Clean-up	Remove trash/debris from channel & floodplain
Fenton Mill	TR-4	FMP-C-4L-A	2	Remove Trash	Local Clean-up	Remove trash/debris from channel & floodplain
Fenton Mill	TR-2	FMP-A-2L-1R	3	Remove Trash	Local Clean-up	Remove trash/debris from channel & floodplain
Upper Taskinas Creek	TR-5	UTC-B2	3	Remove Trash	Local Clean-up	Remove trash/debris from channel & floodplain
Upper Taskinas Creek	TR-4	UTC-B1	4	Remove Trash	Local Clean-up	Remove trash/debris from channel & floodplain
Upper Taskinas Creek	TR-2	UTC-B-1L	4	Remove Trash	Local Clean-up	Remove trash/debris from channel & floodplain
Upper Taskinas Creek	TR-3	UTC-B1	2	Remove Trash	Local Clean-up	Remove trash/debris from channel & floodplain
Upper Taskinas Creek	TR-1	UTC-B1	4	Remove Trash	Local Clean-up	Remove trash/debris from channel & floodplain



# Appendix D: The Decision Support System

#### Introduction

An essential component of any Watershed Management Plan and/or Stormwater Management Plan is the ability to identify, rank and prioritize potential retrofit and restoration opportunities. Vanasse Hangen Brustlin, Inc. (VHB) has been retained by James City County (JCC) to develop a Decision Support System (DSS) to address this need and to be used in conjunction with the County's Watershed Management Planning initiatives. The goals of creating and using a DSS include:

Provide an objective, yet technically accurate method of prioritizing projects. Provide a consistent ranking procedure for potential projects. Help to guide County Planning.

Various factors are taken into consideration with the development of a DSS, including the goals of the municipality in reference to stormwater control, water quality improvements, flooding issues, land use planning and regulatory requirements. The development of this tool, while informed by actual field data from JCC, can be tailored to meet the needs of any municipality depending on the goals of their management plans and the intrinsic environmental conditions at their location. Any DSS should be created with specific input from the personnel within the municipality that are intimately familiar with watershed and stormwater management activities and that will use the resulting DSS to prioritize and implement projects.

### **Decision Support System**

By definition, a DSS is an information system that supports organizational decision-making activities. A well designed DSS allows decision makers to compile data, technical knowledge and other useful information to identify and solve problems and/or make decisions. For the purposes of this DSS, VHB has created a spreadsheet matrix that will allow JCC to rank and prioritize stormwater retrofit and stream restoration and enhancement / channel stabilization



opportunities within the County's watersheds. The ultimate goal is to improve water quality throughout the County by addressing areas that are currently impacted through development as well as those that will be developed in the future.

Various examples of DSSs used in other municipalities were compiled and analyzed to determine what type of DSS structure would best suit the needs of JCC. In addition to the previously developed examples, VHB conferred with JCC on their specific goals in using such a system to rank and prioritize possible projects throughout the County.

## **Project Identification**

Potential project sites may be identified through a variety of channels of information. Potential sources of project identifications may include:

- Citizen Requests
- Master Planning of County
- Regulatory Requirements (i.e. TMDL Implementation Plan)
- Results of Watershed Assessments
- Inspections of Facilities by County Personnel

The County may elect to use the existing Capital Improvement Project (CIP) Request Form, or create a form that is specific to the ranking criteria within the DSS.

### **Project Prioritization**

The ability to identify potential water quality/stormwater improvement projects is an important aspect of a Watershed Management Assessment Program. Once potential project areas are identified, they must then be stratified using results of analyses of the field data collected by the specified methodology during an assessment. This stratification allows for the projects with the most potential for retrofit and/or restoration to be identified. Following stratification, the sites may then be ranked for funding and implementation. The criteria used in such a ranking procedure should be representative of the goals of the County and may be adjusted over time as new issues arise or priorities change. A DSS is the logical tool to use for the purposes of this final ranking. The benefits of having a dynamic DSS tailored for the County or even a specific (sub) watershed include the ability to address management issues that may be indicative of particular land use(s), pollutant(s) of concern, inadequate infrastructure and other sources of water quality degradation.

Consistency of ranking criteria allows for comparison between sites and determination as to which projects will provide the most improvement and should be implemented first. For the purpose of the JCC DSS, the possible benefits associated with the projects were derived from the goals for the Watershed Plans as well as the field data collected during the watershed



assessment(s). These benefits are then assigned a numerical score according to the degree of improvement offered by the chosen treatment method on a particular site or stream reach. The degree of improvement is assessed as having either primary, secondary, supplemental or no benefit. Each project area that is included in the DSS is attributed values for eight (8) Prioritization Factors and eight (8) Possible Conflicts. The DSS spreadsheet located in Appendix A is designed such that project sites are prioritized based on the highest to lowest scores afforded by the sum of the Prioritization Factor scores (Ranking: Level of Benefit) minus the sum of the Possible Conflict scores (Ranking: Degree of Complexity).

For JCC, opportunities for watershed restoration activities were broken into two general categories:

- 1. Stream Restoration and/or Channel Stabilization
- 2. Stormwater Management Treatment Opportunities

#### **Prioritization Factors**

Prioritization Factors for both categories are scored based on the Prioritization Factor Weighting Table (Appendix A), though the methodology for how the scores are derived differs between the two types of watershed restoration activities. These methodologies are discussed below in relation to the watershed activity.

#### **Stream Restoration and/or Channel Stabilization**

The Prioritization Factors (i.e., potential watershed benefits) for Stream Restoration and/or Channel Stabilization opportunities include:

- Water Quality/Runoff Quantity:
  - Significant Improvements Indicates a significant reduction in pollutant loading, and/or quantity of runoff entering the reach during storm events; may possibly aid in meeting TMDL pollutant reduction requirements (5 points)
  - Minimal Creates a minor reduction in pollutant loading and/or runoff quantity
     (3 points)
  - None Creates no reduction in pollutant loading and/or runoff (0 points)
- Restore Floodplain Connectivity
  - Significantly increase connectivity restoration efforts provide for access to a floodplain (either historical or newly created) at bankfull and greater flow events (5 points)
  - Maintain Existing minimal access to a floodplain at bankfull events, more access during higher flow events (3 points)
  - No increase in connectivity no increase in floodplain access within the reach (0 points)



#### • Restore Aquatic Habitat

- Significant Improvement Improvements in aquatic habitat as measured by increased diversity in aquatic organism population (4 points)
- Minimal Improvement Minimal improvement of aquatic habitat due to slight reductions in pollutant loading and/or physical channel instability (2 points)
- Maintain Maintain existing quality of aquatic habitat (0 points)

#### Reduce Sedimentation

- o Significantly Reduce Significantly reduce amount of sediment entering watershed through streambank erosion and/or poor Erosion & Sedimentation Control (E&S) practices related to land disturbing activities within the watershed (4 points)
- Slight Reduction Minimal reduction in sedimentation due to little improvement to existing channel instability and/or lack of improvement of poor E&S practices within the watershed (2 points)
- Maintain No change in sedimentation within project reach (0 points)

#### Project Size/Scope

- Significant Proposed project length would provide for maximum water quality benefit; several adjacent project stream reaches may be restored as one larger project (3 points)
- Moderate Project length is moderate and/or adjacent to unstable stream reaches not to be restored (2 points)
- Minimal Project length is minimal and/or adjacent unstable stream reaches not to be restored (1 point)

#### • Channel Condition

- Project reach is severely incised and has eroding stream banks (4 points)
- o Project reach is moderately incised and has some eroding stream banks (2 points)
- Minimal incision present with little to no eroding stream banks (0 points)
- Condition of Contributing Watershed Three factors are taken into consideration for this
  ranking factor: Total Impervious Area (TIA), Pollution Severity Index (PSI; average of
  Neighborhood Source Assessment [NSA] sites), and Hotspot Site Investigation (HIS;
  average of sites)
  - Developed watershed (4 points):
    - TIA >25%
    - PSI Any severe
    - HIS Any severe
  - Developing watershed (2 points):
    - TIA 10% 25%
    - PSI Any high
    - HIS Any confirmed
  - Undeveloped watershed (0 points):
    - TIA <10%
    - PSI All others
    - HIS All others



- Increase Environmental Awareness
  - High Significant public involvement (associated with project location and/or community involvement; (3 points)
  - Medium Project provides educational opportunities (2 points)
  - Low Nearby residents may be aware of project/benefits (0 points)

Of the Prioritization Factors noted above, scores for Water Quality/Runoff Quantity, Restore Floodplain Connectivity, Restore Aquatic Habitat, Reduce Sedimentation, Project Size/Scope and Channel Condition can be informed largely by field data collected during stream and floodplain assessment activities. Field efforts associated with the DSS, as well as a detailed discussion of the Stream Restoration and/or Channel Stabilization Prioritization Factor evaluation, weighting scheme and calculation are provided as Appendix C.

#### .....

# **Stormwater Management Treatment Opportunities**

The Prioritization Factors (i.e., potential watershed benefits) for Stormwater Management Treatment Opportunities include:

- Water Quality/Runoff Quantity: Improving water quality and decreasing runoff quantity (this ranking is determined by the total removal percentage of the stormwater management facility):
  - Significant Improvements (5 points) Indicates a significant reduction in pollutant loading, and/or quantity of runoff entering the reach during storm events; may possibly aid in meeting TMDL pollutant reduction requirements; quantified as:
    - TSS >80%
    - $TN^2 > 50\%$
    - TP<sup>1</sup> >50%
    - NO<sub>3</sub> >40%
    - Runoff Volume<sup>1</sup> > 50%
  - Minimal (3 points) Creates a minor reduction in pollutant loading and/or runoff quantity; quantified as:
    - TSS 0% 80%
    - TN<sup>2</sup> 0% 50%
    - TP<sup>1</sup>0% 50%
    - NO<sub>3</sub> 0% 40%
    - Runoff Volume<sup>1</sup> 0% 50%

<sup>&</sup>lt;sup>1</sup> Percentages from Table 2, TM: Runoff Reduction Method, April 2008

<sup>&</sup>lt;sup>2</sup> Percentages from Table 3, TM: Runoff Reduction Method, April 2008

<sup>&</sup>lt;sup>3</sup> CWP, National Pollutant Removal Performance Database, version 3, September 2007



- None (0 points) Creates no reduction in pollutant loading and/or runoff quantity;
   quantified as:
  - TSS 0%
  - TN<sup>2</sup> 0%
  - TP<sup>1</sup> 0%
  - NO<sub>3</sub> 0%
  - Runoff Volume<sup>1</sup> 0%

