

Major Water Quality Impact Assessment



Northfax West
10510 Orchard Street
Fairfax, Virginia 22030

PREPARED FOR:

Northfax JV LLC c/o The Lann Companies
3900 Jermantown Route, Suite 300
Fairfax, Virginia 22030

January 28, 2020

Apex Companies, LLC
203 Wylderoose Court
Midlothian, Virginia 23113





Table of Contents

1.0	Introduction	1
2.0	Purpose	1
3.0	Project Description	1
3.1	Location.....	2
3.2	Existing Conditions.....	2
4.0	Methods	2
5.0	Results	4
5.1	Hydrogeologic Elements.....	5
5.2	Landscape Elements	7
5.3	Other Measures.....	7
6.0	Conclusions and Recommendations	8

FIGURES

Figure 1 – Project Location Map

Figure 2 – Project Vicinity Map

Figure 3 – City of Fairfax RPA Map

Figure 4 - Northfax West RPA Map

APPENDICES

Appendix A – WQIA Application Form

Appendix B – Agency Documentation

Appendix C – JPA Exhibits

Appendix D – Master Development Plan

Appendix E – BEHI and NBS Investigation



1.0 Introduction

The City of Fairfax (the City) 2019 Zoning Ordinance documents Chesapeake Bay Preservation Area (CBPA) ordinances designed to protect local waterways in the Chesapeake Bay watershed from nonpoint source pollution generated from urban development. As with other municipalities in the watershed, the City's CBPA ordinance has been approved by the Virginia Department of Environmental Quality (DEQ) to implement the requirements of the Code of Virginia needed to comply with the federal Chesapeake Bay Preservation Act. Examples of CBPA features in the City include the Resource Protection Area (RPA) and the Resource Management Area (RMA). To better define the extent and location of these features, the City adopted a CBPA Map in November 25, 2003. The City ordinance codifies the regulations that apply to the CBPA in order to prevent development projects from compromising water quality.

Section 4.18 of the Zoning Ordinance mandates that a Water Quality Impact Assessment (WQIA) must be submitted for any proposed land disturbance, development or redevelopment within the RPA including any buffer area modification or reduction. The ordinance provides criteria for approving, denying or modifying requests to rezone, subdivide, use, develop and /or redevelop land in a CBPA. The City provides for two levels of water quality impact assessment: a minor assessment and a major assessment. Typically, a Major WQIA is required for developments that exceeds 5,000 square feet land disturbance or propose encroachment onto the waterward 50 feet of the 100-foot RPA buffer.

Based on the proposed development activities for the Northfax West project, Apex Companies LLC (Apex) performed a Major WQIA based on a request by and in accordance with the City's ordinance. The WQIA Application form is provided in Appendix A of this report. Information in the application is consistent with the Preliminary Jurisdiction Determination (PJD) issued by the U.S. Army Corps of Engineers (USACE) in 2018 and Section 401/404 Clean Water Act (CWA) permits authorized by the DEQ and USACE in 2019 (Appendix B). The report herein presents the purpose of the WQIA, the methods used by Apex to investigate hydrogeological and landscape elements of the assessment, and data documenting the results of the Major WQIA. The report meets the standards set forth in the City's Chesapeake Bay Preservation ordinance (Section 4.18) for a Major WQIA and is intended to supplement the project's site plan and be reviewed with the site plan during the application review process.

2.0 Purpose

The City's Chesapeake Bay Preservation ordinance states that the purpose of a WQIA is to identify the impacts of proposed development on water quality and lands within the City's approved RPA boundary. Moreover, in areas where redevelopment does take place within the RPA, a WQIA is needed to ensure project activities are located and implemented to be the least disruptive of the RPA's natural water quality functions. When the functions of the RPA must be disrupted, the WQIA is used to determine mitigation measures that address water quality protection and compensate for impacts approved by the City.

The Northfax West project as proposed will impact water quality and lands within the City's approved RPA. Therefore, the purpose of this Major WQIA is to identify the extent of those impacts, minimize disruptions to the natural water quality functions of the RPA, and outline compensatory mitigation for unavoidable impacts to the RPA and potential impacts to water quality.

3.0 Project Description

The Northfax West project is part of a comprehensive strategy for the growth and redevelopment of the Fairfax



Boulevard corridor through the City, as demonstrated by the City of Fairfax 2035 Comprehensive Plan. In accordance with this plan the project will create a mix of residential and commercial uses in a highly urbanized setting, serving the needs of the community, while attracting those who would otherwise just pass through the area. The project will occur in an area which has not seen significant improvement in many years and will allow residents to work near where they live, reducing traffic congestion on area roads. The project envisions the revitalization of the area through the construction of residential homes, potentially a mix of townhouses, condominiums and a senior living facility, to maximize living space, while also providing commercial space for businesses.

3.1 Location

The Northfax West project is located in the northwest quadrant at the intersection of Fairfax Boulevard (Route 50) and Chain Bridge Road (Route 123) (Figure 1). The project site consists of an assemblage of 17 parcels with an aggregate area of approximately 11.32 acres, which has historically been used for residential and commercial purposes. The project area is part of the Accotink Creek watershed and located within the Middle Potomac River drainage area identified by Hydrologic Unit Code (HUC) 02070010.

3.2 Existing Conditions


The existing conditions for the Northfax West project are presented on the project plans in Appendix C and Appendix D. The project area currently consists of two single family homes with mowed grass yards, two parking lots (approx. 3 acres) constructed of rolled stone over fabric, and approximately 4 acres of woods. Orchard Street is located within the project limits and dead ends in a cul-de-sac. The 4-acre wooded area is composed of a mixed hardwood vegetation community surrounding perennial and intermittent streams that flow through the site.

The perennial stream enters the site at the northwest corner and flows southeast before entering a culvert that conveys water under Route 123, near the intersection of Route 123 and Route 50. The intermittent stream begins at a culvert outlet near the southwest corner of the project site and flows easterly to its confluence with the perennial stream. The perennial stream is a culvert to culvert system with little connection to upstream or downstream components of a typical stream system (e.g. floodplain, buffers, or other stream corridor features).

A wetland delineation was performed in 2017 and a Preliminary Jurisdictional Determination (PJD) was issued by the USACE on February 5, 2018 (Appendix B). The PJD documented the limits of perennial and intermittent stream channels and the absence of non-tidal wetlands within the project boundaries. The flow regime of each stream was verified in 2017 in a site-specific RPA determination, the results of which concurred with the City's RPA map (Figure 3). Under USACE permit NAO-2014-1871 (Appendix B), the eastern extent of the perennial stream was later redirected to the north, into new 8-foot box culverts installed under Chain Bridge Road to improve drainage and reduce flooding. As a result, the RPA buffer associated with the stream also shifted to the north of its previous location, as shown in Figure 4.

4.0 Methods

Apex conducted a Major WQIA in accordance with Section 4.18 titled "Chesapeake Bay Preservation" of the City's ordinance for Site Development Standards (Chapter 110, Article 4). The City's Chesapeake Bay Preservation ordinance states that a Major WQIA is required for any development that exceeds 5,000 square feet land disturbance or that encroaches onto the seaward 50 feet of the 100-foot RPA buffer area; or is located in the RMA and is deemed necessary by the Zoning Administrator. The City's requirements for a Major WQIA application are provided as follows:

- 
- Location of the components of any RPA, including the 100-foot buffer area;
 - Location and nature of proposed improvements, including:
 - Type of paving material;
 - Areas of clearing or grading;
 - Location of any structures, drives, or other impervious cover; and
 - Sewage disposal systems or reserve drain field sites;
 - Type and location of proposed best management practices to meet the required general performance standards specified in §110-4.18.7;
 - Location of existing vegetation on site, including the number and type of trees and other vegetation to be removed to accommodate the encroachment or modification; and
 - A revegetation plan that supplements the existing buffer vegetation in a manner that provides for pollutant removal, erosion and runoff control.
 - Certification of all required information as complete and accurate by a Class IIIB certified land surveyor and professional wetlands delineator.
 - Hydrogeological element that describes
 - Existing topography;
 - Estimates of soil characteristics and potential for erosion;
 - Hydrology of the area;
 - Impacts on wetlands and streams;
 - Proposed mitigation measures; and
 - A listing of requisite permits with permit or application status.
 - Landscape element that fully describes:
 - Existing trees required to be identified as part of a Tree Management Plan in accordance with subsection §110-4.5.9.D.1;
 - Limits of clearing and grading;
 - Trees and indigenous vegetation that are to be preserved within the disturbed area;
 - Measures to be taken to protect vegetation, proposed plantings and other vegetative measures used to enhance water quality; and
 - A proposed construction schedule that includes all activities related to clearing, grading and proposed plantings.
 - Such other measures as deemed necessary by the Zoning Administrator to ensure the impact to water quality can be accurately predicted.

Information in the WQIA relies on previous investigations performed by Apex including a Waters of the U.S. (WOTUS) delineation and a site-specific RPA determination from 2017. These investigations were conducted using standard methods required by the USACE, DEQ, and the City. Results were provided as supporting documentation in the Joint Permit Application (JPA) submitted to regulatory agencies on June 22, 2018, which satisfied the terms and conditions contained in the USACE Norfolk District State Program General Permit (17-SPGP-01) and remains effective until May 31, 2022. DEQ found the JPA compliant with the Virginia Water Protection (VWP) Program and issued VWP Individual Permit Number 18-1003 on March 5, 2019, which remains effective until March 5, 2034. Other measures used to assess water quality included Bank Erosion Hazard Index (BEHI) and Near Bank Stress (NBS) investigations performed by Apex on December 16, 2019. The methods for these investigations are provided in Apex's BEHI and NBS report found in Appendix E.



5.0 Results

Location of the components of any RPA: The PJD issued by the USACE in 2018 (Appendix B) documented the limits of perennial and intermittent stream channels within the project area. The flow regime of each stream was verified in 2017 in a site-specific RPA determination that concurred with the City's CBPA map (Figure 3). Under USACE permit NAO-2014-1871 (Appendix B), the eastern extent of the perennial stream was later redirected to the north into new 8-foot box culverts installed under Chain Bridge Road. As a result, the RPA buffer associated with the perennial stream also shifted to the north of its previous location (Figure 4).

Proposed improvements: Construction of the Northfax West project will include the piping and redirection of stream channel flow using twin box culverts to reduce the risk of flooding and tie into the 8-foot box culverts previously installed by the City and the Virginia Department of Transportation (VDOT). In addition to reducing the risk of flooding and controlling stream flow, the Northfax West project will create a mix of residential and commercial uses that serves the needs of the community and the City of Fairfax 2035 Comprehensive Plan, providing revitalization of the area. The project is in an area that has lacked significant economic improvement and will create opportunities for residents to work near where they live and reduce traffic congestion on area roads. The Northfax West project proposes the development of residential homes with a mix of townhouses, condominiums, and a senior living facility, as well as commercial space for businesses and visitors.

The Master Development Plan filed with the City on January 6, 2020 as part of the project's rezoning application is provided in Appendix D.

Best management practices: USACE and DEQ permit conditions require best management practices that protect water quality during and after construction. Permit conditions are included in the agency documentation provided in Appendix B.

Location and type of existing vegetation on site: The project area currently consists of two single family homes with mowed grass yards, two parking lots (approx. 3 acres) constructed of rolled stone over fabric, and approximately 4 acres of woodlands along the western project boundary (Figure 2). The 4-acre wooded area is composed of a mixed hardwood vegetation community located on upland landforms along existing stream channels. Native vegetation in the forest overstory includes tulip tree (*Liriodendron tulipifera*), red maple (*Acer rubrum*), eastern red cedar (*Juniperus virginiana*), and American sycamore (*Platanus occidentalis*). Understory species include American elm (*Ulmus americana*), American holly (*Ilex opaca*), spice bush (*Lindera benzoin*), and immature trees from the canopy. The understory is also infested with populations of non-native invasive species including Tatarian honeysuckle (*Lonicera tatarica*), multiflora rose (*Rosa multiflora*), Chinese privet (*Ligustrum sinense*), Oriental bittersweet (*Celastrus orbiculatus*), Japanese honeysuckle (*Lonicera japonica*), and English ivy (*Hedera helix*), among others.

The specific location and type of existing trees on the site was documented in the Tree Management Plan submitted as part of the project's Master Development Plan (Appendix D), which was officially filed with the City on January 6, 2020 as part of the owner's rezoning application.

Revegetation plan: Project improvements require that woodlands in the western portion of the project area be removed in order to support the purpose and need of the project. No revegetation within the onsite CBPA features is being proposed, because compensatory mitigation will be provided for stream and riparian buffer impacts via the purchase of 1,675 stream credits or 4,761 Stream Condition Units from a DEQ approved mitigation bank and/or in-lieu fee fund. The stream credits include a 100-foot riparian buffer that extends from the banks of the stream being credited as compensation for this project. Therefore, no net loss of RPA functions, values or area will occur. In

addition, the plans will adhere to the Total Maximum Daily Load (TMDL) requirements, where a development project's post-development nutrient loading cannot exceed its pre-development nutrient loading.

Certifications: Information has been determined complete and accurate by a Class IIIB certified land surveyor and professional wetlands delineator. Certification information for the project is provided below.

- Certified Land Surveyor: Christopher Consultants; Christopher Fillmore, LS; License Number # 2607
- Professional Wetland Delineator: Apex Companies, LLC; John H. Brooks, III, PWD; Certification # 3402000003

5.1 Hydrogeologic Elements

Existing Topography: As shown on Figure 1, the topography within the project area generally slopes to the southeast and along an unnamed tributary of Accotink Creek. Undeveloped portions of the project area that surround the tributary slope gradually toward the tributary. Developed areas are mostly flat due to asphalt pavement in parking lots. Existing topographic contours and elevations are also shown on project plans in Appendix C and Appendix D.

Soil Characteristics and Potential for Erosion: As stated in the *Description and Interpretive Guide to Soils in Fairfax County* (2013), erosion potential is a metric that applies to soils under construction site conditions and includes ratings of low, moderate, and high. Soil characteristics related to erosion potential are summarized below:

- Low: Soils are not highly erodible except on steep unprotected cuts. Erosion of less than 0.05 inches from sheet-flow runoff can be expected on unprotected soils during a severe storm.
- Moderate: Soils are moderately erodible on B slopes and highly erodible on C slopes or greater. Erosion of 0.05 to 0.25 inches from sheet-flow runoff plus rill and shallow gully erosion can be expected on unprotected soils during a severe storm.
- High: Soils which are highly erodible even on B slopes. Soil loss in excess of 0.25 inches from sheet-flow runoff erosion and the formation of numerous gullies can be expected on unprotected soils in a severe storm.

The Soil Survey of the City of Fairfax, accessed through the Web Soil Survey on the Natural Resources Conservation Service (NRCS) website, shows five soil maps units within the project area. Each soil map unit and its corresponding erosion potential are depicted in Table 1.

Table 1: Northfax West Project Soil Erosion Potential Summary

Map Unit	Map Unit Name	Erosion Potential
95	Urban Land	NA
101	Urban land – Wheaton complex	High
103A	Wheaton-Cordorus complex, 0-2% slopes	Low
105B	Wheaton-Glenelg complex, 2-7% slopes	High
107B	Wheaton-Meadow complex, 2-7% slopes	Medium

Source: Description and Interpretive Guide to Soils in Fairfax County (2013)

The results of site-specific assessments for stream bank erosion potential conducted by Apex using the BEHI protocol are presented in Section 5.3.

Hydrology of the Area: Evidence of hydrologic activity is confined primarily to the banks of the stream channels on site. The primary drainage through the site is to the southeast in an unnamed tributary of Accotink Creek. One other

channel along the south side of the site carries flow from a storm drain system to the primary channel. Overland runoff and groundwater discharge provide a minimal amount of input. Two streams were identified as containing potentially jurisdictional waters. Stream "A" (perennial) is centrally located on the property and carries flow in a southeasterly direction. Stream "B" (intermittent) is located along the southern property boundary and has an onsite confluence with Stream "A".

The site has a history of flooding near the intersection of Fairfax Boulevard (Route 50) and Chain Bridge Road (Route 123) caused by undersized culverts and increased impervious area from offsite development. The drainage area reported in the JPA for the Northfax West project was 260.2 acres. Maps depicting stream locations and watershed hydrology are provided in Appendix C.

Impacts on Wetlands and Streams: No wetlands were identified within the project area, and stream impacts permitted by the USACE and DEQ are listed in Table 2.

Table 2: Permitted Impacts to Surface Waters for the Northfax West Project


Impact #	Impact Type	Stream Type	Impact Amount
A1	Permanent – Fill	R3 (Perennial)	797 LF (11,096 SF/0.25 Ac)
A2	Permanent – Fill	R3 (Perennial)	312 LF (3,780 SF/0.09 Ac)
A3	Permanent – Fill	R3 (Perennial)	295 LF (2,989 SF/0.07 Ac)
B1	Permanent – Fill	R4 (Intermittent)	345 LF (4,488 SF/0.10 Ac)
		Total:	1,749 LF (22,353 SF/0.51 Ac)

Each impact area is visually depicted on project plans found in Appendix C and summarized below:

- Impact A1, from the upstream end down to the confluence with Segment B1, will result in redirection of the perennial stream from its current location into twin 8-foot box culverts. The culverts will traverse the site as shown on the attached grading plan and join with existing twin 8-foot box culverts on the west side of Route 123. Fill material will be placed in the abandoned stream channel.
- Impact A2, from the confluence with Segments A1/B1, will result in redirection of the perennial stream from its current location into twin 8-foot box culverts. The culverts will traverse the site as shown on the attached grading plan and join with existing twin 8-foot box culverts on the west side of Route 123. Fill material will be placed in the abandoned stream channel.
- Impact A3, will result in removal of the newly constructed riprap inlet structure prior to joining the proposed twin 8-foot box culverts to the existing culverts. Fill material will be placed in the abandoned channel.
- Impact B1 will result in connecting the existing 42-inch RCP with a proposed 72-inch RCP that will discharge into the proposed box culverts. Fill material will be placed in the abandoned stream channel.

Proposed Mitigation Measures. According to the JPA and agency permits (Appendix B), lack of suitable buffer area for preservation prevents the reduction of required mitigation through onsite preservation. As such, the DEQ permit states that the permittee will "compensate for permanent stream impacts through the purchase of 1,675 stream credits or 4,761 Stream Condition Units from a DEQ approved mitigation bank, in-lieu fee fund, or a combination thereof that is authorized and approved by DEQ to sell credits in the area in which the impacts will occur and has credits available (as released by DEQ)." The purchase of stream credits provides mitigation for the impacts to the stream, as well as impacts to the riparian buffer (including the RPA buffer).

Existing Permits: A Joint Permit Application was submitted on June 22, 2018. The Northfax West project was permitted via VWP Individual Permit Number 18-1003 from the DEQ on March 5, 2019, and satisfied the terms and



conditions contained in the USACE's, Norfolk District State Program General Permit (17-SPGP-01), which remains effective until May 31, 2022. The Site Plan Application, Virginia Stormwater Management Program (VSMP) application, and Tree Removal Permit Application are in the process of being submitted. Agency documentation for state and federal permits is provided in Appendix B.

5.2 Landscape Elements

Existing Trees and Tree Management: The woodlands onsite can be characterized as an early successional tulip tree forest association with a mixed overstory composition of tulip tree, red maple, and American elm. Understory species include tulip tree, American elm, eastern red cedar, spice bush, Tatarian honeysuckle, multiflora rose, and Chinese privet. Tree and shrubs are also commonly found with woody vine populations composed of dense infestations of invasive species such as oriental bittersweet, Japanese honeysuckle, and English ivy.

Per the JPA submitted in June 2018 and the resulting USACE and DEQ permits, the preservation of existing trees was considered infeasible to meet the purpose and need of the project. However, compensatory mitigation will be provided for all stream and riparian buffer impacts via the purchase of stream and buffer credits from an approved mitigation bank. The stream credits include a 100-foot riparian buffer that extends from the banks of the stream being credited as compensation for this project. Therefore, no net loss of RPA functions, values, or area will occur.

The Tree Management Plan from the project's Master Development Plan is included in Appendix D. The plan shows trees proposed for preservation and removal throughout the project area. Invasive species management will be achieved through the removal of non-native invasive shrub and vine species found in existing woodlands onsite.

Limits of Clearing and Grading: Project plans (Appendix C and Appendix D) depict the limits of clearing and grading for the proposed project.

Trees and indigenous Vegetation Preservation: The Tree Management Plan for the Northfax West project is provided on Sheet 3 through Sheet 3D of the Master Development Plan (Appendix D). The plan identifies all trees proposed for preservation and removal, a tree management schedule, and details for standard tree protection. Invasive species management will be achieved through the removal of non-native invasive shrub and vine species found throughout the existing woodlands onsite.

Vegetative Measures Used to Enhance Water Quality: New plantings will occur as part of the proposed development in accordance with City landscaping requirements.

Construction Schedule: A proposed construction schedule that includes all activities related to clearing, grading and proposed plantings will accompany the site plan application for the Northfax West project. Additional details of project construction are shown on the project plans (Appendix C and Appendix D).

5.3 Other Measures

Apex performed a BEHI and NBS study on December 16, 2019 for the streams in the project area. The full results of the study, including maps of stream locations and assessment points, is provided in Appendix E. For BEHI assessment each stream bank was evaluated for the degree of erosion potential (e.g., extreme, very high, high, moderate, or low). Table 3 provides a summary of the BEHI results for Stream A1 and Stream A2.

Table 3: Summary of BEHI Results for the Northfax West Project

Stream ID	Erosion Hazard Potential			
	Extreme	Very High	High	Low
Stream A1	321 LF	1,192 LF	434 LF	735 LF
Stream A2	217 LF	311 LF	290 LF	0 LF
Total	538 LF	1,503 LF	724 LF	735 LF

The NBS data collected for each stream was assessed to predict potential sediment and nutrient loading caused by near bank stress associated with the BEHI assessed bank conditions. Apex estimated the potential for approximately 3,036 tons/year (or 6,072,860 lbs/year) of Total Suspended Sediment (TSS), 0.13 tons/year (or 260 lbs/year) of Total Nitrogen (TN), and 0.12 tons/year (or 240 lbs/year) of Total Phosphorus (TP) caused by stream erosion. Apex anticipates that the sediment and nutrient loads resulting from the stream bank erosion will continue to occur until action is taken to reduce the flow and the associated NBS. The redirection of flow and piping of the base flow and stormwater associated with the stream will eliminate the stream bank erosion and thus the associated sediment and nutrient inputs.

6.0 Conclusions and Recommendations

Based on the City's Chesapeake Bay Preservation ordinance, this report satisfies the City's review and evaluation requirements in Section 4.18 of the Zoning Ordinance for a Major WQIA. Upon the completed review of a WQIA application, the City's Zoning Administrator will determine if the Northfax West development is consistent with the purpose and intent of Section 4.16 of the Zoning Ordinance based upon the following criteria:

- The disturbance of any wetlands is minimized;
- The development will not result in significant disruption of the hydrology of the site;
- The development will not result in significant degradation to aquatic life;
- The development will not result in unnecessary destruction of plant materials on site;
- Proposed erosion and sediment control concepts are adequate to achieve the reductions in runoff and prevent off site sedimentation;
- Proposed stormwater-management measures are adequate to control the stormwater runoff to achieve the required performance standard for pollutant control;
- Proposed revegetation of disturbed areas will provide optimum erosion and sediment control benefits;
- The development, as proposed, is consistent with the purpose and intent of §4.16;
- The cumulative impact of the proposed development, when considered in relation to other development in the vicinity, both existing and proposed, will not result in a significant degradation of water quality.

In summary, the Northfax West project proposes to impact perennial and intermittent streams by piping them under the proposed mixed-use development to tie into the existing twin box culverts near Route 123 (installed by the City and VDOT). Based on Apex's onsite assessments to determine erosion potential, the Northfax West project pipe system will eliminate potential sources of stream bank erosion to include the extreme and very high erosion along existing stream channels. The pipe system will also help to control flooding and reduce the adverse effects of uncontrolled stormwater discharge including a reduction of TSS, TN, and TP transported from the project area to downstream waters within the Chesapeake Bay watershed. Due to the compensatory mitigation provided under USACE and DEQ permits, no net loss of RPA functions, values, or area will occur. In addition, the plans will adhere to the Total Maximum Daily Load (TMDL) requirements, where a development project's post-development nutrient loading cannot exceed its pre-development nutrient loading.




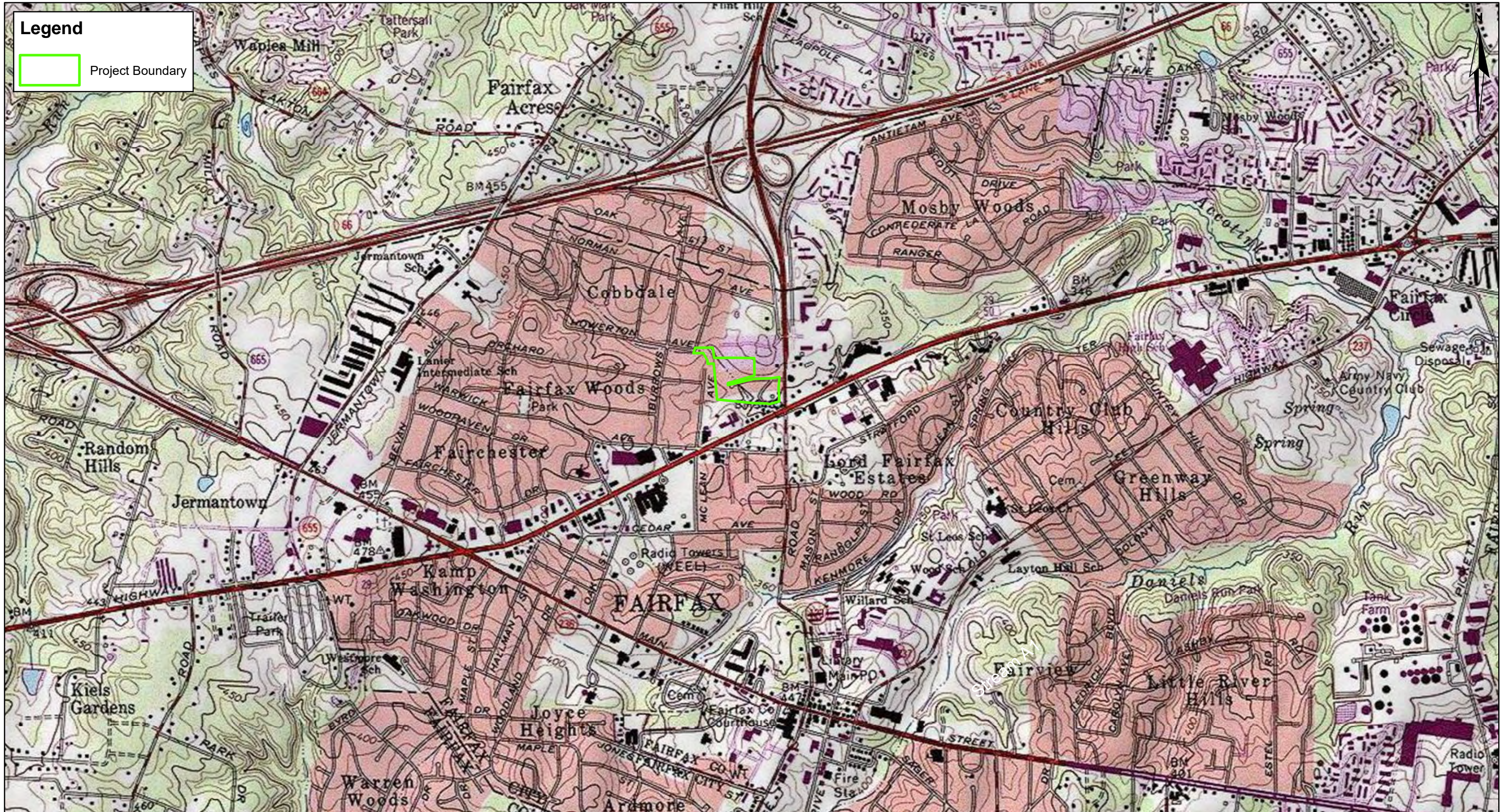
The completed WQIA Application provided in Appendix A documents that each of the City's criteria for a Major WQIA have been satisfied. Considering the water quality investigations conducted by Apex for the Northfax West project, the Section 404/401 water quality permits authorized by the USACE and DEQ, and the results presented in this WQIA report, it is Apex's opinion that the Northfax West project will improve water quality in the Chesapeake Bay.



Figures

Legend

 Project Boundary



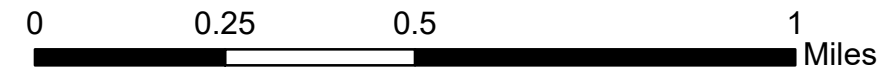
Apex Companies, LLC
 203 Wylderose Ct, Midlothian, VA 23113
 Phone: 804-897-2718
 www.apexcos.com

Northfax West
City of Fairfax, Virginia

Figure 1
Project Location Map

Drawn By: Rob LaPosa
 01/16/2020

Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed



38°5'33.44"N
 77°18'36.93"W

Legend

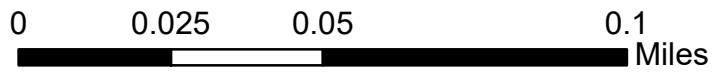
 Project Boundary



Apex Companies, LLC
 203 Wylderose Ct, Midlothian, VA 23113
 Phone: 804-897-2718
 www.apexcos.com

Northfax West
City of Fairfax, Virginia

Figure 2
Project Vicinity Map

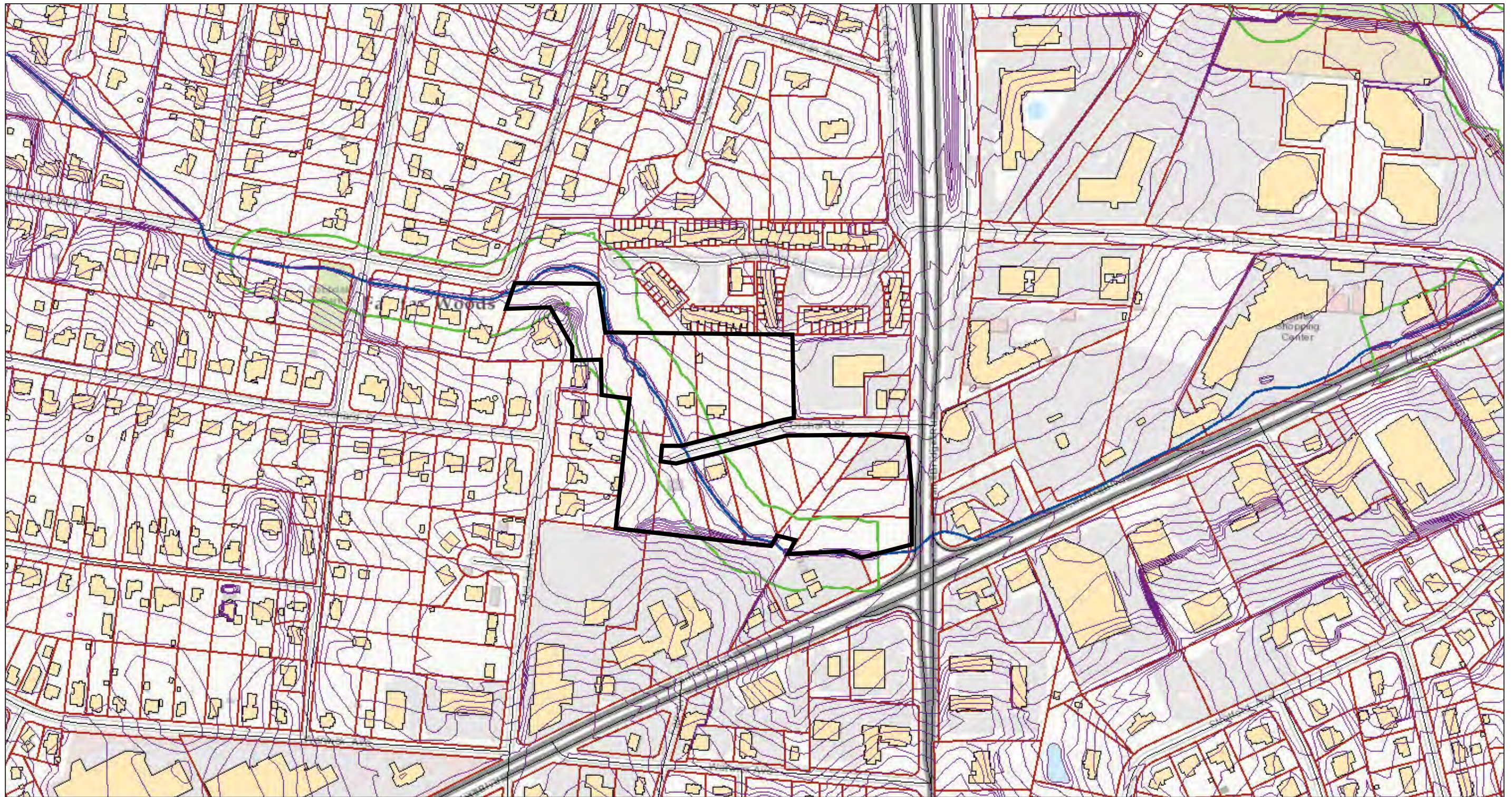


Drawn By: Rob LaPosa
 01/16/2020

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community








38°5'33.44"N
 77°18'36.93"W

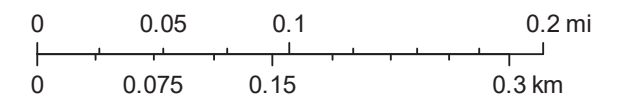
Figure 3: City of Fairfax RPA Map



October 25, 2016

1:4,514

-  Contour Lines (2 foot intervals)
-  Parcels
-  Streets
-  Streams
-  Buildings
-  Resource Protection Areas
-  City Limits



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Legend

- 100-ft buffer
- Perennial Stream
- - - Intermittent Stream
- Project Area



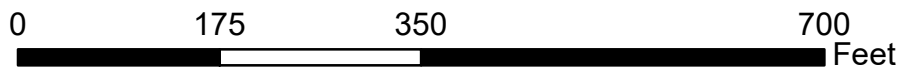
Apex Companies, LLC
 203 Wylderose Ct, Midlothian, VA 23113
 Phone: 804-897-2718
 www.apexcos.com

Northfax West
City of Fairfax, Virginia

Figure 4
Resource Protection Area Map

Drawn By: Rob LaPosa (01/17/2020)
 Reviewed By: John Brooks (1/28/2020)

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



38°5'33.44"N
 77°18'36.93"W



Appendices



Appendix A – WQIA Application



Application #: _____

WATER QUALITY IMPACT ASSESSMENT (WOIA) APPLICATION

Single Family Residential \$ 115.00 / Other: \$ 350.00

- NON REFUNDABLE FEE -

1. JOB LOCATION INFORMATION:

Job Location Address 10510 Orchard St. Fairfax, Virginia 22030

Project Name Northfax Project

Tax Map # See attached document for list of tax map #'s

2. APPLICANT INFORMATION:

Name Northfax JV LLC c/o The Lann Companies

Address 3900 Jermantown Rd., Suite 300, Fairfax VA, 22030

Phone (703) 934-4600 Email john@lann.com

3. PROPERTY OWNER INFORMATION: (Same as Applicant)

Name Northfax JV, LLC c/o The Lann Companies

Address 3900 Jermantown Rd., Suite 300, Fairfax VA, 22030

Phone (703) 934-4600 Email john@lann.com

4. LAND SURVEYOR: (Same as Applicant)

Name Christopher Consultants; Attn: Christopher Fillmore, LS; License No. 2607

Address 9900 Main St., Suite 400, Fairfax, VA, 22031

Phone (703) 273-6820 Email chrisfillmore@ccl-eng.com

5. WETLANDS EXPERT: (Same as Applicant)

Name Apex Companies, LLC; Attn: John Brooks, III, PWD; Certification No. 3402000003

Address 203 Wylderose Ct., Midlothian, VA 23113

Phone (804) 897-2718 Email John.Brooks@apexcos.com

-Continued on Next Page-

The City of Fairfax is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability, please call 703-385-7930, (TTY 711)

The Water Quality Impact Assessment is conducted to identify the impacts of proposed development on water quality and lands within resource protection and resource management areas; to ensure that where development does take place it is located on those portions of a site and in a manner that is least disruptive to the natural functions of the land and to specify mitigation measures to address water quality protection.

The applicant shall submit a WQIA in accordance with §110-4.18.8.B for:

1. Any proposed land disturbance, development or redevelopment within a resource protection area including any buffer area modification or reduction as provided for in §110-4.18.7; or
2. Any proposed development or redevelopment in the resource management area that may significantly impact water quality due to the unique characteristics of the site or intensity of the proposed use or development, as determined by the zoning administrator in accordance with §110-4.18 and §110-4.18.4.D

I. Development Characteristics

You must submit either a minor or major WQIA for your project unless you receive a waiver. The below conditions will determine whether you submit a major or minor WQIA.

Submit a **Minor WQIA** if you answer “Yes” to either of these development characteristics (§110-4.18.8.C)

5,000 square feet of disturbance or less

Encroachment onto the landward 50 feet of the 100-foot buffer area (**Skip to**

Section III, Minor WQIA Requirements)

Submit a **Major WQIA** if you answer “Yes” to any of these development characteristics (§110-4.18.8.D)

YES Over 5,000 square feet of disturbance

YES Encroachment onto the seaward 50 feet of the 100-foot RPA buffer area

Location in the resource management area and is deemed necessary by the Zoning Administrator.

(Skip to Section IV, Major WQIA Requirements)

II. WQIA Waivers

_____ Check here if you plan to submit a WQIA waiver request.

To submit a WQIA waiver request, attach a report detailing how the proposed development or redevelopment does not significantly impact water quality.

III. Minor WQIA Requirements (§110-4.18.8.C)

The minor WQIA calculations will demonstrate that the remaining buffer area and best management practices will result in removal of no less than 75 percent of sediments and 40 percent of nutrients from post development stormwater runoff.

Requirements for a minor WQIA scaled site drawing include:

- 1) Location of the components of any RPA, including the 100 foot buffer area;
- 2) Location and nature of proposed improvements, including:
 - a. Type of paving material;
 - b. Areas of clearing or grading;
 - c. Location of any structures, drives, or other impervious cover; and
 - d. Sewage disposal systems or reserve drain field sites;
- 3) Type and location of proposed best management practices to meet the required general performance standards specified in §110-4.18.7;
- 4) Location of existing vegetation on site, including the number and type of trees and other vegetation to be removed to accommodate the encroachment or modification; and
- 5) A revegetation plan that supplements the existing buffer vegetation in a manner that provides for pollutant removal, erosion and runoff control.
- 6) Certification of all required information as complete and accurate by a Class IIIB certified land surveyor and professional wetlands delineator.

IV. Major WQIA Requirements (§110-4.18.8.D)

Requirements for a major WQIA include:

- 1) All of the information required in a minor WQIA (Section III above);
- 2) Hydrological element that describes:
 - a. Existing topography;
 - b. Estimates of soil characteristics and potential for erosion;
 - c. Hydrology of the area;
 - d. Impacts on wetlands and streams;
 - e. Proposed mitigation measures; and
 - f. A listing of requisite permits with permit or application status.

- 3) Landscape element that fully describes:
 - a. Existing trees required to be identified as part of a Tree Management Plan in accordance with subsection §110-4.5.9.D.1;
 - b. Limits of clearing and grading;
 - c. Trees and indigenous vegetation that are to be preserved within the disturbed area;
 - d. Measures to be taken to protect vegetation, proposed plantings and other vegetative measures used to enhance water quality; and
 - e. A proposed construction schedule that includes all activities related to clearing, grading and proposed plantings.
- 4) Such other measures as deemed necessary by the Zoning Administrator to ensure the impact to water quality can be accurately predicted; and
- 5) Certification of all required information as complete and accurate by a Class IIIB certified land surveyor and professional wetlands delineator.