#### Restore Floodplain Connectivity

- Decrease stormflow stormflow entering the receiving waterbody is reduced by 70 to 100% (5 points)
- Maintain Existing stormflow is decreased by 40-70% (3 points)
- o Increase stormflow stormflow entering the waterbody is decreased by less than 40% (0 points)
- Restore Aquatic Habitat This topic is not applicable to the Stormwater Management Treatment Opportunities

#### Reduce Sedimentation

- Reduce (4 points) Significantly reduce amount of sediment entering watershed through streambank erosion and/or poor Erosion & Sedimentation Control (E&S) practices related to land disturbing activities within the watershed; quantified for the stormwater treatment options as a percent of the Total Volume (Tv) captured:
  - **•** 70% 100%
- Maintain (2 points) Percentage of Tv capture required to maintain the existing condition:
  - **40% 70%**
- o Increase (0 points) Sedimentation is assumed to increase if the Tv is <40%

#### Project Size/Scope

- Significant (3 points) The percentage of the sub-watershed that is included in the drainage being treated is >20%
- Moderate (2 points) The percentage of the sub-watershed that is included in the drainage being treated is 1% - 20%
- Minimal (1 point) The percentage of the sub-watershed that is included in the drainage being treated is <1%</li>

#### Channel Condition

- O Downstream of stormwater facility is severely incised and has eroding stream banks (4 points)
- Downstream of stormwater facility is moderately incised and has some eroding stream banks (2 points)
- Downstream of stormwater facility has minimal eroding stream banks (0 points)

<sup>&</sup>lt;sup>1</sup> Percentages from Table 2, TM: Runoff Reduction Method, April 2008

<sup>&</sup>lt;sup>2</sup> Percentages from Table 3, TM: Runoff Reduction Method, April 2008

<sup>&</sup>lt;sup>3</sup> CWP, National Pollutant Removal Performance Database, version 3, September 2007



- Condition of Contributing Watershed: (Same as for stream projects)
  - Developed watershed (4 points):
    - TIA >25%
    - PSI Any severe
    - HIS Any severe
  - Developing watershed (2 points):
    - TIA 10% 25%
    - PSI Any high
    - HIS Any confirmed
  - Undeveloped watershed (0 points):
    - TIA <10%
    - PSI All others
    - HIS All others
- Increase Environmental Awareness
  - High (3 points) Significant public involvement (associated with project location and/or community involvement); In close proximity to a school, community center or other educational opportunity
  - Medium (2 points) Project provides educational opportunities; In close proximity to parks or pedestrian routes with potential for signage
  - Low (1 point) Nearby residents may be aware of project/benefits; near commercial or industrial area with limited visibility

#### **Possible Conflicts**

Once the potential benefits associated with improving a particular stream reach or stormwater facility through one of the Proposed Treatments are defined and ranked appropriately for a given site, the constraints or conflicts are then taken into consideration. The constraints that are included in the JCC DSS were derived from the Retrofit Reconnaissance Inventory (RRI) data forms used by the CWP and are applicable to Stream Restoration and/or Channel Stabilization as well as the various Stormwater Management Treatment Opportunities.

#### The Possible Conflicts include:

- Conflicts with Existing Utilities
  - Significant (5 points) Utilities will greatly impact project design and may require expensive relocation
  - Minimal (3 points) Utilities are present in the project area and may constrain project design
  - None (0 points) Utilities not present in the project area
- Construction Access
  - Major Restrictions (5 points) Construction access will require creating roads with impacts to sensitive areas; no stockpile areas near site



- Minimal Restrictions (2 points) Some impact to landscaped areas will be required; limited stockpile areas
- No Restrictions (0 points) Site is open/there is access with paved surface;
   stockpile areas are available near the project site

#### Neighborhood Impact

- Dense Development (4 points) Residential areas adjacent to site with easy access; Potential for standing water, mosquitoes, or safety issues
- Some Development (2 points) Residential areas at some distance/site can be fenced; shallow water with safety bench, gentle slopes, fenced
- Open Space (0 points) Site is either in open space or commercial or industrial land use with no nearby residential area; Project will not result in standing water

#### Physical Feasibility

- o Poor (3 points) Site constraints limit feasibility of project
- o Fair (2 points) Some limitation, but project is feasible
- o Good (1 point) Little to no limitations on site

#### Level of Design

- Major (4 points) Significant level of effort required for project design
- Moderate (2 points) Reasonable level of effort required
- Minor (0 points) Minimal level of effort required

#### Private Property

- No Interest (5 points) Site is entirely on private property and owners have no interest in project
- Moderate Interest (3 points) Site is either on private property with some owner interest or site is on publicly owned land currently in other uses
- High interest (0 points) Site is either on private property with actively interested owners or site is on publicly-owned land available for the project

#### Possible Permitting Factors

- Major (5 points) Wetland, Forest, and/or Waters of the U.S. impacts will be incurred and permits will be required
- Moderate (3 points) Wetlands are present but there will be no impacts associated with construction; Some tree removal will be necessary, and tree replacement will be required
- Minor (0 points) No impacts will be incurred resulting in additional permits being required

#### Negative Environmental Impacts

- Major (4 points) Implementation of the proposed treatment for a particular project reach would have significant negative environmental impacts
- Moderate (2 points) Implementation of the proposed treatment for a particular project reach would have minimal negative environmental impacts
- Minor (0 points) Implementation of the proposed treatment for a particular project reach would not have negative environmental impacts



## **Implementation**

The County may use the DSS to prioritize projects identified through watershed assessments as well as other methods. Following this ranking of potential retrofit and/or restoration sites, the County may elect to implement the highest ranked project(s) based on available funds. Issues, other than funding, that should be considered include:

- Relevancy of a project to a larger County or watershed goal, such as implementation of the TMDL plan.
- Coordination of a particular project with other on-going projects such as stream restoration work adjacent to a culvert replacement.
- Limits of project boundaries need to be clearly defined to avoid redundancy and overlap.
- Project sequencing should be considered to maximize potential benefits and not jeopardize previously completed sites.
- Coordination between projects and County Departments should result in potential cost reduction, minimization of environmental and social impacts, and streamlining of the project implementation process.

While the DSS was carefully developed to act as a universal tool and not be watershed-specific, the values assigned to each category of benefit and constraint may be amended somewhat according to the feedback gleaned from initial prioritization efforts.

#### **AGENDA ITEM NO. I.3.**

#### **ITEM SUMMARY**

DATE: 5/12/2020

TO: The Board of Supervisors

FROM: Patrick O. Teague, Director of Human Resources

SUBJECT: Revisions to Chapter 5 of the James City County Personnel Policies and Procedures

Manual

#### **ATTACHMENTS:**

	Description	Type
D	Revisions to Chapter 5 of the James City County Personnel Policies and Procedures Manual	Cover Memo
D	Revisions to Chapter 5 of the James City County Personnel Policies and Procedures Manual	Resolution
ם	Revisions to Chapter 5 of the James City County Personnel Policies and	Exhibit

#### **REVIEWERS:**

Reviewer	Action	Date
Teague, Patrick	Approved	4/23/2020 - 1:09 PM
Daniel, Martha	Approved	4/23/2020 - 1:36 PM
Kinsman, Adam	Approved	4/24/2020 - 9:21 AM
Fellows, Teresa	Approved	4/29/2020 - 1:59 PM
Purse, Jason	Approved	5/5/2020 - 1:44 PM
Fellows, Teresa	Approved	5/5/2020 - 2:01 PM
	Teague, Patrick Daniel, Martha Kinsman, Adam Fellows, Teresa Purse, Jason	Teague, Patrick Approved Daniel, Martha Approved Kinsman, Adam Approved Fellows, Teresa Approved Purse, Jason Approved

#### MEMORANDUM

DATE: May 12, 2020

TO: The Board of Supervisors

FROM: Patrick O. Teague, Director of Human Resources

SUBJECT: Revisions to Chapter 5 of the James City County Personnel Policies and Procedures

Manual

To remain competitive in the marketplace, adjustments to our benefits package can be an important tool.

Staff proposes revisions to Chapter 5 of the James City County Personnel Policies and Procedures Manual to revise Section 5.4 B, Number 3, to increase the annual carryover of paid time off (PTO) from 12 months accrual to 18 months accrual.

Revision of Section 5.4 B, Number 4, to provide three hours of sick leave per month for our Hybrid retirement program staff who only accrue PTO.

Lastly, revision of Section 5.4 B, adding Number 10, to provide a floating holiday to all staff to bring the County's total number of holidays closer to competitors in the market.

A copy of the proposed changes is attached.

Staff recommends approval of the proposed changes.

POT/nb JCC-Ch5Rev-mem

Attachments

### **RESOLUTION**

### REVISIONS TO CHAPTER 5 OF THE JAMES CITY COUNTY

### PERSONNEL POLICIES AND PROCEDURES MANUAL

WHEREAS,	the James City County Personnel Pe important document that guides dec		es Manual	(the "M	anual") is an
WHEREAS,	it is the practice of the County to reimprovements; and	evise and update the	Manual t	o reflect	changes and
WHEREAS,	updating the County's benefit o competitiveness in recruitment and			proves th	ne County's
WHEREAS,	staff recommends revisions to Ch Manual to increase paid time off (F months; provide staff who accrue provide County staff one floating ho	PTO) annual carry ov PTO three hours of	er limit f	rom 12 r	months to 18
NOW, THER	EFORE, BE IT RESOLVED by the E that revisions to the Personnel Polici in the staff memorandum are adopte	ies and Procedures M	anual list		
		James O. Icen Chairman, Bo	,	=	
ATTEST:			AYE	NAY	<u>ABSTAIN</u>
		SADLER MCGLENNON LARSON			
Teresa J. Fell	ows	HIPPLE			
Deputy Clerk	to the Board	ICENHOUR			
May, 2020.	Adopted by the Board of Supervisor	rs of James City Cou	unty, Virg	ginia, this	12th day of

JCC-Ch5Rev-res

# CHAPTER 5

# EMPLOYEE BENEFITS

Section 5.1	Policy - General
Section 5.2	Eligibility - General
Section 5.3	Holidays
Section 5.4	Leave
Section 5.5	Family and Medical Leave Act (FMLA)
Section 5.6	Health Related Benefits
Section 5.7	Retirement, Disability, and Life Insurance
Section 5.8	Workers' Compensation (Policy) (Procedures)
Section 5.9	Tax-Related Benefits
Section 5.10	Employer Assisted Home Ownership Program
Section 5.11	Optional, Employee-Paid Benefits

5-1 Revised 2/3/20

# Chapter 5 Employee Benefits

#### Section 5.1 Policy - General

It is the policy of James City County to provide employee benefits that complement the County's values and strategic direction, that help meet certain needs of County employees and their families, and that help the County to attract and retain quality employees. The County strives to offer high quality benefits, at a reasonable cost to both employees and the County, which prove valuable and useful to employees.