V. Evaluation Procedure (§110-4.18.8.F)

Minor WQIA

The Zoning Administrator shall determine if any proposed modification or reduction to the buffer area is consistent with the provisions of this division and make a finding based upon the following criteria:

4.18.8.F.1	Minor WQIA Criteria	Satisfied (Y/N)
a.	The proposed encroachment is necessary and there is no other location on site to place improvements without disturbing the buffer area.	
b.	The impervious surface is minimized.	
c.	The proposed best management practices, where required, achieve the requisite reductions in pollutant loadings.	
d.	The development, as proposed, meets the purpose and intent of §110-4.18	
e.	The cumulative impact of the proposed development, when considered in relation to other development in the vicinity, both existing and proposed, will not result in a significant degradation of water quality.	
f.	Any other information deemed necessary by the Zoning Administrator.	

Major WQIA

The Zoning Administrator shall determine if the proposed development is consistent with the purpose and intent of this division and make a finding based upon the following criteria:

4.18.8.F.2	Major Water Quality Criteria	Satisfied (Y/N)
a.	The disturbance of any wetlands is minimized.	Y
b.	The development will not result in significant disruption of the hydrology of the site.	Y
c.	The development will not result in significant degradation to aquatic life.	Y
d.	The development will not result in unnecessary destruction of plant materials on site.	Y
e.	Proposed erosion and sediment control concepts are adequate to achieve the reductions in runoff and prevent off site sedimentation.	Y
f.	Proposed stormwater-management measures are adequate to control the stormwater runoff to achieve the required performance standard for pollutant control.	Y
g.	Proposed revegetation of disturbed areas will provide optimum erosion and sediment control benefits.	Y
h.	The design and location of any proposed drain field will be in accordance with the general performance standards outlined in §110-4.18.7.	N/A
i.	The development, as proposed, is consistent with the purpose and intent of §110-4.16.	Y
j.	The cumulative impact of the proposed development, when considered in relation to other development in the vicinity, both existing and proposed, will not result in a significant degradation of water quality.	Y

OFFICE USE ONLY

Receipt # _____ \$115.00 \$350.00

*** OFFICE APPROVAL SIGNATURE***

This Application is Approved By _____ Date _____
Special Projects Engineer

Tax Map #'s

57 2 08 005
57 2 08 006
57 2 08 007
57 2 08 008
57 2 08 010
57 2 08 011
57 2 08 012
57 2 08 013
57 2 08 014
57 2 07 015 B
57 2 47 000 A
57 2 02 003
57 2 02 005
57 2 02 017
57 2 02 018
57 2 02 019
57 2 02 020



Appendix B – Agency Documentation



DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NORFOLK DISTRICT
FORT NORFOLK
803 FRONT STREET
NORFOLK VA 23510-1011

February 5, 2018

PRELIMINARY JURISDICTIONAL DETERMINATION

Northern Virginia Regulatory Section
NAO-2017-02192 (Northfax Project)

Northfax JV LLC
c/o The Lann Companies
Attn: Mr. John Napolitano
3900 Jermantown Road, Suite 300
Fairfax, Virginia 22030

Dear Mr. Napolitano:

This letter is in regard to your request for a verification of a preliminary jurisdictional determination for waters of the U.S. (including wetlands) on property known as the Northfax Project, located on 16 parcels on approximately 10.3 acres, northwest quadrant at the intersection of Chain Bridge Road (Route 123) and Fairfax Boulevard (U.S. Routes 29/50) in the City of Fairfax, Virginia.

The map entitled "Northfax Project", by Christopher Consultants and submitted by Apex Companies, LLC dated December 4, 2017 and revised January 19, 2018 (*copy enclosed*) provides the location of waters and/or wetlands on the property listed above. The basis for this delineation includes the presence of an ordinary high water mark. This letter is not confirming the Cowardin classifications of these aquatic resources.

Discharges of dredged or fill material, including those associated with mechanized landclearing, into waters and/or wetlands on this site may require a Department of the Army permit and authorization by state and local authorities including a Virginia Water Protection Permit from the Virginia Department of Environmental Quality (DEQ), a permit from the Virginia Marine Resources Commission (VMRC) and/or a permit from your local wetlands board. This letter is a confirmation of the Corps preliminary jurisdiction for the waters and/or wetlands on the subject property and does not authorize any work in these areas. Please obtain all required permits before starting work in the delineated waters/wetland areas.

This is a preliminary jurisdictional determination and is therefore not a legally binding determination regarding whether Corps jurisdiction applies to the waters or wetlands in question. Accordingly, you may either consent to jurisdiction as set out in this preliminary jurisdictional determination and the attachments hereto if you agree with the determination, or you may request and obtain an approved jurisdictional determination.

"This preliminary jurisdictional determination and associated wetland delineation map may be submitted with a permit application."

Enclosed is a copy of the "Preliminary Jurisdictional Determination Form". Please review the document, sign, and return one copy to Ms. Theresita Crockett-Augustine either via email (theresita.m.crockett-augustine@usace.army.mil) or via standard mail to US Army Corps of Engineers, Northern Virginia Field Office at 18139 Triangle Plaza, Suite 213, Dumfries, Virginia 22026 within 30 days of receipt and keep one for your records. This delineation of waters and/or wetlands is valid for a period of five years from the date of this letter unless new information warrants revision prior to the expiration date.

If you have any questions, please contact Ms. Theresita Crockett-Augustine at (703) 221-9736 or theresita.m.crockett-augustine@usace.army.mil.

Sincerely,



Theresita Crockett-Augustine
Environmental Scientist
Northern Virginia Regulatory Section

Enclosures

AUGUSTINE.THERESITA.
CROCKETT.1230827040

Digitally signed by
AUGUSTINE.THERESITA.CROCKETT.1230827040
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI,
ou=USA,
cn=AUGUSTINE.THERESITA.CROCKETT.1230827040
Date: 2018.02.05 16:42:10 -05'00'

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION:

A. REPORT COMPLETION DATE FOR PJD: February 5, 2018

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:

Northfax JV LLC
 c/o The Lann Companies
 Attn: Mr. John Napolitano
 3900 Jermantown Road, Suite 300
 Fairfax, Virginia 22030

DISTRICT OFFICE, FILE NAME, AND NUMBER: NAO, Northfax Project, 2017-02192

**C. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
 (USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)**

State: **VIRGINIA** County/parish/borough: Fairfax City: Fairfax

Center coordinates of site (lat/long in degree decimal format):

Latitude: 38.859 ° N Longitude: -77.309 ° W

Universal Transverse Mercator:

Name of nearest waterbody: UT to Accotink Creek

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date:

Field Determination. Date(s): 01/19/18

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site Number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
1			2,064 LF	RPW	Section 404
2					
3					

1. The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.
2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre- construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there "may be" waters of the U.S. and/or that there "may be" navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items.

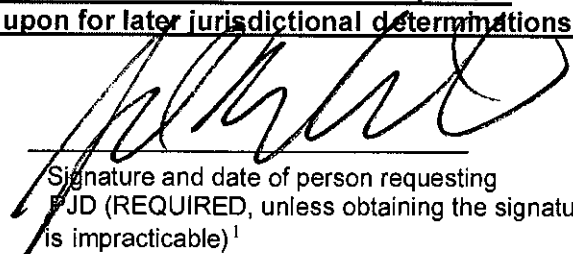
- Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:
Map:
 - Data sheets prepared/submitted by or on behalf of the PJD requestor.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report. Rationale:
 - Data sheets prepared by the Corps:
 - Corps navigable waters' study:
 - U.S. Geological Survey Hydrologic Atlas: USGS
 - NHD data.
 - USGS 8 and 12 digit HUC maps.
 - U.S. Geological Survey map(s). Cite scale & quad name:
 - Natural Resources Conservation Service Soil Survey. Citation:
 - National wetlands inventory map(s). Cite name:
 - State/Local wetland inventory map(s):
 - FEMA/FIRM maps:
 - 100-year Floodplain Elevation: (National Geodetic Vertical Datum of 1929)
 - Photographs Aerial (Name & Date):
or Other (Name & Date):
 - Previous determination(s):
File no. and date of response letter:
 - Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

AUGUSTINE.THERESITA.
CROCKETT.1230827040

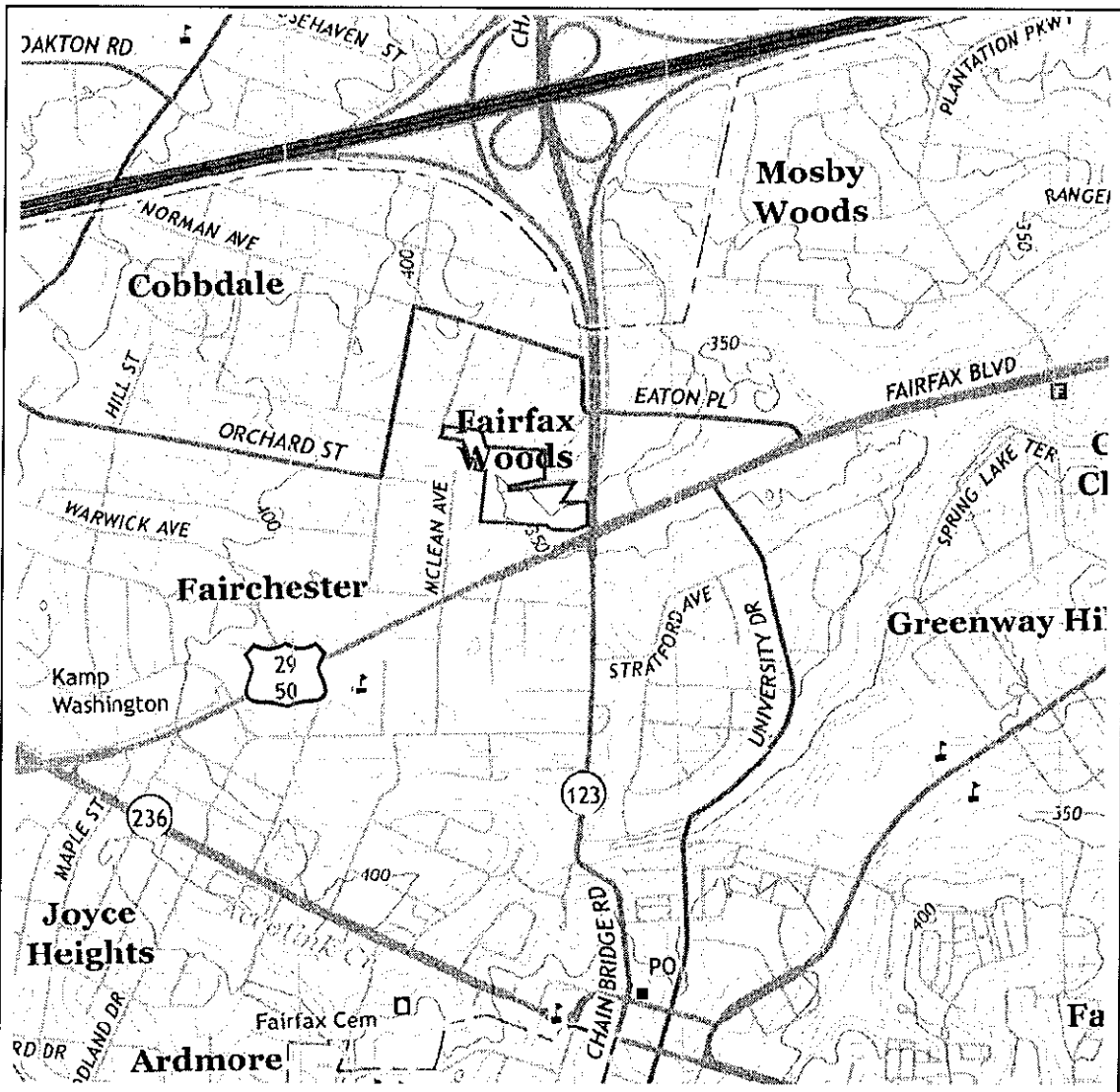
Digitally signed by
AUGUSTINE.THERESITA.CROCKETT.1230827040
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA,
cn=AUGUSTINE.THERESITA.CROCKETT.1230827040
Date: 2018.02.05 16:41:37 -05'00'

Signature and date of
Regulatory staff member
completing PJD



Signature and date of person requesting
PJD (REQUIRED, unless obtaining the signature
is impracticable)¹

¹ Districts may establish timeframes for requester to return signed PJD forms. If the requester does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.



Scale: Not to Scale

Date: USGS Quadrangle 2013

Apex Companies LLC.
8854 Rixlew Lane
Manassas, VA 20109



© Apex Companies LLC

USGS Quadrangle Map
Northfax
38.859309 N -77.310054 W
Fairfax USGS Quadrangle
Fairfax County, VA

Prepared for:
Northfax JV LLC c/o The Lann Companies
3900 Jermantown Road - Suite 300
Fairfax, VA 22030



Scale: North Scale

Date: 05/20/2010

Apex Companies LLC
8854 Ridge Lane
Manassas, VA 20108



© Apex Companies LLC

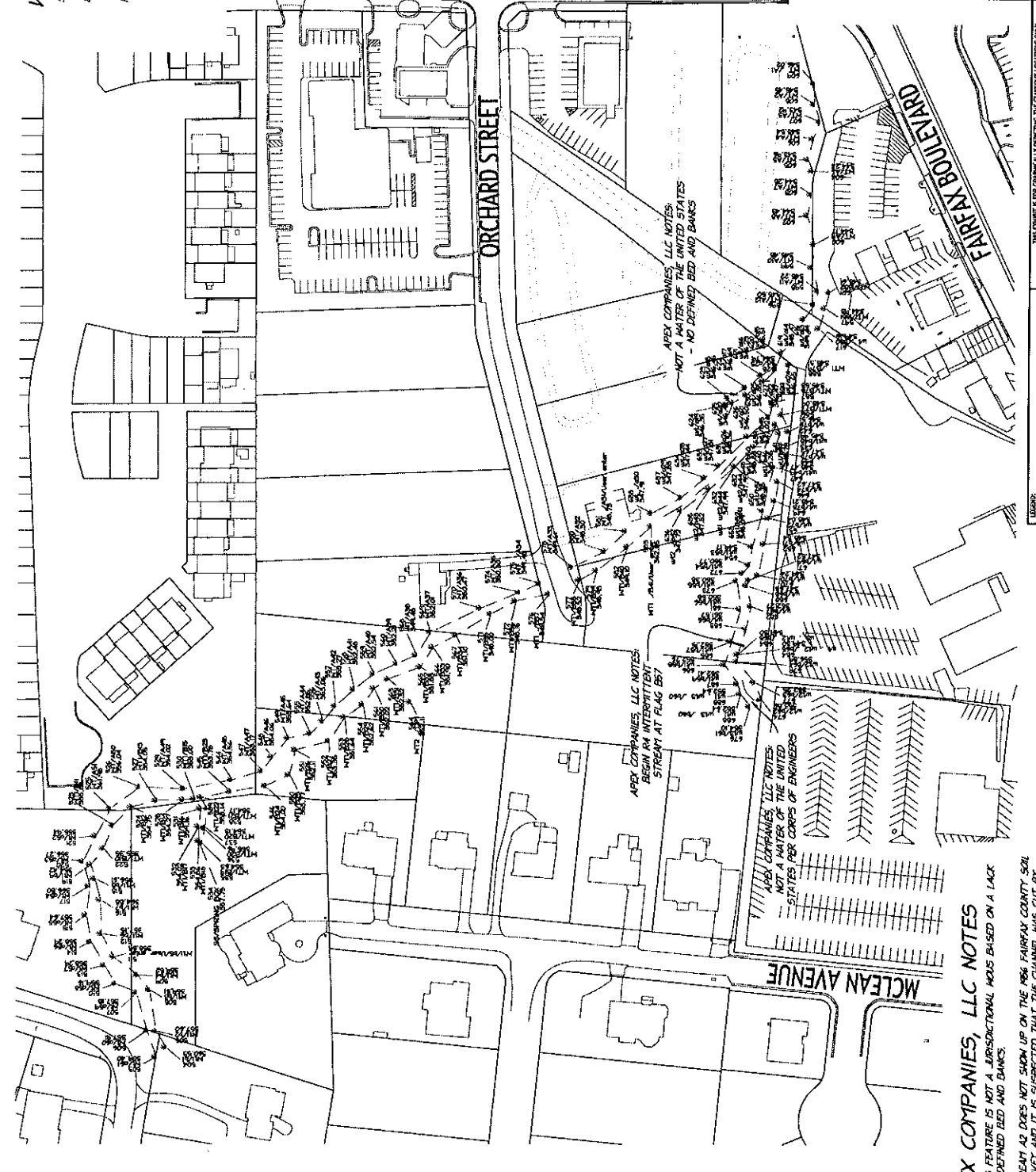
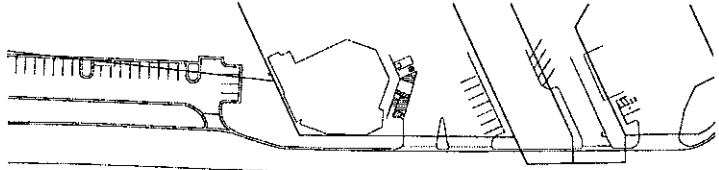
USGS Aerial Map
Northfax
16,000000 00 0000000 W
840000 0000000
Fairfax County, VA

Prepared For:
Northfax JV LLC c/o The Lane Companies
2900 Commonwealth Road - Suite 300
Fairfax, VA 22033

WETLANDS LEGEND

Symbol - Wetlands
 WETLANDS FLAGGING FOUND

Line Types
 PROPERTY LINE
 ADJACENT LINE
 POINT DATA
 500' - POINT NUMBER
 W110/CA2 - POINT DESCRIPTION
 WETLANDS FLAGGING DESCRIPTION FOUND IN FIELD



christopher consultants
 11775/17 - 12/01/17
 W. OSBURN
 12/01/17
 A. SMITH
 01/19/18
 R. CERRECKE
 SCALE: 1" = 80'
 SHEET: 1 of 1
WETLANDS EXHIBIT
NORTHFAX
 CITY OF FAIRFAX, VIRGINIA

LEGEND:
 STAINED POINT LOCATED BY STAINED POINT (USERS BELOW)
 500' - STAINED POINT NUMBER (DESCRIPTION)
 W110/CA2 - STAINED POINT NUMBER (DESCRIPTION)
 WETLANDS FLAGGING FOUND IN FIELD

NOTES:
 THIS EXHIBIT IS FOR GENERAL INFORMATION ONLY. THE EXHIBIT DOES NOT SHOW ALL DESIGN INFORMATION. PLEASE REFER TO THE EXHIBIT FOR ALL DESIGN INFORMATION. DESIGNER'S RESPONSIBILITY FOR THE EXHIBIT IS LIMITED TO THE INFORMATION PROVIDED HEREIN. THE EXHIBIT IS NOT TO BE USED FOR CONSTRUCTION WITHOUT THE APPROVAL OF THE CITY OF FAIRFAX. PLAN DATE: 11/15/17
 DESIGNED BY: APEX COMPANIES, LLC
 APPROVED BY: APEX COMPANIES, LLC

- APEX COMPANIES, LLC NOTES**
1. THIS FEATURE IS NOT A JURISDICTIONAL HOUS BASED ON A LACK OF DEFINED BED AND BANKS.
 2. STREET AS DOES NOT SHOW UP ON THE 1986 FAIRFAX COUNTY SOIL SURVEY AND IT IS SUSPECTED THAT THE CHANNEL WAS CUT BY STORMWATER RUNOFF DISCHARGED BY THE CITY STORMWATER SYSTEM.



Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

13901 Crown Court, Woodbridge, Virginia 22193

(703)583-3800

www.deq.virginia.gov

Matthew J. Strickler
Secretary of Natural Resources

David K. Paylor
Director
(804) 698-4000

Thomas A. Faha
Regional Director

March 5, 2019

Mr. John E. Napolitano, Manager
Northfax JV LLC
3900 Jermantown Road, Suite 300
Fairfax, Virginia 22030

**SENT VIA E-MAIL: john@lann.com
RECEIPT CONFIRMATION REQUESTED**

RE: State Program General Permit (17-SPGP-01) Authorization
Permit Number: 18-1003
Northfax, City of Fairfax, Virginia

Dear Mr. Napolitano:

The Virginia Department of Environmental Quality (DEQ) has received and completed technical review of your application request dated June 22, 2018, and received June 25, 2018. Based on DEQ's technical review, DEQ has determined the proposed project satisfies the terms and conditions contained in the USACE's, Norfolk District State Program General Permit (17-SPGP-01). You are required to adhere to all terms and conditions contained within the attached 17-SPGP-01 and any Special Conditions listed below. Your 17-SPGP-01 verification is effective as of the date on this letter and remains effective until **May 31, 2022**.

The impacts are associated with the construction of a mixed-use development and associated infrastructure on an approximately 10.6 acre development site.

The applicant is hereby authorized to permanently impact 0.50 acre (1,646 linear feet) of stream channel.

The conceptual mitigation plan submitted with your application indicated that mitigation will include the purchase of 1,675 stream credits or 4,761 Stream Condition Units. This mitigation shall be completed and documentation shall be submitted to DEQ prior to commencement of project impacts.

This letter shall serve as verification to proceed with the project as proposed. The permittee shall be responsible for contacting DEQ to revise this verification, including provisions for compensatory mitigation, if the location or amount of the impacts changes.

Northfax JV LLC
Mr. John E. Napolitano
Permit No. 18-1003
March 5, 2019
Page 2 of 2

Please contact Wynn Prusaczyk by phone at (703) 583-3871 or email at Wynn.Prusaczyk@deq.virginia.gov if you have any questions or concerns regarding the information contained herein.

Respectfully,


Trisha M. Beasley, Regional VWPP Program Manager

Attachments: 17-SPGP-01

Cc (via E-mail):

Mr. Jason Franti, Apex Companies, LLC

Mr. Jim Irre, Apex Companies, LLC

Ms. Theresita Crockett-Augustine, USACE, Northern VA Field Office



DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NORFOLK DISTRICT
FORT NORFOLK
803 FRONT STREET
NORFOLK VA 23510-1011

CENAO-WRR STATE PROGRAMMATIC GENERAL PERMIT 17-SPGP-01

Effective Date: June 29, 2017 Expiration Date: May 31, 2022

I. **AUTHORITIES:**

- A. 17-SPGP-01 authorizes the discharge of dredged or fill material in non-tidal waters, of the United States, including wetlands, associated with certain residential, commercial, and institutional developments and linear transportation projects within the geographical limits of the Commonwealth of Virginia and under the regulatory jurisdiction of the U.S. Army Corps of Engineers, Norfolk District (Corps or Norfolk District). These projects must have no more than minimal individual and cumulative impacts and must meet all the terms and conditions outlined herein. The use of 17-SPGP-01 is restricted to those projects that have avoided and minimized impacts to waters of the U.S., including wetlands, to the maximum extent practicable.
- B. The people of the Commonwealth of Virginia (Virginia or "the Commonwealth") are hereby authorized by the Secretary of the Army and the Chief of Engineers, under Section 404 of the Clean Water Act (CWA) (33 U.S.C. § 1344), to perform the aforementioned work in non-tidal waters and wetlands of the Commonwealth as described herein. The Corps' authority and guidance to develop general permits is contained in 33 U.S.C. § 1344(e), 33 C.F.R. § 325.2(e)(2), 33 C.F.R. § 325.3(b), and Corps Regulatory Guidance Letter (RGL) 83-7.

II. **PROCEDURES:**

- A. Delineation Confirmations: Prior to the submission of an application for any Residential, Commercial, or Institutional Development Activity or Linear Transportation Activity covered by 17-SPGP-01, a proponent must first obtain a Corps confirmed delineation that is approved for use with a permit application (Preliminary JD) or a confirmed jurisdictional determination that includes the limits of all waters of the U.S., including wetlands that are located within the project boundaries (Approved JD). The applicant will contact the Corps to obtain a delineation confirmation/jurisdictional determination. When appropriate, a separate delineation confirmation may also be required from the Environmental Protection Agency (EPA).
- B. Application: The application must be submitted to the Virginia Marine Resource Commission (VMRC) and clearly marked 17-SPGP-01. The following information must be submitted as part of the complete application package:
- 1) A completed and signed Standard Joint Permit Application (JPA). The applicant must utilize the most recent version.

<http://www.nao.usace.army.mil/Missions/Regulatory/>

- 2) A completed SPGP Complete Application Checklist. The applicant must utilize the most recent version.
- 3) A Corps confirmed delineation that is approved for use with a permit application OR a confirmed jurisdictional determination that includes the limits of all waters of the U.S., including wetlands that are located within the project boundaries.

This information listed above will be required to render an application complete for 17-SPGP-01 purposes. The application package must be submitted to the Virginia Marine Resource Commission (VMRC) and clearly marked 17-SPGP-01. The VMRC will forward a copy of the application to the applicable VDEQ office. Once the VDEQ has deemed the application complete the VDEQ will forward the complete application to the appropriate federal agency when coordination is required.

For purposes of 17-SPGP-01, the VDEQ is the agency responsible for ensuring permit applications meet the informational and technical requirements of 17-SPGP-01 and for issuance of 17-SPGP-01 verification letters for qualifying Residential, Commercial, and Institutional and Linear Transportation projects.

C. State Approvals: In order for 17-SPGP-01 to be valid, permittees must obtain the following state approvals prior to commencement of work in waters of the U.S.:

- 1) Virginia Department of Environmental Quality (VDEQ) Virginia Water Protection (VWP) permit
- 2) VMRC permit, when required
- 3) VDEQ informal resolution, letter of agreement, executive compliance agreement or consent order when the 17-SPGP-01 is utilized for resolution of non-compliance and/or enforcement (at Corps discretion).

The 17-SPGP-01 may also be used for activities excluded from State VWP permitting when those activities are associated with a larger residential, commercial, institutional development and/or linear transportation project that requires state approval..

III. **DEFINITIONS:**

- A. Loss of waters of the United States: Waters of the United States (WOUS), including wetlands that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage/linear footage of the loss of WOUS is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for 17-SPGP-01; it is not a net threshold that is

calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services.

- 1) The loss of stream bed includes the linear feet of stream bed that is filled or excavated. WOUS temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of WOUS. Impacts resulting from activities eligible for exemptions under Section 404(f) of the Clean Water Act are not considered when calculating the loss of WOUS.
 - 2) Per Norfolk District Pipe Repair Guidelines: pipe repair and replacement is considered a permanent impact
 - 3) The length of any box culvert, pipe, or bridge that is being removed and replaced, whether in the same location or not, is considered a permanent impact. However, if a pipe/culvert/bridge is left in place and is extended or rip-rapped, then only the length and area of the extension or rip-rap is considered a permanent impact. [Based on Norfolk District letter guidance May 5, 2009 to VDOT]
- B. Natural stream design: a stream channel design that mimics the dimension, pattern, and profile of a representative reference stream reach.
- C. Permittee: the responsible party in receipt of the 17-SPGP-01 verification from the VDEQ. The permittee will be the responsible party for complying with all 17-SPGP-01 general conditions as well as any additional special conditions required of each project.
- D. Residential developments: construction or expansion of a multiple unit residential development or a residential subdivision including the construction of building foundations, building pads and attendant features that are necessary for the use of the residence or residential development. Attendant features may include but are not limited to roads, parking lots, garages, yards, utility lines, storm water management facilities, septic fields, and recreation facilities such as playgrounds, playing fields, and golf courses (provided the golf course is an integral part of the residential development).
- E. Commercial and Institutional Developments: construction or expansion of commercial and institutional building foundations, building pads, and attendant features that are necessary for the use and maintenance of the structures. Attendant features may include, but are not limited to, roads, parking lots, garages, yards, utility lines, storm water management facilities, and recreation facilities such as playgrounds and playing fields. Examples of commercial developments include retail stores, industrial facilities, restaurants, business parks, and shopping centers. Examples of institutional developments include schools, fire stations, government office buildings, judicial buildings, public works buildings, libraries, hospitals, and places of worship.

- F. Linear transportation: the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxi ways).

IV. AUTHORIZED ACTIVITIES

A. Residential, Commercial, and Institutional Development Activities Eligibility Criteria:

- 1) Activities are subject to Corps regulations;
- 2) Activities involve the discharge of dredged/fill material associated with residential, commercial, and institutional projects and propose:
 - a. the TOTAL permanent loss of not more than 1 acre of non-tidal waters of the US, to include stream channel, wetlands and open waters.
AND
 - b. the permanent loss of not more than 2,000 linear feet of stream channel;
- 3) Activities meet the general and special conditions of 17-SPGP-01 listed in this document and any special conditions required of each project-specific verification;
- 4) Compensatory mitigation is provided in accordance with the mitigation standards and general conditions listed in this document.
- 5) Activities have received and completed all applicable federal review as listed in the general conditions of this document.

****The following activities are NOT authorized under the 17-SPGP-01:**

- The Construction of one stand-alone single family home and/or its attendant features.
- Golf courses that are not an integral part of a residential development.
- The construction of new ski areas.

B. Linear Transportation Activities Eligibility Criteria:

- 1) Activities are subject to Corps regulations;
- 2) Activities involve the discharge of dredged/ fill material associated with the construction, expansion, modification, or improvement of linear transportation projects that are single and complete with independent utility and propose:

- a. the TOTAL permanent loss of not more than ½ acre of non-tidal waters of the US, to include stream channel, wetlands and open waters
AND
 - b. the permanent loss of not more than 1,000 linear feet of stream channel at any single impact site with independent utility.
- 3) Activities meet all general conditions of 17-SPGP-01 listed in this document and any special conditions required of each project-specific verification;
- 4) Compensatory mitigation is provided in accordance with the mitigation standards and general conditions listed in this document.
- 5) Activities have received and completed all applicable federal review as listed in the general conditions of this document.
- 6) Construction and/or relocation of utility lines by the applicant and within the right-of- way/easements of the project and performed in direct relation with the project are included in the project impact totals.

V. GENERAL CONDITIONS:

The following conditions apply to all activities authorized under 17-SPGP-01. Work that does not meet one or more of the terms or general conditions of 17-SPGP-01, including work that has been determined to be more than minimal in nature (at any impact level), will require consideration under a different type of Corps permit.

- 1) Other permits: Authorization does not obviate the need to obtain other Federal, state, or local authorizations required by law or to comply with all Federal, state, or local laws.
- 2) Minimal effects: Projects authorized shall have no more than minimal individual or cumulative adverse environmental impacts.
- 3) Discretionary authority: The Corps District Commander retains discretionary authority to require processing of an individual permit based on concerns for the aquatic environment or for any other factor of the public interest (33 C.F.R. § 320.4(a)). This authority is exercised on a case-by-case basis.
- 4) Single and complete projects: The activity must be a single and complete project.
 - a. For non-linear projects: the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other

association of owners/developers. A single and complete non-linear project must have independent utility (see "independent utility" as defined in these general conditions). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in a 17-SPGP-01 authorization.

- b. For linear transportation: For projects with multiple crossings or encroachments a determination of "single and complete" will typically apply to each crossing or encroachment of waters that occurs (i.e., single waterbody and/or wetlands) at separate and distinct locations and with independent utility. However, in cases where there are many crossings in close proximity, numerous crossings of the same waterbody, multiple crossings, or multiple encroachments that otherwise may have more than minimal individual or cumulative impacts; the Corps has the discretion to consider all the crossings cumulatively as one single and complete project.
- 5) Independent utility: A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. A phase of a project that would be constructed even if the other phases were not built can be considered as a separate, single and complete project with independent utility. For a linear transportation project, separate impact areas on a new location roadway are not considered to have independent utility and thus impacts would be considered cumulatively and eligible for a single 17-SPGP-01 verification. However, separate impact areas on a roadway that is being widened or where pipes are being replaced at multiple crossings are considered to have independent utility, and each crossing would be considered eligible for a separate 17-SPGP-01 verification. Although such impacts are not considered cumulatively for permitting purposes, they are considered cumulatively when assessing the need for federal review.
 - 6) Multiple general permit authorizations.: The 17-SPGP-01 may be combined with other Corps general permits (including Nationwide, Regional or Letters of Permission) as long as the impacts are considered cumulatively and do not exceed the acreage limit or linear footage limits of the 17-SPGP-01. Two separate activities (e.g. Residential and Linear, within 17-SPGP-01, may be combined as long as they do not exceed the acreage or linear footage threshold of the activity with the highest specified acreage or linear footage threshold).
 - 7) Permit on-site: The permittee shall ensure that a copy of 17-SPGP-01 and the accompanying authorization letter are at the work site at all times. These copies must be made available to any regulatory representative upon request. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be expected to comply with all conditions of any 17-SPGP-01 verification.

- 8) **Historic Properties:** In cases where the Corps determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the District Engineer with the appropriate documentation to demonstrate compliance with those requirements. The District Engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the 17-SPGP-01 activity or whether additional section 106 consultation is necessary.

Non-federal permittees shall not begin work on the activity until Section 106 review and/or coordination has been completed AND they have received their 17-SPGP verification letter from the VDEQ.

Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such permit or assistance despite the adverse effect created or allowed by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

Discovery of Previously Unknown Remains and Artifacts: If a permittee discovers any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, the permittee must immediately notify the District Engineer of what has been found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The District Engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

Tribal Rights: No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

- 9) Federal Lands: Authorized activities shall not impinge upon the value of any National Wildlife Refuge, National Forest, National Park, or any other area administered by the United States Fish and Wildlife Service (USFWS), U.S. Forest Service, or National Park Service unless approval from the applicable land management agency is provided with the permit application.
- 10) Endangered Species: No activity is authorized under any 17-SPGP-01 which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any 17-SPGP-01 which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the District Engineer with the appropriate documentation to demonstrate compliance with those requirements. The District Engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the 17-SPGP-01 activity, or whether additional ESA consultation is necessary.

Non-federal permittees shall not begin work on the activity until Section 7 review and/or consultation has been completed AND they have received their 17-SPGP verification letter from the VDEQ.

Authorization of an activity by a 17-SPGP-01 does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the National Marine Fisheries Service (NMFS), The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the USFWS and NMFS or their World Wide Web

pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.noaa.gov/fisheries.html> respectively.

- 11) Migratory Birds and Bald and Golden Eagles: The permittee is responsible for obtaining any "take" permits required under the USFWS regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the USFWS to determine if such "take" permits are required for a particular activity. As of the issuance date of the 17-SPGP the current contact, concerning this matter, is at the U.S. Fish and Wildlife Service, Thomas Wittig at 413-253-8577 or Thomas_wittig@fws.gov. Information on active bald eagle nests in the project area can be obtained via The Center for Conservation Biology (CCB) Virginia Eagles Nest Locator: <http://www.ccb-wm.org/virginiaeagles/index.htm>.
- 12) Wild and Scenic Rivers: Currently, there are no designated Wild and Scenic Rivers in Virginia. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river has determined, in writing, that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service (NPS), U.S. Forest Service (USFS), Bureau of Land Management (BLM), USFWS). Impacts that occur in these resource areas will require coordination with the appropriate Federal agency.
- 13) Department of Defense (DOD) Siting Clearinghouse Coordination: For all commercial and institutional development projects that include the construction of wind energy generating structures, solar towers, or overhead powerlines the VDEQ must notify the DOD Clearinghouse of the permitted project. The VDEQ will send a copy of the joint permit application and SPGP verification letter to the following address: DoD Clearinghouse, Attn: David Blalock, 101 Marietta St. NW, Suite 3120, Atlanta, Georgia 30303 or david.c.blalock2.civ@mail.mil
- 14) Navigation: No authorized activity may cause more than a minimal adverse effect on navigation.

The permittee understands and agrees that if future operations by the United States require the removal, relocation, or other alteration of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his/her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United

States. No claim shall be made against the United States on account of any such removal or alteration.

- 15) Floodplains: The activity must comply with applicable FEMA-approved state or local floodplain management requirements.
- 16) 408 Certification: Under 33 USC 408, no activity may temporarily or permanently alter or make use of a U.S. Army Corps of Engineers civil works project unless reviewed and permitted by the Secretary of the Army. The Corps may grant this permission if the work does not impair the usefulness of the project and is not injurious to the public interest.
- 17) Environmental justice: Activities authorized under 17-SPGP-01 must comply with Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations".
- 18) Federal liability: In issuing 17-SPGP-01, the Federal government does not assume any liability for the following: (a) damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes; (b) damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest; (c) damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by 17-SPGP-01; (d) design or construction deficiencies associated with the permitted work; (e) damage claims associated with any future modification, suspension, or revocation of this permit.
- 19) Avoidance and minimization: Except as provided under section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. (40 CFR 230.10(a)-(d) Section 404 (b)(1) Guidelines).
- 20) Compensatory Mitigation: Mitigation will be required for all permanent impacts, on a project site, once the compensatory mitigation threshold has been exceeded for waters OR wetland impacts.
 - a. Wetland mitigation: will generally be required for all residential, commercial, and institutional development projects where the total permanent impacts exceed 1/10 acre AND for all wetland impacts on linear transportation projects that are funded in part or in total by local, state or federal funds.

Generally, the minimum required wetland mitigation ratios will be as follows:

- 2:1 for forested wetlands
- 1.5:1 for scrub-shrub wetlands
- 1:1 for herbaceous emergent wetlands
- 0.5:1 for permanent loss of open waters
- 1:1 for conversion of forested wetlands to herbaceous emergent wetlands.

Compensatory mitigation may be required on a case-by-case basis to ensure impacts are minimal for:

- permanent or temporary conversion of one wetland type to another
- wetland impacts totaling less than 1/10 acre
- at mitigation ratios beyond the generally recommend ratios

All wetland mitigation will comply with the Mitigation Rule [Corps-EPA Compensatory Mitigation for Losses of Aquatic Resources, dated April 10, 2008, 33 CFR 325 and 332/40 CFR 230].

- b. Stream mitigation: will generally be required for all residential, commercial, institutional developments AND linear transportation projects where the total permanent stream channel impacts exceed 300 linear feet.

Minimum stream mitigation requirements will be determined using the current Corps and VDEQ endorsed assessment methodology.

Stream mitigation that exceeds the assessment methodology recommendation and mitigation for impacts totaling less the 300 linear feet may be required on a case-by-case basis to ensure impacts are minimal.

All stream mitigation will comply with Mitigation Rule [Corps-EPA Compensatory Mitigation for Losses of Aquatic Resources dated April 10, 2008 33 CFR 325 and 332; 40 CFR 230].

Where local zoning ordinances provide for riparian and floodplain protection pursuant to the Chesapeake Bay Preservation Act (Virginia Code 10.1-2100 et seq.) and the Chesapeake Bay Preservation Area Designation and Management Regulations (9 VAC 1-20 et seq.), the use of buffers as a form of compensatory mitigation shall be allowed only:

- where the extent of the buffer exceeds the lateral extent already required by local ordinances pursuant to the Act and the regulations
- where the quality of the existing protected buffer area is enhanced to provide greater water quality protection benefits
- where the proposed compensatory mitigation is undertaken in

compliance with the Mitigation Rule [Corps-EPA Compensatory Mitigation for Losses of Aquatic Resources; Final Rule dated April 10, 2008 33 CFR 332.4(c)(2)-(14) and 33 CFR 332.3(h)]

- 21) Heavy Equipment: Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.
- 22) Temporary fills: All temporarily disturbed waters and wetlands must be restored to their pre-construction contours within 12 months of commencing the temporary impact's construction. Impacts that will not be restored within 12 months (calculated from the start of the temporary impacts construction) will be considered permanent unless otherwise approved by the Corps, and compensatory mitigation may be required. Once restored to their natural contours, soil in these temporarily disturbed areas must be mechanically loosened to a depth of 12 inches and wetland areas must be seeded or sprigged with appropriate native vegetation.
- 23) Sedimentation and erosion control: Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.
- 24) Countersinking of Pipes and Culverts: Following consultation with the Virginia Department of Game and Inland Fisheries (VDGIF), the Norfolk District assumes there are fish and other aquatic organisms present in any stream being crossed, in the absence of site-specific evidence to the contrary. Although prospective permittees have the option of providing such evidence, extensive efforts to collect such information is not encouraged, since countersinking will in most cases be required except as outlined in the conditions below:
 - a. All pipes and culverts placed in streams will be countersunk at both the inlet and outlet ends, unless indicated otherwise by the VDEQ on a case-by-case basis (see below). Pipes that are 24" or less in diameter shall be countersunk 3" below the natural stream bottom. Pipes that are greater than 24" in diameter shall be countersunk at least 6" below the natural stream bottom. The countersinking requirement does not apply to bottomless pipes/culverts or pipe arches. All single pipes or culverts (with bottoms) shall be depressed (countersunk) below the natural streambed at both the inlet and outlet of the structure. In sets of multiple pipes or culverts (with bottoms) at least one pipe or culvert shall be depressed (countersunk) at both the inlet and outlet to convey low flows.
 - b. When countersinking culverts, permittees must ensure reestablishment of a surface water channel (within 15 days post

construction) that allows for the movement of aquatic organisms and maintains the same hydrologic regime that was present pre-construction (i.e. the depth of surface water through the permit area should match the upstream and downstream depths). This may require the addition of finer materials to choke the larger stone and/or placement of riprap to allow for a low flow channel.

- c. Exemption for extensions and certain maintenance: The requirement to countersink does not apply to extensions of existing pipes or culverts that are not countersunk, or to maintenance to pipes/culverts that does not involve replacing the pipe/culvert (such as repairing cracks, adding material to prevent/correct scour, etc.).
- d. Floodplain pipes: The placement of pipes/culverts above ordinary high water, such as those placed to allow for flood plain flows, is not jurisdictional (provided no fill is discharged into wetlands).
- e. Hydraulic opening: Pipes should be adequately sized to allow for the passage of ordinary high water with the countersinking and invert restrictions taken into account.
- f. Pipes on bedrock or above existing utility lines: Different procedures will be followed for pipes or culverts to be placed on bedrock or above existing buried utility lines where it is not practicable to relocate the lines, depending on whether the work is for replacement of an existing pipe/culvert or a new pipe/culvert:
 - i. Replacement of an existing pipe/culvert: Countersinking is not required provided the elevations of the inlet and outlet ends of the replacement pipe/culvert are no higher above the stream bottom than those of the existing pipe/culvert. Documentation (photographic or other evidence) must be maintained in the permittee's records showing the bedrock condition and the existing inlet and outlet elevations. That documentation will be available to the Norfolk District upon request, but notification or coordination with the Norfolk District is not otherwise required.
 - ii. A pipe/culvert is being placed in a new location: If the prospective permittee determines that bedrock or an existing buried utility line that is not practicable to relocate prevents countersinking, they should evaluate the use of a bottomless pipe/culvert, bottomless utility vault, span (bridge) or other bottomless structure to cross the waterway, and also evaluate alternative locations for the new pipe/culvert that will allow for countersinking. If the prospective permittee determines that neither a bottomless structure nor an alternative location is practicable, then they must submit supporting documentation in the JPA. The prospective permittee must provide documentation of measures evaluated to minimize disruption of the movement of aquatic

life as well as documentation of the cost, engineering factors, and site conditions that prohibit countersinking the pipe/culvert. Options that must be considered include partial countersinking (such as less than 3" of countersinking, or countersinking of one end of the pipe), and constructing stone step pools, low rock weirs downstream, or other measures to provide for the movement of aquatic organisms. The permit application must also include photographs documenting site conditions. The prospective permittee may find it helpful to contact his/her regional fishery biologist for the VDGIF, for recommendations about the measures to be taken to allow for fish movements. When seeking advice from VDGIF, the prospective permittee should provide the VDGIF biologist with all available information such as location, flow rates, stream bottom features, description of proposed pipe(s), slopes, etc. Any recommendations from VDGIF should be included in the JPA. The VDEQ will notify the prospective permittee whether the proposed work qualifies for the 17-SPGP-01. NOTE: Blasting of stream bottoms through the use of explosives is not acceptable as a means of providing for countersinking of pipes on bedrock.

- g. Pipes on steep terrain: Pipes being placed on steep terrain (slope of 5% or greater) must be countersunk in accordance with the conditions above. It is recommended that on slopes greater than 5%, a larger pipe than required be installed to allow for the passage of ordinary high water in order to increase the likelihood that natural velocities can be maintained. There may be situations where countersinking both the inlet and outlet may result in a slope in the pipe that results in flow velocities that cause excessive scour at the outlet and/or prohibit some fish movement. This type of situation could occur on the side of a mountain where falls and drop pools occur along a stream. Should this be the case, or should the prospective permittee not want to countersink the pipe/culvert for other reasons, they must provide documentation of measures evaluated to minimize disruption of the movement of aquatic life as well as documentation of the cost, engineering factors, and site conditions that prohibit countersinking the pipe/culvert. The prospective permittee should design the pipe to be placed at a slope as steep as stream characteristics allow, countersink the inlet 3-6", and implement measures to minimize any disruption of fish movement. These measures can include constructing a stone step/pool structure, preferably using river rock/native stone rather than riprap, constructing low rock weirs to create a pool or pools, or other structures to allow for fish movements in both directions. Stone structures should be designed with sufficient-sized stone to prevent

erosion or washout and should include keying-in as appropriate. These structures should be designed both to allow for fish passage and to minimize scour at the outlet. The quantities of fill discharged below ordinary high water necessary to comply with these requirements (i.e., the cubic yards of stone, riprap or other fill placed below the plane of ordinary high water) must be included in project totals. The prospective permittee may find it helpful to contact the regional fishery biologist for the VDGIF, for recommendations about the measures to be taken to allow for fish movements. When seeking advice from VDGIF, the applicant should provide the VDGIF biologist with all available information such as location, flow rates, stream bottom features, description of proposed pipe(s), slopes, etc. Any recommendations from DGIF should be included in the permit application. The VDEQ will notify the prospective permittee whether the proposed work qualifies for the 17-SPGP-01.

- h. Problems encountered during construction: When a pipe/culvert is being replaced, and the design calls for countersinking at both ends of the pipe/culvert, and during construction it is found that the streambed/banks are on bedrock, a utility line, or other documentable obstacle, then the permittee must stop work and contact the VDEQ (contact by telephone and/or email is acceptable). The permittee must provide the VDEQ with specific information concerning site conditions and limitations on countersinking. The VDEQ will work with the permittee to determine an acceptable plan, taking into consideration the information provided by the permittee, but the permittee should recognize that the VDEQ and/or Corps could determine that the work will not qualify for a 17-SPGP-01 authorization.
- i. Emergency pipe replacements: In the case of an emergency situation, such as when a pipe/culvert washes out during a flood, a permittee is encouraged to countersink the replacement pipe at the time of replacement, in accordance with the conditions above. However, if conditions or timeframes do not allow for countersinking, then the pipe can be replaced as it was before the washout, but the permittee will have to come back and replace the pipe/culvert and countersink it in accordance with the guidance above. In other words, the replacement of the washed out pipe is viewed as a temporary repair, and a countersunk replacement should be made at the earliest possible date. The VDEQ must be notified of all pipes/culverts that are replaced without countersinking at the time that it occurs, and must provide the permittee's planned schedule for installing a countersunk replacement (it is acceptable to submit such notification by email). The permittee should anticipate whether bedrock or steep terrain will limit countersinking and, if so, should follow the procedures outlined in (g) and/or (h) above.

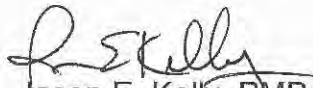
- 25) Discharge of pollutants: All authorized activities involving any discharge of pollutants into waters of the United States shall be consistent with applicable water quality standards, effluent limitations, standards of performance, prohibitions, and pretreatment standards and management practices established pursuant to the CWA (33 U.S.C. § 1251 et seq.) and applicable state and local laws.
- 26) Suitable Material: No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).
- 27) Obstruction of high flows: Discharges of dredged or fill material must not permanently restrict or impede the passage of normal or expected high flows.
- 28) Aquatic Life Movements: No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.
- 29) Spawning Areas: Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.
- 30) Migratory Bird Breeding Areas: Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.
- 31) Native trout and anadromous fishes: Authorizations for discharges of dredged or fill material into native trout waters or anadromous fish spawning areas are conditioned to limit in-stream work within the timeframes recommended by the DGIF. <http://206.16.194.16/environmental-programs/files/VDGIF-Time-of-Year-Restrictions-Table.pdf>
- 32) Water supply intakes: No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization
- 33) Invasive Species: Plant species on the most current Virginia Department of Conservation and Recreation's Invasive Plant Species List shall not be used for replanting activities authorized by the SPGP. The list of invasive plants in Virginia

may be found at: <http://www.dcr.virginia.gov/natural-heritage/document/nh-invasive-plant-list-2014.pdf>

- 34) Inspections: The permittee understands and agrees that the Corps and/or the VDEQ are permitted and allowed to make periodic inspections at any time the Corps or VDEQ deems necessary in order to assure that the activities being performed under authority of this permit are in accordance with the terms and conditions prescribed herein. The Corps reserves the right to require post-construction engineering drawings and/or surveys of any work authorized under 17- SPGP-01, as deemed necessary on a case-by-case basis.
- 35) Maintenance: The permittee shall maintain the work authorized herein in good condition and in conformance with all terms and conditions of this permit. All fills shall be properly maintained to ensure public safety.
- 36) Property rights: 17-SPGP-01 does not convey any property rights, either in real estate or material, or convey any exclusive privileges, nor does it authorize any injury to property or invasion of rights or any infringement of Federal, state, or local laws or regulations. If real estate rights are needed from the Corps, you must contact the Corps Real Estate Office at (757) 201-7735 or at the address listed on the front page of this permit.
- 37) Suspension and revocation: 17-SPGP-01 and individual verifications under 17-SPGP-01 maybe either suspended or revoked in whole or in part pursuant to the policies and procedures of 33 C.F.R. § 325.7. Any such action shall not be the basis for any claim for damages against the United States.
- 38) Restoration directive: The permittee, upon receipt of a restoration directive, shall restore the waters of the United States to their former conditions without expense to the United States and as directed by the Secretary of the Army or his/her authorized representative. If the permittee fails to comply with such a directive, the Secretary or his/her designee, may restore the waters of the United States to their former conditions, by contract or otherwise, and recover the cost from the permittee.
- 39) Special conditions: The Corps may impose other special conditions on a project verified pursuant to 17-SPGP-01 that are determined necessary to minimize adverse navigational and/or environmental effects or based on any other factor of the public interest. Failure to comply with all conditions of the authorization/verification, including special conditions, constitutes a permit violation and may subject the permittee, or his/her contractor, to criminal, civil, or administrative penalties and/or restoration.
- 40) False or incomplete information: In granting authorization pursuant to this permit, the Corps has relied upon information and data provided by the permittee. If,

subsequent to notification by the Corps or the VDEQ that a project qualifies for this permit, such information and data prove to be materially false or materially incomplete, the Corps may suspend or revoke authorization, in whole or in part, and/or the United States or Corps may institute appropriate legal proceedings.

- 41) Abandonment: If the permittee decides to abandon the activity authorized under 17-SPGP-01, unless such abandonment is merely the transfer of property to a third party, they may be required to restore the area to the satisfaction of the Corps.
- 42) Transfer of verification: In order to transfer verification under 17-SPGP-01, the transferee and permittee must supply the Corps and the VDEQ with a written and signed, by all appropriate parties, request to make such a transfer. Such transfer is not effective until written approval has been granted by the Corps or the VDEQ.
- 43) Binding effect. The provisions of the permit authorization shall be binding on any assignee or successor in interest of the original permittee.
- 44) Expiration of 17-SPGP-01: Unless further suspended or revoked the 17-SPGP-01 will be in effect until May 31, 2022. Activities which have commenced (i.e., are under construction) or are under contract to commence construction in reliance upon 17-SPGP-01 will remain authorized provided the activity is completed within twelve months of the date of this 17-SPGP-01's expiration of May 31, 2022, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 325.7(a-e).


Jason E. Kelly, PMP
Colonel, U.S. Army
Commanding

March 5, 2019

FACT SHEET

Virginia Water Protection Individual Permit No. 18-1003
Northfax, City of Fairfax

DEQ has reviewed the application for the Virginia Water Protection (VWP) Individual Permit Number 18-1003 and has determined that the project qualifies for an individual permit.

The following details the application review process and summarizes relevant information for developing the Part I - Special Conditions for permit issuance.

1. Contact Information:

Permittee Legal Name and Address:

Northfax JV LLC
3900 Jermantown Road, Suite 300
Fairfax, Virginia 22030
Mr. John E. Napolitano, Manager
703-934-4600

Agent Legal Name and Address:

Apex Companies, LLC c/o
9700 Capital Court, Suite 100
Manassas, Virginia 20110
Mr. Jason Franti
703-396-6730

2. Processing Dates:

Received Application:	June 25, 2018
Received VMRC Number:	June 25, 2018
Application Complete:	September 12, 2018
Permit Fee Deposited by Accounting:	August 27, 2018
Application Suspended:	September 26, 2018
Application Reinstated:	December 11, 2018
Processing Deadline (120 days from Complete Application):	March 27, 2019
1 st Request for Additional Information Sent:	July 3, 2018
Final Request for Additional Information Received:	September 12, 2018
Section 106 SPGP Coordination Initiated:	August 13, 2018
Section 7 SPGP Coordination Initiated:	August 13, 2018
Request for comments sent to USACE, USEPA and USFWS:	August 13, 2018
Completion of SPGP coordination:	October 31, 2018
Notification of JPA sent to Local Government(s):	June 28, 2018
Commissioner of Revenue Contacted:	N/A
Request for comments sent to VDH, VDGIF, VDCR, VMRC:	June 28, 2018
Letters sent to Riparian Land Owners:	July 11, 2018
Draft Permit Package Issued:	January 2, 2019
Copy of Public Notice sent to DEQ Central Office:	January 2, 2019
Copy of Public Notice sent to Local Gov't and Planning District:	January 2, 2019
Application Suspended Pending Public Notice:	January 17, 2019
Public Notice Published:	January 18, 2019
Application Reinstated:	January 18, 2019
End of 30-Day Public Comment Period:	February 18, 2019
Received Verification of Publication:	January 22, 2019
Permit Issued:	March 5, 2019

3. Project Location:

The project site is located northeast of the intersection of Chain Bridge Road (VA-123) and Fairfax Boulevard (US-50) in the City of Fairfax, Virginia.

City/County:	City of Fairfax
Waterbody:	Accotink Creek, UT
Basin:	Potomac
Subbasin:	Middle Potomac
Section:	7
Class:	III
Special Standards:	b
HUC:	02070010
Latitude & Longitude:	38.859417, -77.309689
U.S.G.S. Quadrangle:	Fairfax
State Watershed No.:	VAN-A15R

4. Project Description:

The permittee proposes to construct a mixed-use development with associated infrastructure, on an approximately 10.6 acre development site, known as “Northfax.”

5. Avoidance and Minimization Efforts:

Avoidance and minimization efforts have been documented by the applicant in the JPA as well as subsequent submittals. The purpose and need of the project is a mixed-use development. However, the purpose and need cannot be met without flood control. A perennial stream channel bisects the property and the development site has been known historically to flood. Complete and partial avoidance was considered by the applicant, however due to the flood conditions and the location of surface waters onsite, completely avoiding or partially piping the channel would result in minimizing the developable area to around fifty-percent of the original design with flooding concerns further minimizing the developable area.

Complete avoidance was considered and deemed infeasible to meet the projects purpose and need as it would reduce the developable land to 4.40 acres thus reducing the Annualized Cost on Return (IRR) to well below the target. In addition, the flood elevations would still render approximately fifty-percent of the developable land area in an unusable condition due to the presence of RPA and flood zones. A historic trolley bridge is located just off-site over the intermittent channel, downstream of the confluence of the two channels, which causes back watering due to its limiting size. Discharge at the confluence of the stream channels during the 100-year storm creates a significant back-water situation thus further limiting developable area due to flood concerns.

A partial stream piping scenario was also considered, in which approximately 500 linear feet of stream channel would be piped leaving most of the perennial stream and all the intermittent stream intact. In this scenario Orchard Road would be still constructed in order to access the western portion of the property. As the stream channel bisects the 10.6 acre development site, the use of Orchard Road would necessitate significant alteration to the flood zones through the installation of a culverted road crossing, thus constricting flood flows and increasing flooding to the northern portion of the property. The back-water flooding associated with the historic trolley bridge would still be a limiting factor for developable land. Flood elevations will allow development of approximately fifty-percent of the total developable area rendering the IRR for the alternative well below the target, thus this alternative was deemed infeasible to meet the projects purpose and need.

For additional information, see page 4-5 of the JPA dated June 22, 2018, the additional information response dated August 10, 2018, and the response to EPA comments dated October 16, 2018.

Based upon staff review, the applicant has demonstrated that the proposed plan represents the least environmentally damaging and practicable alternative and all unavoidable permanent impacts will be adequately mitigated through the proposed compensation plan.

6. Project Impacts:

This permit authorizes the total permanent impact to 0.50 acre (1,646 linear feet) of stream channel. Authorized surface water impacts shall be as depicted on the impacts map entitled Stream Impact Exhibit dated August 9, 2018, with latest revision date of August 21, 2018, and received September 12, 2018.

7. Compensation for Unavoidable Impacts:

The permittee shall compensate for permanent stream impacts through the purchase of 1,675 stream credits or 4,761 Stream Condition Units from a DEQ approved mitigation bank, in-lieu fee fund, or a combination thereof that is authorized and approved by DEQ to sell credits in the area in which the impacts will occur and has credits available (as released by DEQ). The credit sale shall be in accordance with the approved Mitigation Banking Instrument for the mitigation bank. Purchase of required mitigation credits shall occur first through the purchase of available released credits followed by the purchase of advance credits.

The compensation package conforms with the preference hierarchy of the 2008 Compensatory Mitigation Rule issued by the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers (USACE) and DEQ's Guidance Memorandum No. 09-2004 (Applying Compensatory Mitigation Preferences Provided in the EPA Mitigation Rule to Virginia Water Protection Permitting).

8. Site Inspection:

A site visit was conducted on July 23, 2018. The site visit confirmed the site description provided in the applications materials accurately characterized the surface waters on the site. A summary of the site inspection is located in VWP Permit File No. 18-1003.

9. Relevant Regulatory Agency Comments:

As part of the application review process, DEQ contacted the appropriate state regulatory agencies and coordinated with various federal regulatory agencies, including the U.S. Army Corps of Engineers (USACE). No comments received required a change to VWP individual permit Part I - Special Conditions. Therefore, the staff anticipates no adverse effect on water quality and fish and wildlife resources provided the applicant adheres to the permit conditions.

a. Summary of State Agency Comments and Actions

By email/letter dated June 28, 2018, comments were requested from the following state agencies: Virginia Department of Game and Inland Fisheries (DGIF), Virginia Department of Conservation and Recreation (DCR), Virginia Marine Resources Commission (VMRC), and

Virginia Department of Health (VDH). Failure to provide comments within 45 calendar days of the DEQ request for comments infers that the agency has no comments on the project activities.

DCR

DCR provided the following comments in a memorandum dated and transmitted by email on August 10, 2018:

- Recommends the implementation of the following USFWS voluntary measures for the conservation of the Rusty patched bumble bee (*Bombus affinis*): avoid pesticide use, avoid herbicide use, and plant native flowers that bloom throughout the spring and summer to support pollinator habitat.

The measures will not be included in the permit as they are listed as voluntary.

DGIF

DGIF provided comments to DEQ by email dated August 10, 2018.

- Recommended conducting any in-stream activities during low or no-flow conditions, using non-erodible cofferdams or turbidity curtains to isolate the construction area, blocking no more than 50% of the streamflow at any given time, stockpiling excavated material in a manner that prevents reentry into the stream, restoring original streambed and streambank contours, revegetating barren areas with native vegetation, and implementing strict erosion and sediment control measures.

The special conditions of the permit address these activities.

- Recommend coordination with DCR's Department of Natural Heritage as the project is located within 2 miles of a documented occurrence of a state or federal threatened or endangered plant or insect species and/or other Natural Heritage coordination species.