Given the range of benefits and eligibility requirements, the County will communicate the availability of these benefits to eligible individuals and will provide assistance in understanding and using them.

#### Section 5.2 Eligibility - General

Position Type	Benefit Eligibility				
Full-time regular and	All benefits available; VRS Plan 1, 2, or Hybrid				
limited-term positions	eligibility depending on VRS service criteria; leave plan				
_	eligibility depending on VRS Plan 1, 2 or Hybrid.				
Part-time regular and	Benefits available where specifically indicated in the				
limited-term positions	policy; eligibility is dependent on date of hire into the				
	part-time position and authorized annual hours.				
Temporary positions, on	Benefits available where specifically indicated in the				
call positions, former	policy.				
employees, and retirees					
Other positions	Benefits eligibility varies by organization; contact the				
	Human Resource Department.				
Affordable Care Act	Eligible for group health insurance coverage in				
Benefits Eligible	compliance with the shared responsibility provision of				
	section 4980H of the Internal Revenue Code, enacted by				
	the Patient Protection and Affordable Care Act.				

#### Section 5.3 Holidays

The County observes the following eleven designated holidays:

January 1
3rd Monday in January
3rd Monday in February
Last Monday in May
July 4
1st Monday in September
November 11
4th Thursday in November
Friday following Thanksgiving

Christmas Eve December 24
Christmas Day December 25

The Board of Supervisors may declare any other day an additional holiday.

A. <u>Eligibility for and Calculation of Holidays</u>. Employees in full-time and part-time regular and limited-term positions are eligible for paid holidays or compensatory leave as listed in the eligibility charts below.

IF an employee is in a Full-Time Position (2,080 or more Annual Authorized				
Hours)				
AND the employee participates in				
VRS Plan 1 or 2	leave is based on the employee's			
	monthly sick leave accrual rate (see			
	Section 5.4.B.9.)			
AND the employee participates in the	THEN paid holidays or compensatory			
VRS Hybrid Plan leave is 8 hrs.				

IF an employee is in a Part-Time Regular or Limited-Term Position (fewer than 2,080 Annual Authorized Hours					
	AND authorized to work	THEN the employee's paid holidays or compensatory leave is based on the employee's monthly sick leave accrual rate (see Section 5.4.B.9.)			
AND the employee was hired into a part-time regular or limited-term position on or after 1/1/2014	AND authorized to work 1,040-2,079 hrs.	THEN the employee's paid holidays and compensatory leave is 6 hrs.			
AND the employee was hired into a part-time regular or limited-term position on or after 1/1/2014 but before 12/1/2019	AND authorized to work 780-1,039 hrs.	THEN the employee's paid holidays and compensatory leave is 3 hrs.			

AND the employee was hired into a part-time regular or limited-term position on or after 1/1/2014	AND authorized to work fewer than 780 hrs.	THEN the employee is not eligible for paid holidays or compensatory leave
AND the employee was hired into a part-time regular or limited-term position on or after 12/1/2019	AND authorized to work fewer than 1,040 hrs.	THEN the employee is not eligible for paid holidays or compensatory leave

#### B. Observance of Holidays

- 1. If a holiday falls on a Saturday, the preceding Friday shall be observed as the holiday; if a holiday falls on a Sunday, the following Monday shall be observed as the holiday. County operations which are open on holidays shall observe the actual holiday for purposes of holiday pay.
- 2. If an observed holiday falls on a day an employee is not otherwise scheduled to work, the employee shall earn compensatory leave for the observed holiday for the number of holiday hours listed in the eligibility chart above. In cases where this would present a hardship because of work load, the department director may authorize payment in lieu of the compensatory leave if the budget permits.
- 3. An employee who is on approved leave with pay during a period in which a holiday falls, shall not be charged leave for the observed holiday for the number of holiday hours listed in the eligibility chart above.
- 4. An employee who is on military leave with pay during a period in which a holiday falls shall not receive any additional pay or compensatory leave for the holiday.
- 5. An employee forfeits eligibility to be compensated for the holidays observed by the County unless the employee works the last scheduled work day before the holiday and the first scheduled work day after the holiday or is on approved leave with pay.

#### C. Working on Holidays

- 1. If an employee is required to work on an observed holiday, he shall receive holiday pay as outlined in Chapter 4, Section 4.15.
- 2. Certain employees who are called to work on a County-observed holiday on which they are not scheduled to work may be eligible for premium pay as outlined in Chapter 4, Section 4.17.

#### Section 5.4 Leave

#### A. General

- 1. <u>Policy Statement</u> James City County recognizes the importance of balancing the productivity needs of the County with the needs of County employees and their families by providing employees with time away from work. It is the policy of the County to provide employees with continued income and benefits during certain approved absences of specified durations.
- 2. <u>Eligibility</u> Employees in part-time regular and limited-term positions are eligible for leave on a pro-rated basis with the exception of those hired on or after January 1, 2014, into positions with fewer than 780 annual authorized hours and those hired on or after December 1, 2019, into positions with fewer than 1,040 annual authorized hours.

#### 3. Definitions

#### a. Day

Full or Part	Characteristics	Annual	Day
Time		Authorized Hours	,
Full-Time	VRS Plan 1 or 2	2,080 or more	Monthly sick
	Member		leave accrual
			rate
Full-Time	VRS Hybrid	2,080	8 hours
	Plan Member		
Part-Time	Hired before	Fewer than 2,080	Monthly sick
	1/1/2014		leave accrual
			rate
Part-Time	Hired on or after	1,040-2,079	6 hours
	1/1/2014		
Part-Time	Hired on or after	780-1,039	3 hours
	1/1/2014 but		
	before		
	12/1/2019		
Part-Time	Hired on or after	Fewer than 780	None;
	1/1/2014 but		ineligible
	before		
	12/1/2019		
Part-Time	Hired on or after	Fewer than 1,040	None;
	12/1/2019		ineligible

b. Immediate Family - The immediate family is defined as: spouse, parent, son, daughter, brother, sister, grandparents, grandchildren, step-children, step-parents, guardian, spouse's parent and

grandparents, and any persons residing in the same household as the employee.

c. Week - A week is defined as the annual authorized hours of the employee's position divided by 52.

### B. Types of Leave

The County offers the following types of leave. An overview of eligibility, purpose and guidelines is listed below.

1					
Type	Annual Leave				
Eligibility	Employees in full-time regular and limited-term positions who are members of VRS Plan 1 or 2, and employees in part-time regular and limited-term positions who were hired into those positions before January 1, 2014				
Purpose	Any purpose		•		
Guidelines	Accrual Annual leave shall be accrued in accordance with the chart below:				
	Mon	thly Accrual	Rate In Hou	rs	
	Annual Authorized Hours	<5 years of service	5<15 years of service	>15 years of service	
	< 261 261-520	1 2	1.5 3.0	2 4	
	521-780	3	4.5	6	
	781-1,040	4	6.0	8	
	1,041-1,300 1,301-1,560 5 7.5 9.0			10	
	1,301-1,560	9.0	12		
	1,561-1,820	7	10.5	14	
	1,821-2,080	8	12.0	16	
	2,081-2,340	9 10	13.5 15.0	18 20	
	2,341-2,600 2,601-2,860	10	16.5	20 22	
	2,801-2,860				
	The maximum amount of leave that an employee may				
	accumulate is the amount of leave the employee can earn in				
	a two-year period.				
	The employee's leave balance must be within the maximum accumulation amount on July 1 of each year or the excess shall be forfeited.				

Payment for Accumulated Leave Upon Separation from Employment:

Employees shall receive the monetary equivalent of their annual leave balance up to the annual maximum accumulation. If two weeks' notice is not given by an employee, the equivalent of one day shall be deducted from the leave payments for each day that the employee failed to give notice of termination up to a two-week maximum. Exceptions may be made by the department director.

2.

<u> </u>			
Type	Civil Leave		
Eligibility Purpose	All employees in full-time and part-time regular and limited-term positions except those hired on or after 1/1/2014 into part-time and limited-term positions which have annual authorized hours fewer than 780 and those hired on or after December 1, 2019 who work a minimum of 1,040 annual hours.  May be used by an employee to provide paid absences while serving on a jury, or attending court as a witness		
	under subpoena.		
Guidelines	Compensation An employee compensated for civil duties, as by jury or witness fees, shall either take annual or compensatory leave, or turn over compensation received to the County.  Return to Work Any employee serving four or more hours (including travel time) is not required to start any shift that begins between 5 p.m. and 3 a.m. following the court appearance. The time		
	will be charged to Civil Leave.  Exclusion In those circumstances where a County employee is not subpoenaed and is acting as an expert witness in a court proceeding which is not directly related to his duties for the County, the employee shall be charged annual or compensatory leave or leave without pay.		

3.

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	Type	Paid Time Off (PTO)
	Eligibility	Employees in full-time regular and limited-term positions
		who are members of the VRS Hybrid Plan, and employees
		in part-time regular and limited-term position of 1,040 or
		more annual authorized hours who were hired into the part-
		time position on or after January 1, 2014.

<u> </u>						
Purpose	May be used by an employee to provide paid absences for					
	any purpose including illness and supplementing short-term					
Guidelines	disability payments.  Accrual					
Guraerines	PTO shall be accrued in accordance with the chart below:					
	r 10 shan i	de acciueu ii	i accordance	with the ch	art below.	
	PTO Monthly Accrual Rate in Hours					
	Annual <5 Years 5-10 10-15 15+					
	Authorize	of Service	Years of	Years of	Years of	
	d Hours		Service	Service	Service	
	<780	Ineligible;	Ineligible;	Ineligible;	Ineligible;	
		no PTO	no PTO	no PTO	no PTO	
		accrued	accrued	accrued	accrued	
	780 - 1,039 If	3.0	3.5	4.0	4.5	
	hired before					
	12/1/2019					
1,040- 2,079		6.0	7.0	8.0	9.0	
	2,080	12.0	14.0	16.0	18.0	
	<1,040 If	Ineligible;	Ineligible;			
	hired after	no PTO	no PTO	no PTO	no PTO	
	12/1/2019	accrued	accrued	accrued	accrued	
	Employees do not accrue leave while on short-term or long-term disability.					
	The maximum amount of PTO that an employee may accumulate is the amount of leave the employee can earn in a one-year 18-month period.  The employee's PTO leave balance must be within the maximum accumulation amount on July 1 of each year or the excess shall be forfeited.					
use a. Scheduled Absences - PTO should be sched advance for time off for vacations, persona appointments or other reasons. It is subsupervisor approval, department staffing neaestablished department procedures.				onal leave subject to		

- b. <u>Unscheduled Absences</u> While sometimes unavoidable, unscheduled absences can adversely affect the operations of the department. The supervisor may request the employee provide documentation in accordance with department policy or County procedures or regulations.
- c. <u>Supplement to Short-Term Disability Payments</u> Accrued PTO may be used by full-time employees wishing to increase STD payments up to 100% or full pay.