Staff requested comments from DCR on the proposed project on June 28, 2018.

- Recommend that the permittee avoid and minimize impacts to undisturbed forest, wetlands, and streams to the fullest extent practicable to minimize overall impacts to wildlife and our natural resources. DGIF also recommended maintaining undisturbed naturally vegetated buffers of at least 100 feet in width around all on-site wetlands and on both sides of all perennial and intermittent streams.

Staff reviewed the proposed impacts to surface waters and determined those proposed have been minimized to the maximum extent practicable.

- Recommended that the stormwater controls for this project be designed to replicate and maintain the hydrographic condition of the site prior to the change in landscape.

Oversight of stormwater management and erosion and sediment control measures is the responsibility of DEQ-Stormwater Management or the locality, if such responsibility has

been delegated. Any such requirements will be implemented under the oversight of that program.

- Recommended that all tree removal and ground clearing adhere to a time of year restriction protective of resident and migratory songbird nesting from March 15 through August 15 of any year.

This time of year restriction was not included in the permit as it's not associated with a threatened or endangered species. The recommendation was forwarded to the permittee for their consideration.

- Recommended adherence to erosion and sediment controls during ground disturbance.

Oversight of stormwater management and erosion and sediment control measures is the responsibility of DEQ-Stormwater Management or the locality, if such responsibility has been delegated. Any such requirements will be implemented under the oversight of that program.

VDH

VDH provided comments in a memorandum dated July 12, 2018, and received on July 16, 2018, that no public raw water intakes were found, in the commonwealth, downstream from the proposed construction site.

VMRC

VMRC provided comments in a letter dated and transmitted by email on August 7, 2018, stating that the project is not within the purview of the agency and the Commission has no objection to DEQ's issuance of a VWP individual permit. A "No Permit Necessary" letter was issued on June 6, 2018.

b. Summary of Federal Agency Comments and Actions

The project is being reviewed by DEQ for a State Programmatic General Permit (SPGP). By letter dated July 13, 2018, comments were requested from the following federal agencies: Environmental Protection Agency (EPA), U.S. Army Corps of Engineers (USACE), and U.S. Fish and Wildlife (FWS).

Section 106

USACE provided comments to DEQ by email transmitted October 30, 2018 stating the Department of Historic Resources concurs with the Corps' determination that there will be "No Historic Properties Affected" by the proposed project.

Section 7

FWS responded to the request for Section 7 comments by email transmitted on August 14, 2018 requesting a Self-Certification Letter. DEQ responded on August 24, 2018, with the Self-Certification Letter. No response was received within 30 days of the latest transmittal.

Federal Review

EPA responded to the request for Federal Review by email transmitted on August 28, 2018, requesting more information on avoidance and minimization. The applicant responded to the comments, and the response was forwarded to EPA on October 16, 2018. No response was received within 15 days of the latest transmittal. No project comments were received from FWS or USACE.

10. Riparian Landowner Notification:

Staff notified riparian landowners located adjacent to the impact area by letter dated July 11, 2018. The impacted stream channel is piped starting at the edge of the property continuing offsite, therefore downstream landowners were not notified.

Notifications of riparian and adjacent landowners were conducted in accordance with DEQ's Guidance Memorandum No. 11-2005 (Revised Local Government, Riparian Property Owner, Adjacent Property Owner or Resident, and General Public Notification Procedures for VPDES, VPSA and VWP Permit Applications and Draft Permits).

No significant responses were received.

11. Changes in Permit Part I - Special Conditions Due to Public Comments:

The public notice was published in Fairfax County Times Friday-Sunday, January 18-20, 2019, on January 18, 2019. The public comment period ran from January 19, 2019, to February 18, 2019.

One public comment letter was received. However, no substantial or disputed issues were presented that warranted revisions to the draft conditions of the permit.

12. Special Conditions:

The following conditions were developed to protect instream beneficial uses, to ensure compliance with applicable water quality standards, to prevent significant impairment of state waters or fish and wildlife resources, to provide for no net loss of wetland acreage, and to provide no net loss of functions in all surface waters through compensatory mitigation and monitoring and reporting.

Section A Authorized Activities

Nos. 1-3 addresses the activities authorized by this permit, including impact types and limits.

Section B Permit Term

Nos. 1-2 addresses the permit term and re-issuance process to ensure that all permit conditions are completed.

Section C Standard Project Conditions

- No. 1 addresses the requirement for the minimization of adverse impacts to instream beneficial uses.
- No. 2 ensures that the project will be executed in a manner that limits the disruption of the movement of aquatic life.
- No. 3 ensures that downstream flows will be maintained to protect both instream and off-stream beneficial uses
- No. 4 ensures the minimization of adverse effects on navigation.
- No. 5 ensures the passage of high flows.
- No. 6 requires maintenance of continuous flow of perennial springs for the protection of instream beneficial use.
- No. 7 ensures that dredging and filling operations will minimize stream bottom disturbances and turbidity.
- No. 8 requires instream activities to be conducted during low-flow conditions to protect instream beneficial uses.
- Nos. 9 through 11 provide requirements and limitations on the entry of various materials (including concrete, fill, construction and waste material, fuels, lubricants, and untreated stormwater runoff) into state waters.
- Nos. 12 and 13 limit the use of machinery and equipment in surface waters to protect beneficial uses
- Nos. 14 through 18 require temporary disturbances to surface waters during construction to be avoided and minimized to the maximum extent practicable and the restoration of such temporary disturbances.
- No. 19 prohibits the violation of Water Quality Standards in surface waters as a result of project activities
- No. 20 requires the identification of all non-impacted surface waters in the vicinity of the proposed activity to prevent unpermitted impacts
- Nos. 21 through 25 set forth all reporting requirements concerning construction, monitoring, compensation, and restoration as required by current law and regulations.

Section D Stream Modifications, Including Intake/Outfall Structures

- No. 1 prohibits the use of stream substrate for erosion control to avoid additional impacts to state waters.
- No. 2 requires upland disposal of material removed from stream substrate to avoid unpermitted impacts to surface waters.
- No. 3 ensures riprap placement conforms to current law and regulation.
- Nos. 4 and 5 direct the placement and contents of materials for the construction of submerged structures, and on-bank storage and staging of materials, to protect water quality and fish and wildlife resources.

Section E Installation of Utilities

- No. 1 requires the minimization of disturbance to surface waters and restoration to preconstruction conditions following utility line installation.

No. 2 sets a 90-day time limit for temporary sidecasting during trench excavation to minimize impacts to surface waters.

No. 3 provides the requirements for trench construction to avoid the drainage of surface waters.

Section F Road Crossings

No. 1 provides specifications for access road construction to minimize adverse effects to surface waters.

No. 2 ensures pipes and culvert construction is conducted in the dry to protect water quality and wildlife habitat.

No. 3 requires that temporary impacts be restored immediately following construction to minimize impacts to water quality and fish and wildlife resources.

No. 4 summarizes requirements for pipe and culvert placement and countersinking to provide for the re-establishment of a natural stream bottom and low flow channel to maintain instream beneficial uses

No. 5 requires measurement of stream bottom elevations at road crossings to ensure for the re-establishment of a natural stream bottom and low flow channel to maintain instream beneficial uses. The intent of this condition is to maintain a hydrologic connection and enable the stream bottom to reestablish in the culvert. The stream crossing(s) to which this condition pertains is identified in the condition.

Section G Stormwater Management Facilities

No. 1 defines the general requirements for stormwater management facility construction to minimize adverse effects to aquatic resources and provide for long-term aquatic resources protection and enhancement.

No. 2 provides limits and guidance for maintenance excavation to avoid unpermitted impacts to surface waters.

Section H Project Construction Monitoring and Submittals (Impact Site)

Nos. 1 through 6 address monitoring and submittals required for pre-construction, during construction and post-construction for the impact areas on site.

Section I Compensatory Mitigation

No. 1 describe the compensatory mitigation required to mitigate for the permitted impacts.

No. 2 describes the documentation requirement for the purchase of the required amount of credits.

13. General Conditions:

The general conditions specified in the effective VWP Permit Program Regulation 9VAC25-210 apply to all VWP individual permits.

14. General Criteria (9VAC25-260-20 A):

State waters, including wetlands, shall be free from substances attributable to sewage, industrial waste, or other waste in concentrations, amounts, or combinations which contravene established standards or interfere directly or indirectly with designated uses of such water or which are inimical or harmful to human, animal, plant, or aquatic life.

Specific substances to be controlled include, but are not limited to: floating debris, oil, scum, and other floating materials; toxic substances (including those which bioaccumulate); substances that produce color, tastes, turbidity, odors, or settle to form sludge deposits; and substances which nourish undesirable or nuisance aquatic plant life. Effluents which tend to raise the temperature of the receiving water will also be controlled. Conditions within mixing zones established according to 9VAC25-260-20 B do not violate the provisions of this subsection.

15. Staff Findings and Recommendations:

- In compliance with § 401 of the Clean Water Act, as amended (33 USC § 1341) and the State Water Control Law and regulations adopted pursuant thereto, the board has determined that there is a reasonable assurance that this VWP permit, if complied with, will protect instream beneficial uses, will not violate applicable water quality standards, and will not cause or contribute to a significant impairment of state waters or fish and wildlife resources. In issuing this VWP permit, the board has not taken into consideration the structural stability of any proposed activities.
- The proposed permit conditions address no net loss of wetland acreage and no net loss of functions in all surface waters, through the avoidance and minimization of wetland impacts to the maximum extent practicable; compensatory mitigation; and compensation monitoring and reporting. Permitted wetland impacts have been inventoried in evaluating this proposed permit.
- The draft permit reflects the required consultation with and full consideration of the written recommendations of VMRC, VDH, DCR and DGIF.

Staff recommends VWP Individual Permit Number 18-1003 be issued as proposed.



Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

13901 Crown Court, Woodbridge, Virginia 22193

(703)583-3800

www.deq.virginia.gov

Matthew J. Strickler
Secretary of Natural Resources

David K. Paylor
Director
(804) 698-4000

Thomas A. Faha
Regional Director

March 5, 2019

By e-mail: john@lann.com

Receipt Confirmation Requested

Mr. John E. Napolitano, Manager
Northfax JV LLC
3900 Jermantown Road, Suite 300
Fairfax, Virginia 22030

Re: Virginia Water Protection (VWP) Individual Permit Number 18-1003
Northfax, City of Fairfax, Virginia
Final VWP Individual Permit

Dear Mr. Napolitano:

Pursuant to the VWP Permit Program Regulation 9 VAC 25-210 and § 401 of the Clean Water Act Amendments of 1977, Public Law 95-217, the Department of Environmental Quality has enclosed the VWP Individual Permit for the "Northfax" project.

This permit is valid for 15 years from the date of issuance. An extension of the permit may not occur as the permit term cannot exceed the maximum of 15 years. A new permit may be necessary if any portion of the authorized activities or any permit requirement (including compensatory mitigation provisions) is not complete at the end of the 15 year permit term.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have **30 calendar days** from the date of service (the date you actually received this decision or the date it was e-mailed to you, whichever occurred first) within which to appeal this decision by filing a notice of appeal in accordance with the Rules of the Supreme Court of Virginia with the Director, Department of Environmental Quality. In the event that this decision is served on you by mail, three days are added to that period. Refer to Part 2A of the Rules of the Supreme Court of Virginia for additional requirements governing appeals from administrative agencies.

Alternatively, an owner may request a formal hearing for the formal taking of evidence upon relevant fact issues under Section 2.2-4020 of the Administrative Process Act. A petition for a formal hearing must meet the requirements set forth in 9VAC25-230 of the Virginia Administrative Code. In cases involving

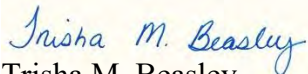
Mr. John E. Napolitano
VWP Individual Permit No. 18-1003
March 5, 2019
Page 2 of 2

actions of the board, such petition must be filed within 30 calendar days after notice of such action is sent to such owner by certified mail.

The work authorized by this permit also satisfies the terms and conditions contained in the Norfolk District, Corps of Engineers' State Program General Permit (17- SPGP-01) and the special conditions, if any, attached to 17-SPGP-01. No additional authorization from the Corps is required. Your 17-SPGP-01 authorization is effective as of the date on this letter and remains effective until May 31, 2022.

If you have any questions, please contact Wynn Prusaczyk by phone at (703) 583-3871 or by email at Wynn.Prusaczyk@deq.virginia.gov.

Respectfully,



Trisha M. Beasley
Regional VWPP Program Manager

Enclosures: Permit Cover Page, Part I - Special Conditions, Part II - General Conditions, Monthly VWP Permit Inspection Checklist, VWP Permit Construction Status Update Form, 17-SPGP-01 Verification Letter, and 17-SPGP-01

Cc (by e-mail):

Mr. Jason Franti, Apex Companies, LLC

Mr. Jim Irre, Apex Companies, LLC

Ms. Theresita Crockett-Augustine, U.S. Army Corps of Engineers, Northern VA Field Office



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

VWP Individual Permit Number 18-1003

Effective Date: March 5, 2019

Expiration Date: March 4, 2034

VIRGINIA WATER PROTECTION PERMIT ISSUED PURSUANT TO THE STATE WATER CONTROL LAW AND SECTION 401 OF THE CLEAN WATER ACT

In compliance with § 401 of the Clean Water Act, as amended (33 USC § 1341) and the State Water Control Law and regulations adopted pursuant thereto, the board has determined that there is a reasonable assurance that this VWP permit, if complied with, will protect instream beneficial uses, will not violate applicable water quality standards, and will not cause or contribute to a significant impairment of state waters or fish and wildlife resources. In issuing this VWP permit, the board has not taken into consideration the structural stability of any proposed activities.

Permittee: Northfax JV LLC

Address: 3900 Jermantown Road, Suite 300, Fairfax, Virginia 22030

Activity Location: The project is located northeast of the intersection of Chain Bridge Road (VA-123) and Fairfax Boulevard (US-50) in the City of Fairfax, Virginia.

Activity Description: The permittee proposes to construct a mixed-use development and associated infrastructure on an approximately 10.6 acre development area known as "Northfax." Permitted activities shall be conducted as described in the Joint Permit Application dated June 22, 2018, received on June 25, 2018, and supplemental materials, revisions and clarifications received through December 11, 2018.

Authorized Surface Water Impacts:

This permit authorizes the total permanent impact of 0.50 acre (1,646 linear feet) of stream channel. Authorized surface water impacts shall be as depicted on the impacts map entitled *Stream Impact Exhibit* dated August 9, 2018, with latest revision date of August 21, 2018, and received September 12, 2018.

Approved Compensation:

The permittee shall compensate for the authorized surface water impacts through the following:

1. Compensation for permanent stream impacts shall be provided through the purchase of 1,675 stream credits or 4,761 Stream Condition Units from a DEQ approved mitigation bank, in-lieu fee

fund, or a combination thereof that is authorized and approved by DEQ to sell credits in the area in which the impacts will occur and has credits available (as released by DEQ).

2. Mitigation bank credits shall be purchased prior to the purchase of in-lieu fee program credits in accordance with 9VAC25-210-116.C.2.
3. The credit sale shall be in accordance with the approved Mitigation Banking Instrument for the mitigation bank.

The permitted activity shall be in accordance with this Permit Cover Page, Part I - Special Conditions, and Part II - General Conditions.



Thomas A. Faha, Regional Director

March 5, 2019

Date

Part I – Special Conditions

A. Authorized Activities

1. This permit authorizes the total impact permanent impact of 0.50 acre (1,646 linear feet) of stream channel. Authorized surface water impacts described under this condition shall be as depicted on the impacts map entitled *Stream Impact Exhibit* dated August 9, 2018, with latest revision date of August 21, 2018, and received September 12, 2018.
2. The permittee shall conduct authorized activities as described in the Joint Permit Application dated June 22, 2018, and received June 25, 2018, and supplemental materials, revisions and clarifications received through December 11, 2018. Any changes to the authorized activities or impacts map that affect permitted areas shall be submitted to DEQ immediately upon determination that changes are necessary, and DEQ approval shall be required prior to implementing the changes.
3. The permittee shall notify the DEQ of any changes in authorized impacts to surface waters or any changes to the design or type of construction activities in surface waters authorized by this permit. DEQ approval shall be required prior to implementing the changes. Any additional impacts, modifications, or changes shall be subject to individual permit review and/or modification of this permit.

B. Permit Term

1. This permit is valid for **fifteen (15) years** from the date of issuance. A new permit may be necessary for the continuance of the authorized activities, or any permit requirement that has not been completed, including compensation provisions.
2. The permittee shall notify DEQ in writing at least 120 calendar days prior to the expiration of this permit if reissuance will be requested.

C. Standard Project Conditions

1. The activities authorized by this permit shall be executed in such a manner that any impacts to beneficial uses are minimized. As defined in § 62.1-10(b) of the Code, "beneficial use" means both instream and offstream uses. Instream beneficial uses include, but are not limited to, the protection of fish and wildlife habitat, maintenance of waste assimilation, recreation, navigation, and cultural and aesthetic values. The preservation of instream flows for purposes of the protection of navigation, maintenance of waste assimilation capacity, the protection of fish and wildlife resources and habitat, recreation, cultural and aesthetic values is an instream beneficial use of Virginia's waters. Offstream beneficial uses include, but are not limited to, domestic uses (including public water supply), agricultural uses, electric power generation, commercial uses, and industrial uses. Public water supply uses for human consumption shall be considered the highest priority.

2. No activity shall substantially disrupt the movement of aquatic life indigenous to the water body, including those species which normally migrate through the area, unless the primary purpose of the activity is to impound water.
3. Flows downstream of the project area shall be maintained to protect all uses.
4. No activity shall cause more than minimal adverse effect on navigation, and no activity shall block more than half of the width of the stream at any given time.
5. The activity shall not impede the passage of normal or expected high flows, and any associated structure shall withstand expected high flows.
6. Continuous flow of perennial springs shall be maintained by the installation of spring boxes, French drains, or other similar structures.
7. All excavation, dredging, or filling in surface waters shall be accomplished in a manner that minimizes bottom disturbance and turbidity.
8. All in-stream activities shall be conducted during low-flow conditions whenever practicable.
9. All construction, construction access, and demolition activities associated with this project shall be accomplished in a manner that minimizes construction materials or waste materials from entering surface waters, unless authorized by this permit. Wet, excess, or waste concrete shall be prohibited from entering surface waters.
10. All fill material placed in surface waters shall be clean and free of contaminants in toxic concentrations or amounts in accordance with all applicable laws and regulations.
11. Measures shall be employed at all times to prevent and contain spills of fuels, lubricants, or other pollutants into surface waters.
12. Machinery or heavy equipment in temporarily impacted wetlands shall be placed on mats or geotextile fabric, or other suitable means shall be implemented, to minimize soil disturbance to the maximum extent practical. Mats, fabrics, or other measures shall be removed as soon as the work is complete in the temporarily impacted wetland.
13. Stream channel restoration activities shall be conducted in the dry or during low flow conditions. When site conditions prohibit access from the streambank or upon prior authorization from the Department of Environmental Quality, heavy equipment may be authorized for use within the stream channel. The equipment shall be stationed on cobble bars.
14. Temporary disturbances to wetlands, stream channels, and/or stream banks during project construction activities shall be avoided and minimized to the maximum extent practicable.
15. All temporarily disturbed wetland areas shall be restored to preconstruction conditions within 30 calendar days of completing work in the areas, which shall include re-establishing pre-

construction contours, and planting or seeding with appropriate wetland vegetation according to cover type (emergent, scrub/shrub, or forested), except for invasive species identified on DCR's Virginia Invasive Plant Species List. The permittee shall take all appropriate measures to promote and maintain the revegetation of temporarily disturbed surface waters through the second year post-disturbance.