# Payment for Accumulated Leave Upon Separation from Employment

Employees shall receive the monetary equivalent of their PTO balance up to the annual maximum accumulation. If two weeks' notice is not given by an employee, the equivalent of one day shall be deducted from the leave payments for each day that the employee failed to give notice of termination up to a two-week maximum. Exceptions may be made by the department director.

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Type	Sick Leave		
Eligibility	Employees in full-time regular and limited-term positions		
	who are members of VRS Plan 1 or 2, and employees in		
	part-time regular and limited-term positions who were hired		
	into their positions before January 1, 2014. VRS Hybrid		
	Plan employees and Part-time regular and limited-term		
	positions of 1,040 or more annual authorized hours who		
	were hired into their position on or after January 1, 2014		
	are eligible for sick leave at varying accrual rates.		
Purpose	May be used by an employee to provide paid absences for		
	health-related reasons as outlined below. Accumulated sick		
	leave provides continued income for employees during		
	periods of disability.		
Guidelines	Sick leave provides paid absences for the following		
	reasons:		
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	a. A personal illness, injury, and/or disability not incurred		
	in the line of duty, which incapacitates the employee		
	from being able to perform assigned duties.		
	b. Appointments for examination and/or treatment related		
	to health when approved in advance by the department		
	director and when such appointments cannot		
	reasonably be scheduled during nonwork hours.		
	c. An illness or appointment for examination and/or		

treatment related to the health of an immediate family member requiring the attendance of the employee and approved by the department director, not to exceed twelve (12) days per fiscal year. A day is defined in Section 5.4.A.3.a. Use of additional sick leave in excess of the permitted allowance may be approved if recommended by the department director and approved by the Human Resource Director.

#### Accrual

a. VRS Plan 1 and 2 employees accrue sick leave in accordance with the chart below:

Annual	Monthly
Authorized	Accrual
Hours	Rate In
	Hours
<261	1
261-520	2
521-780	3
781-1,040*	4
1,041-1,300	5
1,301-1,560	6
1,561-1,820	7
1,821-2,080	8
2,081-2,340	9
2,341-2,600	10
2,601-2,860	11
>2,860	12

- b. There is no limit to the amount of sick leave an employee may accrue.
- c. VRS Hybrid Plan employees accrue 3 hours of sick leave per month.
- d. Part-time regular and limited-term position of 1,040 or more annual authorized hours who were hired into their part-time position on or after January 1, 2014 accrue 1.50 hours of sick leave per month

Payment for Accumulated Leave Upon Separation from Employment

Employees with two (2) years or more of continuous service with the County shall be compensated for their sick leave balance at the rate of one hour's pay for every four hours of accrued sick leave or the maximum amount listed

below, whichever is less. If two weeks' notice is not given by the employee, or if the employee is discharged for disciplinary reasons, sick leave payments shall be forfeited. Exceptions may be made by the department director.

Years of Service	Maximum Payment
2-14	\$1,000
15-24	\$2,500
25 or more	\$5,000

#### Sick Leave Bank

VRS Plan 1 and 2 employees may elect to pool accumulated sick leave into a sick leave bank for the purpose of providing participating employees additional leave for extended illness or injury. Such a bank shall be supported by employees and shall cease to exist should there be insufficient employee interest.

5.

Type	Funeral Leave				
Eligibility	All employees in full-time and part-time regular and				
	limited-term positions except those hired on or after				
	1/1/2014 into part-time and limited-term positions which				
	have annual authorized hours fewer than 780 and those				
	hired on or after December 1, 2019 which have annual				
	authorized hours fewer than 1,040.				
Purpose	May be used by an employee to provide paid absences upon				
	the death of a member of an employee's immediate family.				
Guidelines	Amount of Leave				
	Funeral leave, if requested by the employee, shall be				
	granted by the supervisor for up to three (3) days as defined				
	in Section 5.4.A.3.a. per death of an employee's immediate				
	family member. Exceptions may be granted by the				
	department director.				

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Туре	Leave Without Pay				
Eligibility	All employees in full-time and part-time regular and limited-term positions who are eligible to accrue leave. See Section 5.4.A.2.				
Purpose	May be used by an employee to provide unpaid absences				
Turpose	for a variety of reasons outlined below including any				
	mutually agreeable reason.				
Guidelines					
Guidennes	An employee shall be on leave without pay under the following circumstances:				
	<ul> <li>a. Approved absence for which the employee has insufficient accrued leave, or for which the employee elects, with the concurrence of the department director, not to use accrued leave;</li> <li>b. Absences authorized as a condition of employment;</li> <li>c. Unapproved absence from the job during a scheduled work period;</li> <li>d. Suspension without pay as defined in Section 7.5.C; or</li> <li>e. Furlough, or required unpaid time off for a defined group of employees, directed by the County Administrator due to fiscal constraints.</li> </ul>				
	<ul> <li>Impact on Other Benefits and Conditions of Employment <ul> <li>a. PTO or sick and annual leave shall not be earned for any pay period during which an employee takes leave without pay that is not approved prior to use or which exceeds one full work day.</li> <li>b. An employee's first performance increase after returning to work shall be pro-rated for each period of thirty (30) consecutive calendar days the employee is on leave without pay. Exceptions for qualified FMLA absences.</li> <li>c. The County shall pay its share of County health and life insurance premiums during approved leave without pay unless otherwise provided in writing to the employee.</li> <li>d. Should an employee fail to return to work by the date the employee agreed to in writing, the County Administrator may declare the employee to have terminated voluntarily as of the expected return to work date, except where the employee requires additional time off under the Family and Medical Leave Act, Section 5.5, or is on short-term disability.</li> </ul> </li> </ul>				
	An employee who accepts employment elsewhere while on leave without pay, unless approved, shall be considered to have terminated employment with the				

County without notice as of the original date the leave
was begun.

7.

Type	Military Leave				
Eligibility	All employees in full-time and part-time regular and				
	_	limited-term positions who are eligible to accrue leave. See			
70	Section 5.4.A.2.	. 1 0 0			
Purpose	May be used by an employee who				
	the covered military, security, or				
	listed below to provide paid abser	ices for the reasons and			
C: 1-1:	duration outlined below:				
Guidelines	Legal Basis	d to enguring that our			
	James City County is committed Personnel Policies are in complian				
	Services Employment and Reen				
	(USERRA) Title 38 and as amend				
		-			
	Certain activated employees in orga				
	uniformed service are intermittent				
	are considered members of the	uniformed service for			
	purposes of USERRA.				
	Covered Organizations and Qualif	ying Reasons			
	Covered Organizations	Qualifying Reason			
	The organized reserve forces of				
	any of the armed services of:	for training.			
	The United States Called to active duty.				
	National Guard Called forth by the				
	Naval Militia	Governor during a			
	disaster.				
		Other reasons			
		covered by			
	M 1 C1 D 1 C	USERRA.			
	Members of the Department of	Federal deployment			
	Homeland Security/Federal	and/or training			
	Emergency Management Agency's (FEMA) Disaster	during regularly scheduled work			
	Medical System, to include:	hours.			
	Disaster Medical Assistance	Hours.			
	Team (DMAT)				
	Disaster Mortuary Operational				
	Response Team (DMORT)				
	Other groups as required by law				
	Amount of Leave				

Up to 15 days during each federal fiscal year, which is October 1 through September 30, for qualifying reasons. Weekend drills are not a qualifying reason.

#### Duration of Leave and Associated Pay and Benefits

	Salary and Benefits		
Absence			
Up to 15 days per	Full pay and all benefits and benefit		
federal fiscal year	accruals continue.		
More than 15	Employee coordinates with		
days in a federal	department director to use other		
fiscal year	applicable leave or leave without		
	pay.		

#### **Special Circumstances**

Employees who are members of the force listed above and are involuntarily called to federally funded military active duty shall receive the following:

a. A Military Pay Differential in the amount of the difference between the employee's military base pay plus basic allowances for housing and subsistence, and the employee's regular County base pay. If the employee's military pay plus allowance exceeds the County pay, no differential shall be paid.

#### **Employee Responsibility**

- a. The employee must submit a copy of the valid written orders when requesting military leave and a copy of the release from active duty upon return.
- b. The employee cannot accept other employment while on military leave without the prior approval of the department director.

#### Return to Work

- a. The employee may use up to five years of cumulative service and still retain reemployment rights as provided by USERRA.
- b. The position that the employee is eligible to return to after active duty service depends on the length of that service as provided by USERRA.
- c. The employee's terms of employment are controlled by the Personnel Policies and Procedures Manual and applicable USERRA provisions.
- d. If the employee does not return to work after

deactivation as prescribed by law, the County Administrator may declare the employee to have terminated voluntarily as of the expected return to work date. Urban Search and Rescue Members Department of the of Homeland Security/FEMA's Urban Search and Rescue Team (US&R) are not considered intermittent federal employees or members of the uniformed services under USERRA. These employees when activated will be paid according to the Mutual Aid Agreement Memorandum of Understanding concerning US&R team membership and FEMA reimbursement policies in effect at the time of activation.

8.

Type	Volunteer and School Leave
Eligibility	Employees in full-time and part-time regular and limited-term positions except those hired on or after 1/1/2014 into part-time regular and limited-term positions which have fewer than 780 annual authorized hours. Part-time regular employees hired after December 1, 2019 who work a minimum of 1,040 annual hours.
Purpose	School Leave may be used by an employee to provide paid absences to perform volunteer work in a school, to meet with a teacher or administrator concerning the employee's children, step-children, or children over whom the employee has custody, or to attend a school function in which such a child is participating. School leave may be used for these purposes in a public or private elementary, middle, or high school, or a licensed preschool or daycare center.
	Volunteer Leave may be used by an employee to provide paid absences to perform volunteer work as part of an organized service project through a recognized nonprofit or governmental organization.
Guidelines	Employees in full-time regular and limited-term positions may take up to eight (8) hours of School Leave per fiscal year and up to eight (8) hours of Volunteer Leave per fiscal year.  Employees in part-time regular and limited-term positions may take up to one day as defined in Section 5.4.A.3.a.

9.

Type	Short-Term Disability (STD)
Eligibility	Employees in full-time regular and limited-term positions
	who are VRS Hybrid Plan members.
Purpose	May be used by an employee to provide paid absences for
	illnesses or injuries including Workers' Compensation
	meeting the criteria set forth in the Code of Virginia.
Guidelines	Details of coverage are available from the Human Resource
	Department.

10.

Туре	Floating Holiday
Eligibility	All employees in full-time and part-time regular and
	limited-term positions except those hired on or after
	1/1/2014 into part-time and limited-term positions which
	have annual authorized hours fewer than 780 and those
	hired on or after December 1, 2019 who work a minimum
	of 1,040 annual hours.
Purpose	May be used by an employee for leave on holidays that are
	not recognized County holidays or for work days adjacent
	to a recognized County holiday.
Guidelines	Employees in full-time and part-time regular and limited-
	term positions may take one day of Floating Holiday as
	defined in Section 5.4.A.3.a.

#### Section 5.5 Family and Medical Leave Act (FMLA)

A. Policy Statement - James City County policy complies with the Family and Medical Leave Act (FMLA) of 1993 (as revised January 16, 2009). The function of this policy is to provide employees with a general description of their FMLA rights. This policy summarizes the key provisions of the Act; employees should refer to the Act itself or contact Human Resources if more specific detail is needed. In the event of any conflict between this policy and the applicable law, employees will be afforded all rights required by law. Under this policy, James City County will grant up to 12 weeks of time away from work (or up to a total of 26 weeks of military caregiver leave to care for a covered service member with a serious injury or illness incurred in the line of duty while on active duty) during a 12-month period to eligible employees. The leave taken under FMLA may be paid, unpaid or a combination of paid and unpaid leaves, depending on the circumstances of the leave and in accordance with Sections 5.4 and 5.5. A request for determination of eligible leave under FMLA may be initiated by the employee, the supervisor, or the Human Resource Department in accordance with their respective responsibilities outlined in Sections 5.5.F, 5.5.G, and 5.5.H.

- B. <u>Eligibility</u> To qualify for FMLA under this policy, the employee must meet all of the following conditions:
  - 1. The employee must have worked for the County for 12 months or 52 weeks. The 12 months or 52 weeks need not have been consecutive.
  - 2. The employee must have worked at least 1,250 hours during the 12-month period immediately before the date the leave is requested to begin. Hours actually worked will be counted in determining the 1,250 hours; paid or unpaid time off will not be counted.

#### C. Definitions

- 1. Day See Section 5.4.A.3.a.
- 2. <u>Fiscal Year</u> July 1 through June 30.
- 3. <u>In loco parentis</u> Acting as a temporary guardian of a child.
- 4. <u>Next of Kin</u> The closest blood relative of the injured or recovering service member.
- 5. <u>Parent</u> The biological, adoptive, step, or foster parent or other person who stands "in loco parentis" to the employee.
- 6. Qualifying Exigency One of the following:
  - a. short-notice deployment,
  - b. military events and activities,
  - c. child care and school activities.
  - d. financial and legal arrangements,
  - e. counseling,
  - f. rest and recuperation,
  - g. post-deployment activities and
  - h. additional activities that arise out of active duty, provided that the employer and employee agree, including agreement on timing and duration of the leave.
- 7. <u>Serious Health Condition</u> An illness, injury, impairment, or physical or mental condition that involves inpatient care or continuing treatment by a health care provider. The "continuing treatment" test for a serious health condition under the regulations may be met through:
  - a. a period of incapacity of more than three consecutive, full calendar days plus treatment by a health care provider twice, or once with a continuing regimen of treatment,
  - b. any period of incapacity related to pregnancy or prenatal care,
  - c. any period of incapacity or treatment for a chronic serious health condition,
  - d. a period of incapacity for permanent or long-term conditions for which treatment may not be effective, or
  - e. any period of incapacity to receive multiple treatments (including recovery from those treatments) for restorative surgery, or for a condition which would likely result in an

- incapacity of more than three consecutive, full calendar days absent medical treatment.
- 8. <u>Son or Daughter</u> A biological or adopted child or foster child, a step-child, a legal ward, or a child of a person standing "in loco parentis" who is under 18 years of age. FMLA leave may apply to a son or daughter defined in this section who is over 18 if either of the following two situations apply:
  - a. The child is incapable of self-care because of mental or physical disability.
  - b. Leave is requested and approved for a qualifying exigency.
- 9. Spouse A husband or wife.
- 10. 12-month period
  - a. For military caregiver leave, the 12-month period begins on the first day that leave is taken and ends 12 months later.
  - b. For determining the 1,250-hour eligibility provision, the 12-month period begins 12 months prior to the start of the FMLA leave.
- 11. <u>Week</u> The annual authorized hours of the employee's position divided by 52.
- D. <u>Reasons for FMLA Absences</u> To qualify as FMLA leave under this policy, the employee must be taking leave for one of the reasons listed below:
  - 1. To care for a spouse, child or parent with a serious health condition.
  - 2. The serious health condition of the employee.
  - 3. The birth of a child and in order to care for that child.
  - 4. The placement of a child for adoption or foster care and to care for the newly placed child.
  - 5. Qualifying exigency leave for an employee whose spouse, son, daughter or parent is a member of the National Guard or Reserves when the covered military member either has been notified of an impending call or order to active military duty or who is already on active duty in support of a contingency operation. The leave may begin as soon as the individual receives the call-up notice.
  - 6. Military caregiver leave (also known as covered service member leave) to care for a spouse, son, daughter, parent or next of kin who is a covered service member with a serious illness or injury incurred in the line of duty while on active duty.

#### E. Amount of Allowable FMLA Leave

1. Allows eligible employees to take leave from work for up to 12 work weeks of paid, unpaid or a combination of paid and unpaid leaves during a fiscal year. Each time an employee takes leave that qualifies under FMLA, the County will compute the amount of leave the employee has taken under this policy during the fiscal year and subtract it from the 12 weeks of available leave. The balance

- remaining is the amount of FMLA leave the employee may take until the end of that fiscal year.
- 2. An eligible employee may take up to 12 weeks paid, unpaid or a combination of paid and unpaid leave for the birth of a child or the placement of a child for adoption or foster care, to care for a spouse, child or parent with a serious health condition, or where the employee suffers from a serious health condition. FMLA leave to bond with a child must be taken within one year of the child's birth or placement and must be taken as a continuous block of leave.
- 3. An eligible employee may take up to 26 weeks of military caregiver leave during a single 12-month period beginning the first day the eligible employee takes leave, and ends 12 months after that date. During this single 12-month period, the employee may also take leave for a different eligible FMLA-related event, but the employee is entitled to a combined total of 26 workweeks of military caregiver leave and leave for any other FMLA-qualifying reason in this single 12-month period. Under this policy, up to a total of 26 weeks of military caregiver leave to care for a covered service member with a serious injury or illness incurred in the line of duty while on active duty during the fiscal year for eligible employees.
- 4. If a husband and wife both work for the County and each wishes to take leave for the birth of a child, adoption or placement of a child in foster care, the husband and wife may take a combined total of 12 weeks of FMLA leave during the fiscal year. If a husband and wife both work for the County and each wishes to take leave to care for a covered injured or ill service member, the husband and wife may take a combined total of 26 weeks of FMLA leave during a 12-month period.
- 5. An employee who uses accrued paid leave to cover some or all of the FMLA leave must take it in accordance with County policy as defined in Section 5.4.F of this policy.
- 6. If paid leave is used, such time will also be counted concurrently toward the 12 weeks granted under FMLA. Disability leave for the birth of a child and for an employee's own serious health condition, will be designated as FMLA.
- 7. Worker's Compensation injuries or illnesses will be designated as FMLA after 6 months of date of injury.
- 8. Employees in VRS Plan 1 or Plan 2 will be afforded an additional 14 weeks upon the completion of the original FMLA designation. This will provide employees the same benefit as those covered under the VRS Hybrid plan for short-term disability.
- F. <u>Employee Responsibilities</u> An eligible employee requesting time off for eligible FMLA reasons must comply with their department's usual and customary notice and procedural requirements for requesting leave. When an employee does not comply with James City County's usual notice and

procedural requirements, and no unusual circumstances justify the failure to comply, FMLA-protected leave may be delayed, denied, or rescheduled.

- 1. Employee requests FMLA paperwork from Human Resources and informs supervisor the purpose for leave. Notice should be provided 30 days in advance if leave is foreseeable. When advance notice is not possible, the employee must provide notice within 5 working days of event or as soon as practicable and must comply with the Department's absence notification procedures;
- 2. An employee must work with the supervisor to identify the type of County leave(s) which will be taken during the absence;
- 3. Provide medical certification within 15 calendar days of the request for leave if the situation necessitating the absence and anticipated duration of leave if foreseeable. Medical certification will be provided using the appropriate Department of Labor form obtainable from Human Resources or the DOL web site;
- 4. An employee must advise their supervisor and the Human Resource Department if leave is to be taken intermittently, or on a reduced work schedule basis;
- 5. An employee should contact Human Resources to make benefit payments if necessary;
- 6. Employees should keep their supervisor and the Human Resources informed of the status of the absence, including any change in the circumstances for which the leave is being taken, and the employee's anticipated return to work; and
- 7. Prior to returning to work, an employee must provide to the Human Resource Department a fitness for duty certification from their a physician if the leave was taken for the employee's own serious health condition. Human Resources will notify supervisor of the return to work date and if the employee has any restrictions.
- G. <u>Supervisor Responsibility</u> If an employee requests leave for an eligible FMLA event, or when an employee has been absent for more than five (5) consecutive workdays for reasons which may make the employee eligible for FMLA, the supervisor must inform Human Resources of the absence so that Human Resources may inform the employee in writing, of their rights and responsibilities under FMLA.
  - 1. Supervisor must inform Human Resources of any contact with the employee regarding the extension of FMLA leave or if the employee has been released to return to work sooner than expected.
  - 2. Supervisor must not allow the employee to return to work until Return to Work Form has been provided to Human Resources.