16. All temporarily impacted streams and stream banks shall be restored to their original elevations and contours within 30 calendar days following the construction at that stream segment, and the banks shall be seeded or planted with the same vegetative cover type originally present along the banks, including supplemental erosion control grasses if necessary but not including invasive species identified on DCR's Virginia Invasive Plant Species List.
17. All materials (including fill, construction debris, excavated materials, and woody materials, that are temporarily placed in wetlands, in stream channels, or on stream banks) shall be placed on mats or geotextile fabric, shall be immediately stabilized to prevent the material or leachate from entering surface waters, and shall be entirely removed within 30 calendar days following completion of that construction activity. After removal, disturbed areas shall be returned to original contours, shall be stabilized, and shall be restored to the original vegetated state within 30 calendar days.
18. Temporary in-stream construction features such as cofferdams shall be made of non-erodible materials.
19. Virginia Water Quality Standards shall not be violated in any surface waters as a result of the project activities.
20. All non-impacted surface waters that are within the project or right-of-way limits, and that are within fifty feet of any project activities, shall be clearly flagged or demarcated for the life of the construction activity within that area. The permittee shall notify all contractors and subcontractors that *no activities are to occur in these marked areas*.
21. All required notifications and submittals shall include project name and permit number and be submitted electronically to vwp.nro@deq.virginia.gov or mailed to the DEQ office stated below, to the attention of the VWP permit manager, unless directed in writing by DEQ subsequent to the issuance of this permit: Department of Environmental Quality- Northern Regional Office, 13901 Crown Court, Woodbridge, Virginia 22193.
22. All reports required by this permit and other information requested by DEQ shall be signed by the permittee or a person acting in the permittee's behalf, with the authority to bind the permittee. A person is a duly authorized representative only if *both* criteria below are met. If a representative authorization is no longer valid because of a change in responsibility for the overall operation of the facility, a new authorization shall be immediately submitted to DEQ.
 - a. The authorization is made in writing by the permittee.

- b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, superintendent, or position of equivalent responsibility. A duly authorized representative may thus be either a named individual or any individual occupying a named position.

23. All submittals shall contain the following signed certification statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

24. Any fish kills or spills of fuels or oils shall be reported to DEQ immediately upon discovery at (703) 583-3800. If DEQ cannot be reached, the spill shall be reported to the Virginia Department of Emergency Management (DEM) at 1-800-468-8892 or the National Response Center (NRC) at 1-800-424-8802.
25. DEQ shall be notified in writing within 24 hours or as soon as possible on the next business day when potential environmentally threatening conditions are encountered which require debris removal or involve potentially toxic substances. Measures to remove the obstruction, material, or toxic substance or to change the location of any structure are prohibited until approved by DEQ.

D. Stream Modifications, Including Intake/Outfall Structures

1. Redistribution of existing stream substrate for erosion control purposes is prohibited.
2. Material removed from the stream bottom shall not be deposited into surface waters unless otherwise authorized in this permit.
3. Riprap apron for all outfalls shall be designed in accordance with Virginia Erosion and Sediment Control Handbook, Third Edition, 1992, or the most recent version in effect at the time of construction.
4. For streambank protection activities, structures and backfill shall be placed as close to the streambank as practical, while still avoiding and minimizing impacts to surface waters to the maximum extent practical. No material shall be placed in excess of the minimum necessary for erosion protection.
5. Asphalt and materials containing asphalt or other toxic substances shall not be used in the construction of submerged sills, breakwaters, dams, or weirs.

E. Installation of Utilities

1. All utility line work in surface waters shall be performed in a manner that minimizes disturbance in each area. Temporarily disturbed surface waters shall be restored in accordance with Part I.C.15, C.16, and C.17, unless otherwise authorized by this permit.
2. Material resulting from trench excavation may be temporarily sidecast into wetlands not to exceed a total of 90 calendar days, provided the material is not placed in a manner such that it is dispersed by currents or other forces.
3. The trench for a utility line cannot be constructed in a manner that drains wetlands (e.g., backfilling with extensive gravel layers creating a French drain effect).

F. Road Crossings

1. Access roads authorized by this permit shall be constructed to minimize the adverse effects on surface waters to the maximum extent practicable and to follow as near as possible pre-construction contours and elevations.
2. Installation of pipes and road crossings shall occur in the dry via the implementation of cofferdams, sheetpiling, stream diversions or other similar structures.
3. All surface waters temporarily affected by a road crossing shall be restored to their original elevations immediately following the removal of that particular temporary crossing. Temporary access roads shall be removed entirely following activity completion.
4. At crossings of streams, pipes and culverts must be installed to maintain low flow conditions and shall be countersunk at both inlet and outlet ends of the pipe or culvert, unless otherwise specifically approved by the Department of Environmental Quality on a case-by-case basis, and as follows: The requirement to countersink does not apply to extensions or maintenance of existing pipes and culverts that are not countersunk, floodplain pipes and culverts being placed above ordinary high water, pipes and culverts being placed on bedrock, or pipes and culverts required to be placed on slopes 5.0% or greater. Bedrock encountered during construction must be identified and approved in advance of a design change where the countersunk condition cannot be met. Pipes and culverts 24 inches or less in diameter shall be countersunk three inches below the natural stream bed elevations, and pipes and culverts greater than 24 inches shall be countersunk at least six inches below the natural stream bed elevations. Hydraulic capacity shall be determined based on the reduced capacity due to the countersunk position. In all stream crossings appropriate measures shall be implemented to minimize any disruption of aquatic life movement.
5. Stream bottom elevations at road crossings shall be measured at the inlet and outlet of the proposed structure and recorded prior to construction and within one week after the completion of construction to ensure that the design elevations were met. This information shall be recorded on the *Monthly VWP Permit Inspection Checklist (Attachment 2)* completed after the crossing is installed.

G. Stormwater Management Structures

1. The outfall and overflow structure shall be constructed and maintained to prevent downstream sediment deposition, erosion, or scour that may be associated with normal flow and any expected storm flows. Construction shall include the use of an appropriately sized riprap outlet protection apron at the outfall site.
2. Draining of a stormwater management facility shall be performed by a method that prevents downstream sediment deposition, erosion, or scour.

H. Project Construction Monitoring and Submittals (Impact Sites)

1. The permittee shall submit written notification at least **ten (10) calendar days** prior to the initiation of land disturbance or construction activities in permitted areas. The notification shall include a projected schedule for initiating and completing work at each permitted impact area.
2. Site inspections shall be conducted **once every calendar month** and recorded on the *Monthly VWP Permit Inspection Checklist (Attachment 2)* by the permittee or the permittee's qualified designee during active construction within authorized surface water impact areas. Monthly inspections shall be conducted in the following areas: all authorized permanent and temporary impact areas; all avoided surface waters, including wetlands, stream channels, and open water; surface water areas within 50 feet of any land disturbing activity; and all on-site areas designated for permanent preservation. The *Monthly VWP Permit Inspection Checklist (Attachment 2)* shall be completed in its entirety for each monthly inspection and shall be kept on-site and made available for review by DEQ staff upon request during normal business hours.
3. The *VWP Permit Construction Status Update Form (Attachment 1)* enclosed with this permit shall be completed in June and December of every year for the duration of this permit. The *VWP Permit Construction Status Update Form (Attachment 1)* shall include reference to the VWP permit authorization number and one of the following statements for each authorized surface water impact location:
 - a. Construction activities not yet started;
 - b. Construction activities started;
 - c. Construction activities started but are currently inactive, or;
 - d. Construction activities complete.
4. The *VWP Permit Construction Status Update Form (Attachment 2)* shall be submitted and must be received by DEQ no later than January 10 and July 10 of every year.
5. The permittee shall notify DEQ within 24 hours of discovering impacts to surface waters including wetlands, stream channels, and open water that are not authorized by this permit. The

notification shall include photographs, estimated acreage and/or linear footage of impacts, and a description of the impacts.

6. The permittee shall submit written notification of completion within 30 calendar days after the completion of all activities in all permitted impact areas authorized under this permit.

I. Compensatory Mitigation

1. The permittee shall compensate for permanent stream impacts through the purchase of 1,675 stream credits or 4,761 Stream Condition Units (SCUs) from a DEQ approved mitigation bank, in-lieu fee fund, or a combination thereof that is authorized and approved by DEQ to sell credits in the area in which the impacts will occur and has credits available (as released by DEQ). Mitigation bank credits shall be purchased prior to the purchase of in-lieu fee program credits in accordance with 9VAC25-210-116.C.2. The credit sale shall be in accordance with the approved Mitigation Banking Instrument for the mitigation bank.
2. The permittee shall submit documentation to DEQ prior to initiating work in permitted impact areas that 1,675 stream credits or 4,761 SCUs were acquired and debited from the ledger of a DEQ approved mitigation bank, in-lieu fee fund, or a combination thereof to satisfy the requirement of Part I.I.1.

Part II – General Conditions

A. Duty to Comply

The permittee shall comply with all conditions and limitations of the VWP permit. Nothing in this chapter shall be construed to relieve the permittee of the duty to comply with all applicable federal and state statutes, regulations, toxic standards, and prohibitions. Any VWP permit violation or noncompliance is a violation of the Clean Water Act and State Water Control Law and is grounds for enforcement action, VWP permit termination, VWP permit revocation, VWP permit modification, or denial of an application for a VWP permit extension or reissuance.

Nothing in this VWP permit shall be construed to relieve the permittee from civil and criminal penalties for noncompliance.

B. Duty to Cease or Confine Activity

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the activity for which a VWP permit has been granted in order to maintain compliance with the conditions of the VWP permit.

C. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any impacts in violation of the VWP permit that may have a reasonable likelihood of adversely affecting human health or the environment.

D. VWP Permit Actions

A VWP permit may be modified in whole or in part, revoked and reissued, extended, transferred, or terminated in accordance with 9 VAC 25-210-180.

1. During the drafting and authorization of a permit modification, only those conditions to be modified shall be addressed with preparing a draft modified permit. VWP permit terms and conditions of the existing permit shall remain in full force and effect during the modification of the permit.
2. This VWP permit may be modified upon the request of the permittee or upon board initiative when any of the following developments occur:
 - a. When new information becomes available about the project or activity covered by the VWP permit, including project additions or alterations, that was not available at VWP permit issuance and would have justified the application of different VWP permit conditions at the time of VWP permit issuance;

- b. When a change is made in the promulgated standards or regulations on which the VWP permit was based;
 - c. When changes occur that are subject to "reopener clauses" in the VWP permit; or
 - d. When developments applicable to surface water withdrawals as specified in 9VAC25-210-380 occur.
3. When this VWP permit authorizes surface water withdrawals, it may be modified when any of the following developments occur:
- a. When the board determines that minimum instream flow levels resulting directly from the permittee's withdrawal of surface water are detrimental to the instream beneficial use, existing at the time of permit issuance, and the withdrawal of surface water should be subject to further net limitations or when an area is declared a surface water management area pursuant to §§ 62.1-242 through 62.1-253 of the Code of Virginia, during the term of the VWP permit.
 - b. Significant changes to the location of the surface water withdrawal system are proposed such that the Department of Environmental Quality determines a new review is warranted due to the potential effect of the surface water withdrawal to existing beneficial uses of the new location.
 - c. Changes to the permitted project or the surface water withdrawal, including increasing the storage capacity for the surface water withdrawal, that propose an increase in the maximum permitted withdrawal volumes or rate of withdrawal or that cause more than a minimal change to the instream flow requirements with potential to result in a detrimental effect to existing beneficial uses.
 - d. A revision to the purpose of the surface water withdrawal that proposes to include a new use or uses that were not identified in the permit application or a modification of the existing authorized use or uses such that the use description in the permit application and permit is no longer applicable. Examples of uses include, but are not limited to agricultural irrigation, golf course irrigation, public water supply, manufacturing, and electricity generation.
4. When the permittee has submitted a timely and complete application for reissuance of an existing VWP individual permit, but through no fault of the permittee, the board does not reissue or reissue with conditions a VWP individual permit or the board does not provide notice of its tentative decision to deny the application before an existing VWP individual permit expires, the conditions of the expiring VWP individual permit shall be administratively continued in full force and effect until the effective date of a reissued permit or the date on which the board denies the application. Timely application shall be a minimum of 180 days for an individual permit or a minimum of 270 days for an individual permit for a surface water withdrawal, unless otherwise specified in the existing permit.
5. Any permittee desiring to continue a previously permitted activity after the expiration date of this VWP permit shall apply for and obtain a new permit or, if applicable, shall request an extension in

accordance with 9VAC25-210-180. Any permittee with an effective VWP permit for an activity that is expected to continue after the expiration date of the VWP permit, without any change in the activity authorized by the VWP permit other than as may be allowed under 9VAC25-210-180, shall submit written notification requesting an extension. The permittee must file the request 90 days prior to the expiration date of the VWP permit. VWP permit modifications shall not be used to extend the term of a VWP permit beyond 15 years from the date of original issuance. When a permit term, other than that of an Emergency Virginia Water Protection Permit, is less than 15 years, an extension of the permit terms and conditions may be granted in accordance with 9VAC25-210-180. Emergency Virginia Water Protection Permits shall not exceed a duration of one year or shall expire upon the issuance of a regular Virginia Water Protection Permit, whichever comes first.

6. This VWP permit may be transferred to a new permittee only by modification to reflect the transfer, by revoking and reissuing the permit, or by automatic transfer. Automatic transfer to a new permittee shall occur if the current permittee: a) Notifies the board of the proposed transfer of the permit and provides a written agreement between the current and proposed permittees containing the date of transfer of VWP permit responsibility, authorization, and liability to the new permittee; and b) the board does not within 15 days notify the existing permittee of its intent to modify the VWP permit.

7. After notice and opportunity for a formal hearing pursuant to § 62.1-44.15:02 of the Code of Virginia, a VWP permit can be terminated for cause. Reasons for termination for cause are as follows:
 - a. Noncompliance by the permittee with any condition of the VWP permit;
 - b. The permittee's failure in the application or during the VWP permit process to disclose fully all relevant facts or the permittee's misrepresentation of any relevant facts at any time;
 - c. The permittee's violation of a special or judicial order;
 - d. A determination by the board that the permitted activity endangers human health or the environment and can be regulated to acceptable levels by VWP permit modification or termination;
 - e. A change in any condition that requires either a temporary or permanent reduction or elimination of any activity controlled by the VWP permit; and
 - f. A determination that the permitted activity has ceased and that the compensation for unavoidable adverse impacts has been successfully completed.

8. The board may terminate this permit without cause when the permittee is no longer a legal entity due to death, dissolution, or when a company is no longer authorized to conduct business in the Commonwealth. The termination shall be effective 30 days after notice of the proposed

termination is sent to the last known address of the permittee or registered agent, unless the permittee objects within that time. If the permittee does object during that period, the board shall follow the applicable procedures for termination under § 62.1-44.15:25 of the Code of Virginia and 9VAC25-230.

9. This VWP permit may be terminated by consent, as initiated by the permittee. The permittee shall submit a request for termination by consent within 30 days of completing or canceling all permitted activities and all required compensatory mitigation requirements. When submitted for project completion, the request for termination by consent shall constitute a notice of project completion. The director may accept this termination on behalf of the board. The permittee shall submit the following information:
 - a. Name, mailing address, and telephone number;
 - b. Name and location of the activity;
 - c. The VWP permit number; and
 - d. One of the following certifications:
 - i. For project completion: "I certify under penalty of law that all activities and any required compensatory mitigation authorized by a VWP permit have been completed. I understand that by submitting this notice of termination that I am no longer authorized to perform activities in surface waters in accordance with the VWP permit, and that performing activities in surface waters is unlawful where the activity is not authorized by a VWP permit, unless otherwise excluded from obtaining a permit. I also understand that the submittal of this notice does not release me from liability for any violations of this VWP permit."
 - ii. For project cancellation: "I certify under penalty of law that the activities and any required compensatory mitigation authorized by this VWP permit will not occur. I understand that by submitting this notice of termination that I am no longer authorized to perform activities in surface waters in accordance with the VWP permit, and that performing activities in surface waters is unlawful where the activity is not authorized by a VWP permit, unless otherwise excluded from obtaining a permit. I also understand that the submittal of this notice does not release me from liability for any violations of this VWP permit, nor does it allow me to resume the permitted activities without reapplication and issuance of another permit."
 - iii. For events beyond permittee control, the permittee shall provide a detailed explanation of the events, to be approved by DEQ, and the following certification statement: "I certify under penalty of law that the activities or the required compensatory mitigation authorized by this VWP permit have changed as the result of events beyond my control (see attached). I understand that by submitting this notice of termination that I am no longer authorized to perform activities in surface waters in accordance with the VWP permit, and that

performing activities in surface waters is unlawful where the activity is not authorized by a VWP permit, unless otherwise excluded from obtaining a permit. I also understand that the submittal of this notice does not release me from liability for any violations of this VWP permit, nor does it allow me to resume the permitted activities without reapplication and issuance of another permit.

E. Inspection and Entry

Upon presentation of credentials, the permittee shall allow the board or any duly authorized agent of the board, at reasonable times and under reasonable circumstances, to conduct the actions listed in this section. For the purpose of this section, the time for inspection shall be deemed reasonable during regular business hours. Nothing contained herein shall make an inspection time unreasonable during an emergency.

1. Enter upon any permittee's property, public or private, and have access to, inspect and copy any records that must be kept as part of the VWP permit conditions;
2. Inspect any facilities, operations or practices (including monitoring and control equipment) regulated or required under the VWP permit; and
3. Sample or monitor any substance, parameter, or activity for the purpose of ensuring compliance with the conditions of the VWP permit or as otherwise authorized by law.

F. Duty to Provide Information

The board may request (i) such plans, specifications, and other pertinent information as may be necessary to determine the effect of an applicant's discharge on the quality of state waters or (ii) such other information as may be necessary to accomplish the purposes of this chapter. Any owner, permittee, or person applying for a VWP permit or general permit coverage shall provide the information requested by the board.

G. Monitoring and Records Requirements

1. Monitoring of parameters, other than pollutants, shall be conducted according to approved analytical methods as specified in the VWP permit. Analysis of pollutants will be conducted according to 40 CFR Part 136 (2000), Guidelines Establishing Test Procedures for the Analysis of Pollutants.
2. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
3. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart or electronic recordings for continuous monitoring instrumentation, copies of all reports required by the VWP permit, and records of all data used to

complete the application for the VWP permit, for a period of at least three years from the date of permit expiration. This period may be extended by request of the board at any time.

4. Records of monitoring information shall include:
 - a. The date, exact place and time of sampling or measurements;
 - b. The name of the individuals who performed the sampling or measurements;
 - c. The date and time the analyses were performed;
 - d. The name of the individuals who performed the analyses;
 - e. The analytical techniques or methods supporting the information such as observations, readings, calculations and bench data used;
 - f. The results of such analyses; and
 - g. Chain of custody documentation.

H. Property rights

The issuance of a VWP permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize injury to private property or any invasion of personal rights or any infringement of federal, state or local laws or regulations.

I. Reopener

This VWP permit may be reopened for the purpose of modifying the conditions of the VWP permit to meet new regulatory standards duly adopted by the board. Cause for reopening VWP permits includes, but is not limited to when the circumstances on which the previous VWP permit was based have materially and substantially changed, or special studies conducted by the board or the permittee show material and substantial change, since the time the VWP permit was issued and thereby constitute cause for VWP permit modification or revocation and reissuance.

J. Compliance with State and Federal Law

As to the permitted activity(ies), compliance with a VWP permit constitutes compliance with the VWP permit requirements of the Law and regulations. .

K. Severability

The provisions of this VWP permit are severable.

L. Oil and Hazardous Substance Liability

Nothing in this VWP permit shall be construed to preclude the institution of legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under § 311 of the Clean Water Act or §§ 62.1-44.34:14 through 62.1-44.34:23 of the State Water Control Law.

M. Unauthorized Discharge of Pollutants

Except in compliance with a VWP permit, unless the activity is otherwise exempted or excluded, no person shall dredge, fill, or discharge any pollutant into, or adjacent to surface waters; withdraw surface water; otherwise alter the physical, chemical, or biological properties of state waters regulated under this chapter and make them detrimental to the public health, to animal or aquatic life, or to the uses of such waters for domestic or industrial consumption, for recreation, or for other uses; excavate in wetlands; or on or after October 1, 2001, conduct the following activities in a wetland:

1. New activities to cause draining that significantly alters or degrades existing wetland acreage or functions;
2. Filling or dumping;
3. Permanent flooding or impounding; or
4. New activities that cause significant alteration or degradation of existing wetland acreage or functions.