#### H. <u>Human Resource Responsibilities:</u>

- 1. Post and provide general notice to all employees of their FMLA rights and responsibilities;
- 2. Upon learning of the employee's absence, notify the employee within five (5) workdays that the leave may qualify for and be designated as leave under FMLA;
- 3. Review the employee-submitted documentation to determine if the employee's absence qualifies under FMLA;
- 4. If the absence does not qualify for FMLA, confirm that in writing to the employee including the reason(s) the employee is not eligible;
- 5. If the absence does qualify for FMLA:
  - a. Confirm the employee's eligibility for FMLA in writing including ending date of leave;
  - b. Maintain group health benefits as if the employee continued to work instead of taking leave;
  - c. Notify the employee concerning the status of benefits while on leave; and
  - d. Notify the employee's supervisor of the qualified FMLA absence so tracking of leave may begin.
  - e. Upon completion of an employee's absence under FMLA:
    - 1) Notify supervisor of return to work date any restriction upon receipt.
    - 2) Ensure the employee is returned to the same or equivalent position based upon the FMLA provisions; and
    - Track the employee's remaining available time and the remaining eligible time period.
- Recertification/Second Opinion James City County may request I. recertification for the serious health condition of the employee or the employee's family member no more frequently than every 30 days and only when circumstances have changed significantly, or if the employee or the County receives information casting doubt on the reason given for the absence, or if the employee seeks an extension of his or her leave. Otherwise, the County may request recertification for the serious health condition of the employee or the employee's family member every six months in connection with the FMLA absence. The County may provide the employee's health care provider with the employee's attendance records and ask if the need for leave is consistent with the employee's serious health condition. If the County has reason to doubt the validity of the medical certification, the County, at its own expense, may require the employee to obtain a second opinion and, if the employee's health care provider's certification and the second opinion certification conflict, a third opinion certification.
- J. <u>Additional Information</u> Employees seeking more detailed information may contact the Human Resource department or consult the Family and Medical

Leave Act itself and/or the appropriate areas of the Department of Labor web site.

#### Section 5.6 Health Related Benefits

A. <u>Policy Statement</u> - James City County recognizes the importance of the physical and mental health of employees and their dependents to the employees' quality of life and productivity at work. It is the policy of James City County to provide employees with assistance to care for their physical and mental health.

#### B. Health Insurance

1. <u>Group Health Insurance Plan</u> - The County shall provide at least one group health insurance option.

#### 2. Eligibility and Cost

- a. Employees in full-time regular and limited-term positions and employees identified as eligible under the Affordable Care Act, their spouses, and dependent children are eligible for group health insurance coverage. The County shall pay at least a portion of the cost of the group health insurance coverage for active employees.
- b. Retirees, at least 50 years of age, who have worked for the County for at least 15 years or who have worked for the County fewer than 15 years but have retired because of a Line of Duty Act injury, are eligible to continue group health insurance for themselves and their dependents until they are eligible for Medicare, if they elect to participate prior to leaving County employment. The County bears none of the cost for this coverage; however, the retiree may be eligible for a VRS Retiree Health Insurance Credit. See Sections 5.7.B.2.b and 5.7.C.3.
- c. Employees who are terminating employment or reducing their hours to part-time may elect to continue the group insurance coverage for themselves and their dependents at that time. This option is available only for as long as the employee or eligible family member is not covered by another group plan and only for designated periods of time. The County bears none of the cost of this coverage and an administrative charge is added to the premium.
- 3. <u>Medicare</u> Both the County and the employee contribute to the Medicare account of employees in full-time and part-time regular, limited-term, temporary, and on-call positions as required by law. All questions regarding Medicare coverage should be directed to the Social Security Administration.

- C. <u>Employee Assistance Program</u> The County shall offer a program to provide confidential counseling and referral services.
  - 1. <u>Eligibility</u> Employees in full-time and part-time regular and limited-term positions, their spouses, and dependent children are eligible for counseling and referral services.
  - 2. <u>Cost</u> The County shall bear the cost of short-term counseling and referral services. The Employee Assistance service provider shall refer the employee and dependents to an affordable community resource, including coordination with the employee's health insurance plan, for longer-term counseling.
- D. <u>Fitness Program</u> The County shall assist employees in accessing at least one fitness center and in obtaining educational materials on wellness.

#### Section 5.7 Retirement, Disability and Life Insurance

- A. <u>Policy Statement</u> James City County recognizes the importance of income after retirement and in the event of disability, and the financial needs of surviving family members in the event of death. It is the policy of the County to assist employees in meeting these needs through financial contributions to retirement and insurance plans or by providing group plans in which employees may choose to participate at their own expense.
- B. Retirement James City County believes that an employee is best served by having retirement income from more than one source. It is the policy of the County to contribute towards Social Security (FICA) and the Virginia Retirement System (VRS), on behalf of the employee. The County also provides an IRS Section 457 Deferred Compensation Plan to which the employee may choose to contribute. The County may match a portion of those contributions as outlined in Section 5.7.B.3.b.
  - 1. <u>Social Security (FICA)</u> Both the County and the employee contribute to the social security account of employees in full-time and part-time regular, limited-term, temporary, and on-call positions as required by law. All questions, including those regarding estimated retirement income, account balances, and the like, should be directed to the local Social Security Administration Office.

#### 2. VRS Service Retirement

a. The County's retirement plan is administered by the Virginia Retirement System (VRS). VRS Plans 1 and 2 are defined benefit plans qualified under the Internal Revenue Service Code. The VRS Hybrid Plan has both a defined benefit and defined contribution

component. The VRS is governed by the Code of Virginia, and changes to the law can be made by an act of the General Assembly. Some items are optional to local governments.

The VRS outlines the factors used to determine the defined benefit retirement benefit such as whether the employee is in Plan 1, 2, or the Hybrid Plan, age, average final compensation, and years of VRS service.

b. Generally, a credit of up to a maximum of \$45 per month is available to employees who retire with at least 15 years of VRS service to help defray the cost of health insurance premiums. The amount of the credit varies based on factors such as the number of years of VRS service. This reimbursement for health insurance premiums is included in the VRS retirement payment and is non-taxable. (Effective 7-1-2006)

#### 3. Deferred Compensation

- a. The County sponsors a deferred compensation plan and a Roth IRA to allow County employees to save a portion of their salary for retirement purposes. The plan is voluntary and is administered in accordance with appropriate Federal and State laws. Employees in full-time and part-time regular and limited-term positions are eligible to participate.
- b. The County may match 50 percent of the employee contribution in the deferred compensation plan up to a maximum County contribution established by the Board of Supervisors in the budget. The maximum match for part-time employees will be half that of full-time employees. Employees who have at least two years of County service will be vested for purposes of the match funds. (Effective 7-1-2006)
- a. Employees age 45 or older with 15 years or more of service on July 1, 2006, may be eligible for an additional match upon retirement if they have contributed continuously to deferred compensation from July 1, 2006, and if they contribute at least some of their final leave payments to their deferred compensation account. (Effective 7-1-2006)
- b. The County provides a Roth plan to allow County employees to save a portion of their salary for retirement purposes. The plan is voluntary and is administered in accordance with appropriate Federal and State laws. Employees in full-time and part-time regular and limited-term positions are eligible to participate.

#### C. <u>Disability</u>

- 1. <u>VRS Plan 1 and 2 Members</u> The VRS provides an employee with disability retirement if the employee becomes mentally or physically unable to perform the employee's present duties, the disability is likely to be permanent, and the employee is under age 65. Employees are eligible from the first day of employment, provided the disability did not exist at the time of employment, and regardless of whether the cause of the disability is work-related or is compensable under Workers' Compensation.
- 2. <u>VRS Hybrid Plan Members</u> are eligible for Long-Term Disability (LTD) coverage in accordance with the provisions implemented under the Code of Virginia. If benefits are approved by the LTD insurance carrier, benefits may continue until service retirement age.
- 3. <u>Health Insurance Credit</u> Generally, a credit of \$45 per month is available to employees who retire on disability regardless of the years of VRS service to help defray the cost of health insurance premiums. This reimbursement for health insurance premiums is included in the VRS retirement payment and is non-taxable. (Effective 7-1-2006)

#### D. Life Insurance

- 1. <u>VRS Standard Life Insurance</u> Provides payment to an employee's designated beneficiary in the event of the employee's death or to the employee in the event of his dismemberment. A medical examination is not required in order to be covered by this insurance. The County pays the full cost of the coverage. The insurance continues at a reduced amount for employees who retire and receive VRS payments and may be converted to an individual policy by employees who are terminating employment.
- 2. <u>VRS Optional Life Insurance</u> Employees may, at their own expense, purchase additional life insurance for themselves as well as coverage for their spouses and dependent children through a VRS-sponsored program. A medical examination is not required for some levels of coverage.

#### Section 5.8 Workers' Compensation

#### A. Policy Statement

When an employee experiences an employment-related injury or illness as defined in the Workers' Compensation Act of the Code of Virginia, the County provides medical reimbursement, lost wage payments, and fixed awards as outlined in the Code of Virginia. The County also provides a salary supplement to help offset the difference between the lost wage payment and the employee's normal net pay, after taxes. Employees do not accrue leave while on Workers' Compensation. Where the injury or illness is outside the scope of the Code,

employees are encouraged to contact the Human Resource Department to determine what other benefits may apply.

#### B. <u>Eligibility</u>

Employees in full-time and part-time regular, limited-term, temporary, and oncall positions are eligible for Workers' Compensation benefits.

#### Section 5.9 Tax-Related Benefits

- A. <u>Policy Statement</u> James City County recognizes the value of paying certain expenses outlined in IRS Code Section 125 with pretax dollars. It is the policy of the County to offer such opportunities where there are a sufficient number of interested employees.
- B. <u>Pretax Health Insurance Premiums</u> Also called Premium Conversion, allows employees who pay a portion of their County-sponsored group health insurance plan premiums to pay them before taxes. Employees are automatically enrolled unless they waive participation.
- C. <u>Reimbursement Accounts</u> Also called Flexible Spending Accounts, allow eligible employees in full-time and part-time regular and limited-term positions who enroll in the program to pay for eligible health care or dependent care expenses with pretax dollars on a reimbursable basis.

#### Section 5.10 Employer Assisted Home Ownership Program

- A. <u>Policy Statement</u> James City County recognizes the value of having employees live in the community they serve when possible economically and considering family circumstances. It is the policy of the County to assist employees who meet eligibility requirements to purchase a home in the community.
- B. <u>Legal Basis</u> County Code Section 2-15.2 authorizes the County program in accordance with Code of Virginia Section 15.2-958.2.
- C. <u>Benefits</u> eligible employees may receive matching funds up to the maximum allowed by the Program if they purchase a primary residence in James City County or the City of Williamsburg and they meet all program terms and conditions.
- D. <u>Repayment of Matching Funds</u> In accordance with the terms of the Program, employees are required to repay some or all of the funds received if they do not remain in County employment and live in the residence for an amount of time specified in the program terms and conditions.

#### Section 5.11 Optional, Employee Paid Benefits

From time to time the County may offer optional benefits that it deems of value to employees, and which are 100 percent employee paid.

Chapter5

#### **AGENDA ITEM NO. I.4.**

#### **ITEM SUMMARY**

DATE: 5/12/2020

TO: The Board of Supervisors

FROM: Christopher Johnson, Economic Development Director

SUBJECT: Authorization and Appropriation for the Contribution to the Greater Williamsburg Small

Business Relief Fund

#### **ATTACHMENTS:**

Description Type

Memorandum Cover Memo
Resolution Resolution

#### **REVIEWERS:**

Department Reviewer Action Date

Board Secretary Fellows, Teresa Approved 5/8/2020 - 4:30 PM

#### MEMORANDUM

DATE: May 12, 2020

TO: The Board of Supervisors

FROM: Christopher Johnson, Economic Development Director

SUBJECT: Authorization and Appropriation for the Contribution to the Greater Williamsburg Small

Business Relief Fund

The cumulative financial hardships resulting from business closures and reduced operations due to COVID-19 mitigation measures are yet to be known; small businesses are struggling to keep their doors open and jobs intact. County businesses have suffered negative fiscal impacts as a result from the restrictions contained in the Governor's Executive Orders imposed as a result of the COVID-19 pandemic.

The Greater Williamsburg Partnership ("GWP") and the Williamsburg Community Foundation ("WCF") recently announced the creation of the Greater Williamsburg Small Business Relief Fund (the "Fund") to provide financial assistance to qualifying businesses to help meet payroll, preserve healthcare coverage for employees, and save jobs while the businesses await approved federal funding. Donations to the Fund are being collected by the WCF who is partnering with the Virginia 30 Day Fund (the "30 Day Fund") to administer the program including the processing of applications and issuing of payments.

The 30 Day Fund is a volunteer-powered non-profit that provides \$3,000 forgivable loans to qualifying Virginia-based small businesses. The 30 Day Fund is designed to be quick, easy, and free of red tape with applications that can be submitted in less than 10 minutes and a funding decision within three days. Approved businesses can expect an immediate transfer of funds. Applications are evaluated by volunteer Masters of Business Administration (MBA) students from the Raymond A. Mason School of Business at the College of William & Mary and MBA students and alumni from the Darden School of Business at the University of Virginia. In the three weeks since it was launched, the 30 Day Fund has raised more than \$800,000 and provided direct financial assistance to over 135 struggling small businesses throughout the Commonwealth, including several in James City County.

Qualifying small businesses must have operated for at least a year, employ between three to 30 people, and be owned and operated by a Virginia resident. Funds disbursed to approved businesses do not need to be repaid. If businesses receiving 30 Day Fund assistance do, at a later date, wish to "pay it forward", they may do so by directing those dollars back to the 30 Day Fund, which will disburse the funding to another Virginia business in need.

At the May 5, 2020 meeting, the Board of Supervisors (the "Board") expressed a desire to provide financial assistance to County small businesses through a \$500,000 contribution to the Greater Williamsburg Small Business Relief Fund with the funds authorized by the Board designated exclusively to County businesses with a current 2020 business license.

Staff proposes transferring funds from the Capital Projects Fund to the Special Projects Fund and recommends adoption of the attached resolution appropriating \$500,000 in the Special Projects Fund for the specific purpose of benefitting businesses licensed in James City County.

CJ/md GWPSmBusRelief-mem

#### Attachment:

1. Resolution

#### RESOLUTION

#### AUTHORIZATION AND APPROPRIATION FOR THE CONTRIBUTION TO THE

#### GREATER WILLIAMSBURG SMALL BUSINESS RELIEF FUND

- WHEREAS, businesses in James City County have generally suffered negative impacts from the restrictions contained in the Governor of Virginia's Executive Orders 53 and 55, imposed as a result of the COVID-19 pandemic; and
- WHEREAS, the County's businesses are essential to the recovery of James City County from the COVID-19 disaster; and
- WHEREAS, the Board of Supervisors of James City County desires to support such businesses to the extent reasonably possible and legally permissible in order to enable such businesses to overcome and recover from these negative impacts and help save as many jobs as possible; and
- WHEREAS, as of the date of this resolution, funds offered by the federal government in assistance to businesses have largely been depleted, and it is unknown whether additional funds will be made available; and
- WHEREAS, in light of these circumstances, the Board of Supervisors desires to assist businesses licensed in James City County by appropriating funds to the Greater Williamsburg Small Business Relief Fund through the Williamsburg Community Foundation in partnership with the Virginia 30 Day Fund to support James City County businesses whose operations and revenues have been significantly impacted by COVID-19 restrictions and limitations.
- NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, hereby authorizes the County Administrator to transfer \$500,000 in funds from the Capital Projects Fund to the Special Projects Fund
- NOW, THEREFORE, BE IT FURTHER RESOLVED that the Board of Supervisors of James City County, Virginia, hereby authorizes the additional appropriation in the Special Projects Fund of this \$500,000, which shall be used for the purposes described above.

#### Revenue:

Transfer from Capital Projects \$500,000

Expenditure:

Small Business Relief Fund \$500,000

	James O. Icenhour, Jr. Chairman, Board of Supervisors			
Teresa J. Fellows	SADLER MCGLENNON LARSON HIPPLE ICENHOUR	VOTE AYE	NAY	<u>ABSTAIN</u>
Deputy Clerk to the Board  Adopted by the Board of May, 2020.	Supervisors of James City Cou	unty, Virg	ginia, this	s 12th day of
GWPSmBusRelief-res				

#### **AGENDA ITEM NO. I.5.**

#### **ITEM SUMMARY**

DATE: 5/12/2020

TO: The Board of Supervisors

FROM: Scott Stevens, County Administrator

SUBJECT: COVID-19 Reopening Guidelines

#### **ATTACHMENTS:**

Description Type

DMemorandumCover MemoDResolutionResolutionDPresentationPresentation

#### **REVIEWERS:**

Department Reviewer Action Date

Board Secretary Fellows, Teresa Approved 5/11/2020 - 2:58 PM

#### MEMORANDUM

DATE: May 12, 2020

TO: The Board of Supervisors

FROM: Scott A. Stevens, County Administrator

SUBJECT: COVID-19 Reopening Guidelines

On March 13, 2020, County facilities were closed to the public. On March 24, 2020, the Board of Supervisors adopted an Emergency Ordinance to provide for the continuity of government during the Coronavirus disaster in James City County. The Ordinance was subsequently readopted on April 14, 2020, and included a section that directs the County Administrator to restrict public from entering or congregating around County-owned buildings, facilities, and real property in the least restrictive manner as reasonably necessary to ensure the health, safety, and welfare of the public and County staff.

County Administration has now developed a phased plan to reopen facilities that will allow for a return of staff, and eventually the public, to these buildings in conformance with the April 14 Ordinance.

In an effort to provide an additional level of guidance for employees, please find the attached phased reopening procedures. Please note that individual buildings and departments will have their own modifications to these procedures based on their individual service needs; however, this should hopefully provide some overall guidance to employees during this uncertain time.

On April 24, 2020, the Governor of Virginia released the Forward Virginia plan providing a process for the reopening of the Commonwealth. This plan, similar to federal guidance, includes three phases of relaxing current commercial and social restrictions. The Governor has outlined four triggers that must be satisfied before moving into Phase 1 of his plan, which includes:

- 1. A downward trend in the percentage of positive tests over 14 days;
- 2. A downward trend in hospitalizations over 14 days;
- 3. Hospital capacity for both beds and intensive care treatment; and
- 4. Increasing and sustainable Personal Protective Equipment (PPE).

Once these milestones are reached the next phases will progress at differing speeds for different sectors of the economy. Phase 1 continues to require social and commercial restrictions. Phase 2 allows some relaxation of these limitations, and Phase 3 provides for the start of a "new normal" which still includes some protections against a resurgence that exceeds capacity for treatment.

Because it is an essential operation, the County has been operating somewhat outside of this procedure already. Almost all of our operations continue, albeit from a more distanced setting. In preparation for the Governor permitting more businesses to open to the public, we need to prepare to be on that same timeframe. We must take every precaution while recognizing that some risk of infection is unavoidable and that the County must continue to provide the services that our community needs at a level they expect.

Our phased reopening plan is designed to mirror that of our adjacent locality neighbors, as well as those guidelines provided by the Commonwealth. Each phase intends to mitigate the risk of infection to the greatest extent possible, while allowing employees to slowly acclimate to a new work environment. So as not to confuse our plan with the Governor's, our reopening will be based on "levels" rather than "phases."

The most important part of this plan is following the guidelines to protect each other and the community. Some have low risk of serious symptoms from infection, while others may be suffering from pre-existing conditions or have loved ones who are more vulnerable to the disease. We must each do our part to ensure that we are providing a safe workplace for ourselves, but just as importantly, for our coworkers and eventually the public.

#### **Level 1 - Current Working Situation**

#### 1. Staff Procedures:

- a. **Employees in County Facilities** Some staff have been mostly working remotely for the past two months. It is expected that over the next two weeks a majority of workers will return to the workplace, for at least part of the work week.
- b. **Telework** Telework is available on an as-needed basis. Employees with underlying risk factors or child care needs may need to continue to telework, and those departments with physical separation limitations may need to provide this option to prevent sharing of work spaces.
- c. **Alternate Shifts** Departments can utilize alternative shift management to minimize the number of employees working from the office each day. Those not working in the office are still expected to be teleworking or working from a remote location.
- d. **Meetings** All meetings between employees will continue to be teleconference or virtual to the greatest extent possible. In-person interoffice communication should be kept to a minimum. All in-person meetings should take place with full six feet of distancing between all participants.
- e. **Travel and Training -** All business related travel is prohibited and non-virtual training in a group setting is canceled. Specific requests for travel and/or training may be approved by the County Administrator on a case-by-case basis.
- f. **Interior Doors** Interior doors for common areas within a building should remain open where practical. This will reduce the number of touchpoints after entering a building.
- g. Cleanliness and Protective Equipment All employees should be mindful of surfaces they touch on a regular basis and clean those areas regularly. General Services will be wiping down common touchpoints in offices twice a day as well. Handwashing and/or use of hand sanitizer are paramount to prevent the spread of germs. A mask policy will be published through Human Resources, but masks are encouraged for employees, particularly when in direct contact with other employees or with the public. Masks are mandatory when the six-foot separation is not able to be met, either in an automobile or in an otherwise tight work environment. Please see policy for full details.

#### 2. Public Procedures:

a. Public facilities remain closed to the public. All services are still available online or by alternate means.

b. Staff should evaluate individual buildings and facilities to determine needs for a limited opening to the public over the next two weeks. This means, asking how can staff appropriately accommodate a limited number of citizens in County facilities? This can include visits by appointment only, creating physical separation from citizens or procedures for handling sanitization of surfaces in proximity to citizens and staff.

### Level 2 - Limited Public Opening: This may be concurrent with the Governor's opening of similar businesses and activities

#### 3. Staff Procedures:

- a. **Employees in County Facilities -** It is expected that a majority of workers will return to the workplace on a full-time basis.
- b. **Telework** Telework is available on an as-needed basis. Employees with underlying risk factors or child care needs may need to continue to telework, and those departments with physical separation limitations may need to provide this option to prevent sharing of work spaces.
- c. **Alternate Shifts** Departments can utilize alternative shift management to minimize the number of employees working from the office each day. Those not working in the office are still expected to be teleworking or working from a remote location.
- d. **Meetings** All meetings between employees will continue to be teleconference or virtual to the greatest extent possible. In-person interoffice communication should be kept to a minimum. All in-person meetings should take place with full six feet of distancing between all participants.
- e. **Travel and Training -** All out-of-state business related travel is prohibited, but some regional travel can be approved on a case-by-case basis by a supervisor. Specific requests for out-of-state travel and/or training may be approved by the County Administrator on a case-by-case basis.
- f. **Interior Doors** Interior doors for common areas within a building should remain open where practical. This will reduce the number of touchpoints after entering a building.
- g. Cleanliness and Protective Equipment All employees should be mindful of surfaces they touch on a regular basis and clean those areas regularly. General Services will be wiping down common touchpoints in offices twice a day as well. Handwashing and/or use of hand sanitizer are paramount to prevent the spread of germs. A mask policy will be published through Human Resources, but masks are strongly encouraged for employees, particularly when in direct contact with other employees or with the public. Masks are mandatory when the six-foot separation is not able to be met, either in an automobile or in an otherwise tight work environment. Please see policy for full details.

#### 4. Public Procedures:

a. Public facilities will open on an as-needed basis for citizens. Certain services, like tax bill payment, will require more availability. Services that can be handled by appointments or can continue to be provided by online means should continue in that fashion. Facilities such as parks, playgrounds, and other like services will follow Commonwealth guidelines, as well as protocols from adjacent localities. We will continue to offer similar services as the City of Williamsburg and York County, so we will need to coordinate our openings with theirs.

- b. Hand sanitizer will be provided at building entry points for the public and face mask usage will be strongly recommended. Staff should also continue to operate at six-foot separation distances from the public where possible.
- c. We strongly encourage the public wear masks in County facilities and otherwise follow the guidance of the CDC in regard to safely interacting with staff.

### Level 3 - Full Public Opening: This is likely months away, once more immediate testing and/or a vaccine is available or Governor's limitations are lifted

#### 5. Staff Procedures:

- a. **Employees in County Facilities -** Staff will be fully returned to office settings on a full-time basis.
- b. **Telework** Telework may be needed in very specific cases, or in cases where an employee is at home from a positive test result but not experiencing symptoms.
- c. **Alternate Shifts** Departments will hopefully have managed physical barriers to staff distancing, but some locations may still need shift work in some capacity.
- d. **Meetings** More flexibility will mean in-person meetings are permissible at the interoffice level.
- e. **Travel and Training -** Travel and training can resume at the discretion of supervisors and County Administration.
- f. **Interior Doors** Interior doors for common areas within a building should remain open where practical. This will reduce the number of touchpoints after entering a building.
- g. Cleanliness and Protective Equipment All employees should be mindful of surfaces they touch on a regular basis and clean those areas regularly. General Services will be wiping down common touchpoints in offices twice a day as well. Handwashing and/or use of hand sanitizer are paramount to prevent the spread of germs. A mask policy will be published through Human Resources, but mask usage may be more lenient during this level, and staff should follow the guidelines proposed in the mask policy or any CDC guidelines.

#### 6. Public Procedures:

- a. Public facilities will be fully open to citizens in our "new" normal operations. We will continue to exercise use of online, phone, and email to conduct business and in-person access where needed. Sanitization guidelines and separation standards will continue as necessary.
- b. Public patrons should continue to follow guidance from the CDC regarding the use of masks at this time.

SAS/nb COVID19-ReOpngGdln-mem

#### RESOLUTION

#### **COVID-19 REOPENING GUIDELINES**

- WHEREAS, on March 24, 2020, the Board of Supervisors of James City County (the "Board") adopted an Emergency Ordinance to provide for the continuity of government during the Coronavirus disaster in James City County (the "County"); and
- WHEREAS on April 14, 2020, the Board readopted the Continuity of Government Ordinance; and
- WHEREAS, Section D-1 of the Continuity of Government Ordinance directs the County Administrator to restrict public from entering or congregating around County-owned buildings, facilities, and real property in the least restrictive manner as reasonably necessary to ensure the health, safety, and welfare of the public and County staff; and
- WHEREAS, in response to the Governor of Virginia's phased plan to reopen the Commonwealth, the County Administrator has developed a plan for a phased reopening for the County; and
- WHEREAS, the Board desires to endorse the County Administrator's phased reopening plan as being in conformance with its April 14, 2020, directive to temporarily restrict the public from County-owned buildings, facilities, and real property.
- NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, does hereby endorse the County Administrator's plan for a phased reopening of the County as set forth in the memorandum dated May 14, 2020 and hereby finds that it is in conformance with the directive set forth in Section D-1 of the April 14, 2020 Continuity of Government Ordinance.

	James O. Icenhour, Jr. Chairman, Board of Supervisors				
	VOTES				
ATTEST:		<u>AYE</u>	NAY	<b>ABSTAIN</b>	
	SADLER				
	MCGLENNON				
Teresa J. Fellows	LARSON HIPPLE				
Deputy Clerk to the Board	ICENHOUR				
* *	18EI WIO GIC				

Adopted by the Board of Supervisors of James City County, Virginia, this 12th day of May, 2020.

COVID19-ReOpngGdln-res



**Board of Supervisors Meeting** 

Patrick O. Teague Director, Human Resources

May 12, 2020

## Timeline of COVID-19 Response



- On January 31, 2020, the Virginia Secretary of Health and Human Resources declared a public health emergency in response to the spread of COVID-19
- On March 12, 2020, the Governor of the Commonwealth of Virginia declared a State of Emergency in the Commonwealth of Virginia in response to the spread of COVID-19
- On March 13, 2020, the President of the United States declared a National Emergency, beginning March 1, 2020, in response to the spread of the virus

### Timeline of COVID-19 Response



- On March 13, 2020, the James City County Director of Emergency Management declared a local State of Emergency in James City County due to the outbreak of the virus in the County
- On March 17, 2020, the Board of Supervisors of James City County convened in a special meeting, confirmed the declaration, and further found the emergency to be a "disaster"

### Re-Opening to The Public



James City County has taken a phased approach to opening:

- Some County facilities have maintained nearly normal operations during the closing: Police, Fire, and General Services
- Staff began increasing in most offices the week of May 4<sup>th</sup>
- We will continue to increase our in-office staffing levels and reduce our teleworking staffing levels as County facilities reopen to the public

## Re-Opening to The Public



 Some County facilities will open at a later date to maintain social distancing; Recreation Center and Library

County facilities will open with different requirements depending on facility and operational needs. To maintain social distancing some facilities may require appointments, while others will able to open to the public without restrictions. In some areas, masks may be strongly encouraged and in other areas they may be required.



Staff receive regular communications to continue safety practices:

- Six feet social distancing
- Frequent hand washing of at least 20 seconds
- Covering face in elbow when sneezing or coughing
- Staying home when feeling unwell
- Notify HR and self quarantine when displaying COVID-19 symptoms until cleared by a physician or 14 days symptom free



In addition, the County has provided the following Personal Protective Equipment (PPE) to staff and workspaces:

- Disposable and re-use face masks, and gloves
- Hand sanitizer, hand sanitizer stations in high traffic areas, and sanitizer wipes
- High traffic area office cleaning twice a day
- Daily health screening questionnaire and non-touch thermometers (on order)



 Clear barriers at public service desks and social distancing markers on building floors

Exposure response plan that includes full office disinfection

and notification protocol







The County implemented two new temporary leave programs, passed by Congress in the Family First Coronavirus Response Act (FFCRA) effective April 1, 2020:

- Emergency Paid Sick Leave Act (EPSLA) that provides up to 80 hours of paid sick leave to address absences associated with COVID-19
- Emergency Family and Medical Leave Expansion Act (EFMLA) to provide up to 12 weeks of partially paid leave to address child care issues associated with COVID-19

### Benefits



We also continue to offer the following existing benefits:

- Liberal use of earned leave in vacation, sick, and paid time off categories
- Telework when operationally feasible
- Five free counseling consultations with the Employee Assistance Program, per issue



### Questions?

#### **AGENDA ITEM NO. L.1.**

#### **ITEM SUMMARY**

DATE: 4/20/2020

TO: The Board of Supervisors

FROM: John H. Carnifax, Jr., Director of Parks and Recreation

SUBJECT: Parks and Recreation Advisory Commission Appointments

#### **ATTACHMENTS:**

Description Type

#### **REVIEWERS:**

Department	Reviewer	Action	Date
Parks & Recreation	Carnifax, John	Approved	4/21/2020 - 8:19 AM
Publication Management	Burcham, Nan	Approved	4/21/2020 - 8:34 AM
Legal Review	Kinsman, Adam	Approved	4/21/2020 - 8:56 AM
Board Secretary	Fellows, Teresa	Approved	4/21/2020 - 10:10 AM
Board Secretary	Purse, Jason	Approved	4/21/2020 - 12:58 PM
Board Secretary	Fellows, Teresa	Approved	4/29/2020 - 1:58 PM

#### **AGENDA ITEM NO. L.2.**

#### **ITEM SUMMARY**

DATE: 5/12/2020

TO: The Board of Supervisors

FROM: Tori Haynes, Staff Liaison to the Historical Commission

SUBJECT: Appointments - Historical Commission

#### **ATTACHMENTS:**

Description Type

#### **REVIEWERS:**

Department	Reviewer	Action	Date
Planning	Holt, Paul	Approved	4/28/2020 - 3:42 PM
Development Management	Holt, Paul	Approved	4/28/2020 - 3:42 PM
Publication Management	Daniel, Martha	Approved	4/28/2020 - 3:46 PM
Legal Review	Kinsman, Adam	Approved	4/29/2020 - 10:14 AM
Board Secretary	Fellows, Teresa	Approved	4/29/2020 - 1:57 PM
Board Secretary	Purse, Jason	Approved	5/5/2020 - 1:43 PM
Board Secretary	Fellows, Teresa	Approved	5/5/2020 - 2:00 PM

#### **AGENDA ITEM NO. M.1.**

#### **ITEM SUMMARY**

DATE: 5/12/2020

TO: The Board of Supervisors

FROM: Teresa J. Fellows, Deputy Clerk

SUBJECT: Adjourn until 4 p.m. on May 26, 2020 for the Work Session

#### **REVIEWERS:**

Department Reviewer Action Date

Board Secretary Fellows, Teresa Approved 5/5/2020 - 1:55 PM