Attachment 1: VWP PERMIT CONSTRUCTION STATUS UPDATE FORM

Attached to VWP Individual Permit Number 18-1003

Permit Issuance March 5, 2019

Date (check one):

June ____, _____

December ____, _____

VWP Individual Permit Number: 18-1003

Project Name and Location: Northfax, City of Fairfax

Status within each authorized surface water impact location, as identified on *Stream Impact Exhibit*, dated August 9, 2018, with latest revision date of August 21, 2018, and received September 12, 2018: (check one of the following status options for each impact number/location. Attach additional sheet(s) if needed.)

Authorized impact number	Construction activities not started	Construction activities started	Construction activities started but currently not active	Does this impact involve culvert(s) ¹ ?	Construction activities complete ²
A1					
B1					
A2					
C1					

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

Authorized Signature: _____

Print Name: _____

Title: _____ Phone: _____

Date: _____ Email: _____

¹ Provide spot elevations of the stream bottom within the thalweg at the beginning and end of the pipe or culvert, extending to a minimum of 10 feet beyond the limits of the impact, with completion of all culvert installations.
² If all construction activities and compensatory mitigation requirements are complete, the permittee completes and signs the Termination Agreement section below within 30 days of last authorized activity and/or compensation completion. A completed and signed Agreement serves as Notice of Project Completion (9VAC25-210-130 F).

TERMINATION AGREEMENT BY CONSENT – PROJECT COMPLETION

Permittee Name: _____

Permittee Mailing Address: _____

Permittee Phone: _____

I hereby consent to the termination of coverage for VWP Individual Permit Number 18-1003.

"I certify under penalty of law that all activities and any required compensatory mitigation authorized by a VWP permit have been completed. I understand that by submitting this notice of termination that I am no longer authorized to perform activities in surface waters in accordance with the VWP permit, and that performing activities in surface waters is unlawful where the activity is not authorized by a VWP permit, unless otherwise excluded from obtaining a permit. I also understand that the submittal of this notice does not release me from liability for any violations of this VWP permit."

Permittee Signature: _____



Attachment 2: MONTHLY VWP PERMIT INSPECTION CHECKLIST

An inspection of all permitted impact areas, avoided waters and wetlands, and permanently preserved waters, wetlands and upland areas must be conducted at least once every month during active construction activities. Maintain this record on-site and available for inspection by DEQ staff.

Project Name	Northfax	VWP Permit #	18-1003	Inspection Date	
Inspector Name & Affiliation		Phone # & Email Address			
<p style="text-align: center;">Based on reading of VWP permit No. 18-1003 including authorized impacts map entitled "Stream Impact Exhibit" dated August 9, 2018, with latest revision date of August 21, 2018, and received September 12, 2018, and my inspection on the date referenced above, to the best of my knowledge this project (___ is in compliance / ___ is not in compliance) with the VWP Permit.</p>					
<p>I certify that the information contained in this report is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.</p>					
<p>_____</p> <p>Signature of Inspector</p>			<p>_____</p> <p>Date</p>		

REVIEWED DURING SITE INSPECTION	Yes	No	N/A	Notes & Corrective Action Taken / Date Completed (use back of page if necessary)
Unauthorized impacts to surface waters, including wetlands, or upland preservation areas have occurred . <i>* (This includes sedimentation impacts due to inadequate or failed erosion controls.)</i>	<input type="checkbox"/>	<input type="checkbox"/>		
Non-impacted wetlands, streams and preservations areas within 50 feet of construction are clearly marked to prevent unpermitted impacts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Temporary impacts are being restored to original contours, stabilized, and allowed to re-establish with wetland vegetation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Construction activities are not substantially disrupting aquatic life movement.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
E&S controls are present, properly maintained, and functioning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
In-stream work is being performed in the dry with the appropriate use of cofferdams, sheetpiling, etc., to minimize stream bottom disturbance and turbidity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Pipes and/or culverts for road crossings are countersunk to provide for the re-establishment of low flow fish passage and/or a natural stream bottom, unless otherwise authorized.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Time-of-year restrictions regarding impacts to surface waters are being adhered to.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Water quality monitoring is being conducted during stream impacts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Streams and wetlands are free from any sheen or discoloration that may indicate a spill of oil, lubricants, concrete or other pollutants. **	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Heavy equipment is placed on mats or geotextile fabric when working in wetlands.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Exposed slopes/stream banks are stabilized immediately upon completion of work in each impact area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

* If unauthorized impacts have occurred, you **must** email or fax a copy of this report to DEQ within 24 hours of discovery. Email: vwp.nro@deq.virginia.gov Fax: 703-583-3821

** Any fish kills, or spills of fuels or oils must be reported to DEQ **immediately upon discovery** at 703-583-3864. If DEQ cannot be reached, the spill or fish kill shall be reported to the Virginia Department of Emergency Management (VDEM) at 1-800-468-8892 or the National Response Center (NRC) at 1-800-424-8802. Any spill of oil as defined in § 62.1-44.34:14 of the Code of Virginia that is less than 25 gallons and that reaches, or that is expected to reach, land only is not reportable, if recorded per § 62.1-44.34:19.2 of the Code of Virginia and if properly cleaned up.

Notes



DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NORFOLK DISTRICT
FORT NORFOLK
803 FRONT STREET
NORFOLK VA 23510-1096

NOVEMBER 24, 2014

Reply to
Attention of

Special Projects Regulatory Section
NAO-2014-1871 (N. Fk. Accotink Creek)

City of Fairfax
ATTN: Ms. Wendy Block-Sandford
Transportation Department
10455 Armstrong Street, Room 200A
Fairfax, VA 22030

Dear Ms. Block-Sandford:

This is in regard to your Department of the Army permit application number NAO-2014-1871 to impact approximately 2147 linear feet of stream. You propose to make improvements to the Route 123/50/29 intersection, including widening of portions of Route 123 and Route 29/50 and improving the drainage system, along with some realignment of Route 123. As part of the work, you will construct a new 2,101 linear foot, twin 8 foot by 8 foot box culvert to convey the North Fork Accotink Creek; approximately 1,564 linear feet of the stream is already contained within an existing culvert which will be replaced with the new culvert. You will also install riprap in an additional 46 linear feet of channel. The work will occur at the City of Fairfax, Virginia. These impacts are detailed on the enclosed drawings entitled "Nationwide Permit PCN, Route 29.50/123 Intersection, Proposed Roadway & Drainage Improvements," dated June 2012 and date stamped as received by this office on October 3, 2014, prepared and submitted on behalf of the applicant by Rinker Design Associates, P.C. (attached).

Your proposed work as outlined above satisfies the criteria contained in the Corps Nationwide Permits 23, attached. The Corps Nationwide Permits were published in the February 21, 2012 Federal Register notice (77 FR 10184) and the regulations governing their use can be found in 33 CFR 330 published in Volume 56, Number 226 of the Federal Register dated November 22, 1991.

This nationwide permit verification is contingent upon the following project specific condition:

You have indicated that mitigation for the proposed impacts would be accomplished by purchasing credits from an approved mitigation bank that includes the impact area in its geographic service area. As compensation for impacting 583 linear feet of stream, a total of 343 credits (based on the application of the Unified Stream Methodology) will be debited from an approved bank. Prior to purchasing the credits, you must submit to the Corps of Engineers (USACE) your proposed mitigation bank for acceptance. Once USACE has agreed to your proposed bank, you may proceed to acquire the

required credits. Evidence that you have purchased these credits must be provided to USACE prior to commencing the authorized activities in jurisdictional waters.

Provided the project specific condition (above) and the Nationwide Permit General Conditions (enclosed) are met, an individual Department of the Army Permit will not be required. *You should note Regional Condition 9 which requires countersinking of culverts and insure compliance with this condition.*

In addition, the Virginia Department of Environmental Quality has provided an unconditional §401 Water Quality Certification for Nationwide Permit Number 23. A permit may be required from the Virginia Marine Resources Commission and/or your local wetlands board, and this verification is not valid until you obtain their approval, if necessary. This authorization does not relieve your responsibility to comply with local requirements pursuant to the Chesapeake Bay Preservation Act (CBPA), nor does it supersede local government authority and responsibilities pursuant to the Act. Before you begin work, you should find out how the CBPA applies to your project.

Enclosed is a "compliance certification" form, which must be signed and returned within 30 days of completion of the project, including any required mitigation. Your signature on this form certifies that you have completed the work in accordance with the nationwide permit terms and conditions.

This verification is valid until the NWP is modified, reissued, or revoked. All of the existing NWPs are scheduled to be modified, reissued, or revoked prior to March 18, 2017. It is incumbent upon you to remain informed of changes to the NWPs. We will issue a public notice when the NWPs are reissued. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant nationwide permit is modified or revoked, you will have twelve (12) months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this nationwide permit unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 330.4(e) and 33 CFR 330.5 (c) or (d). Project specific conditions listed in this letter continue to remain in effect after the NWP verification expires, unless the district engineer removes those conditions. Activities completed under the authorization of an NWP which was in effect at the time the activity was completed continue to be authorized by that NWP.

If you have any questions, please contact Alice Allen-Grimes at (757) 201-7219 or alice.w.allen-grimes@usace.army.mil.

Sincerely,



Kimberly A. Prisco-Baggett, MBA
Chief, Special Projects Section

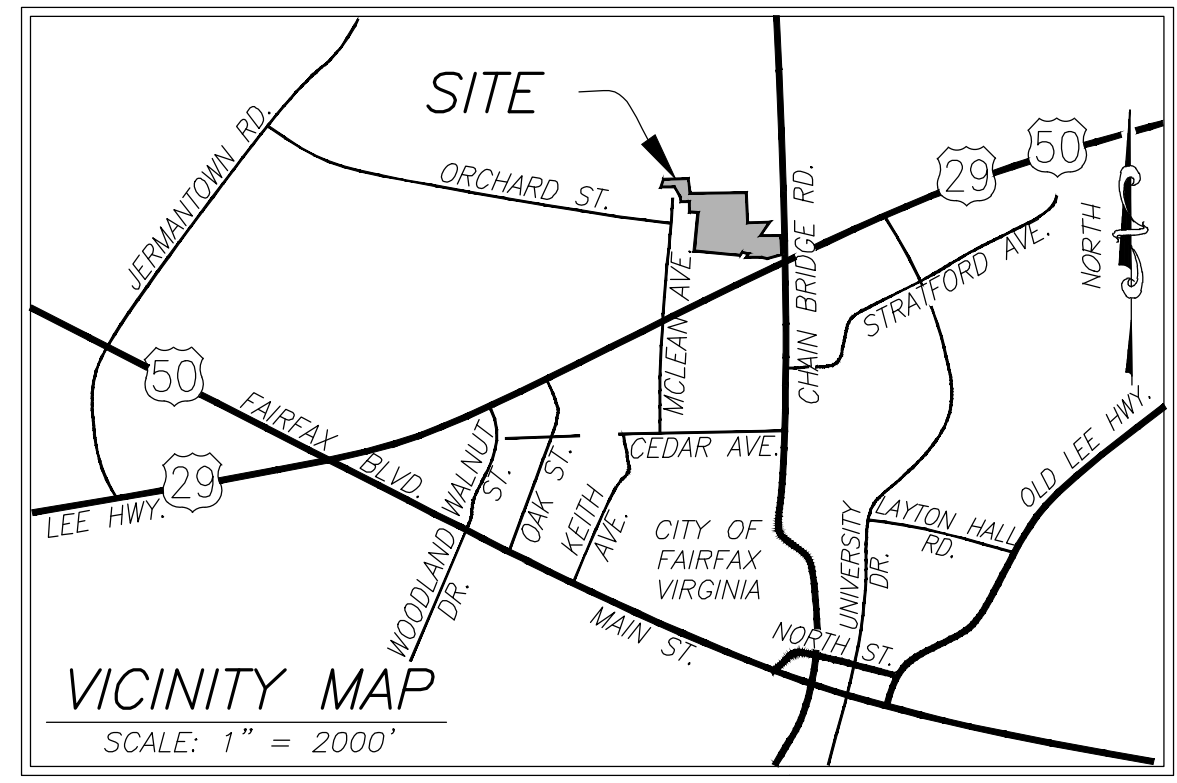
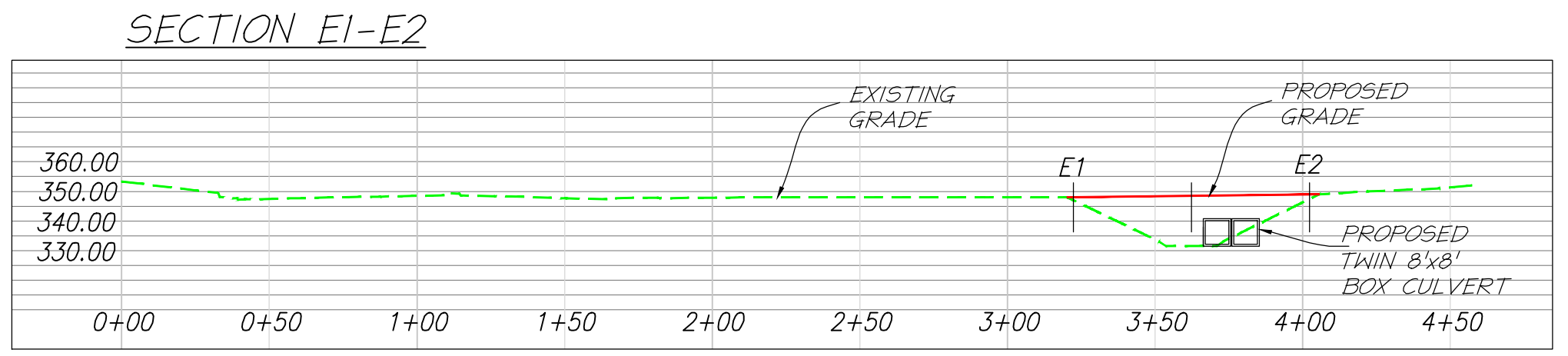
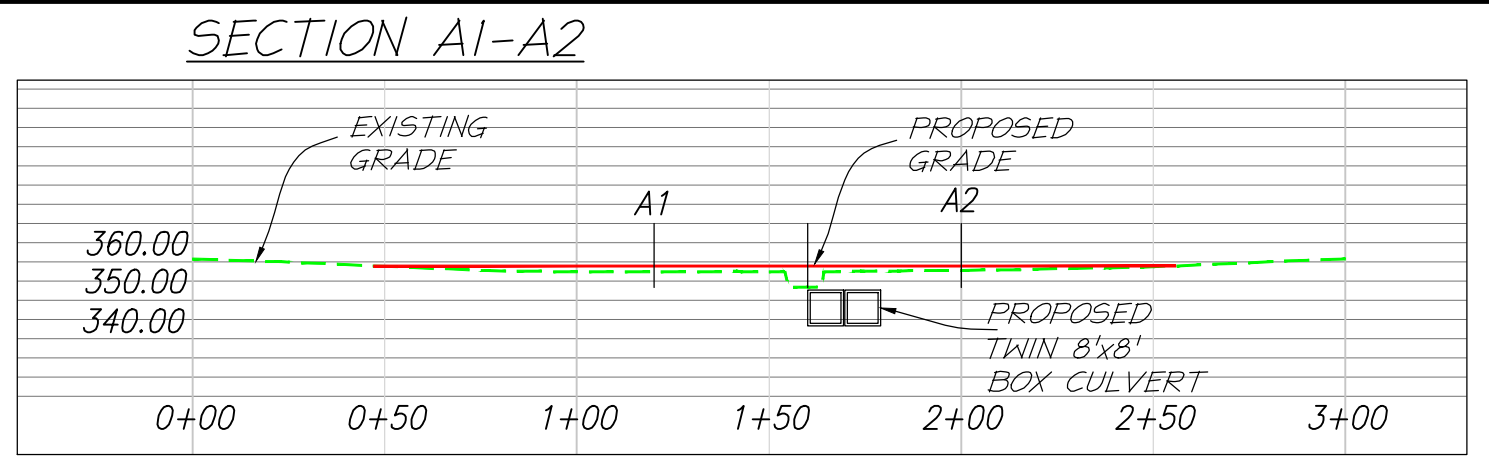
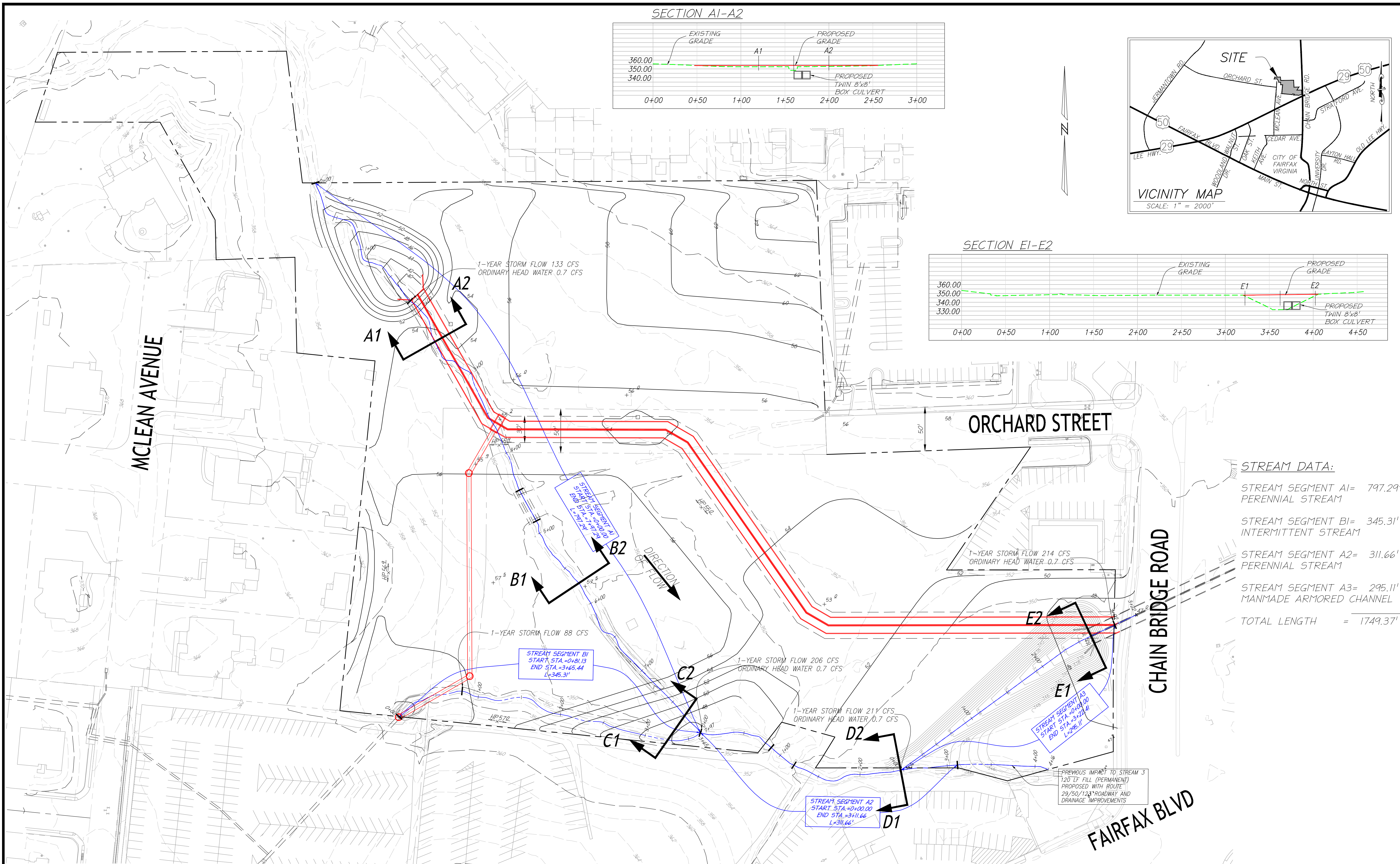
Enclosures

Copies furnished (w/o encl.):

Virginia Marine Resources Commission, Newport News
Rinker Design Associates, PC, Manassas

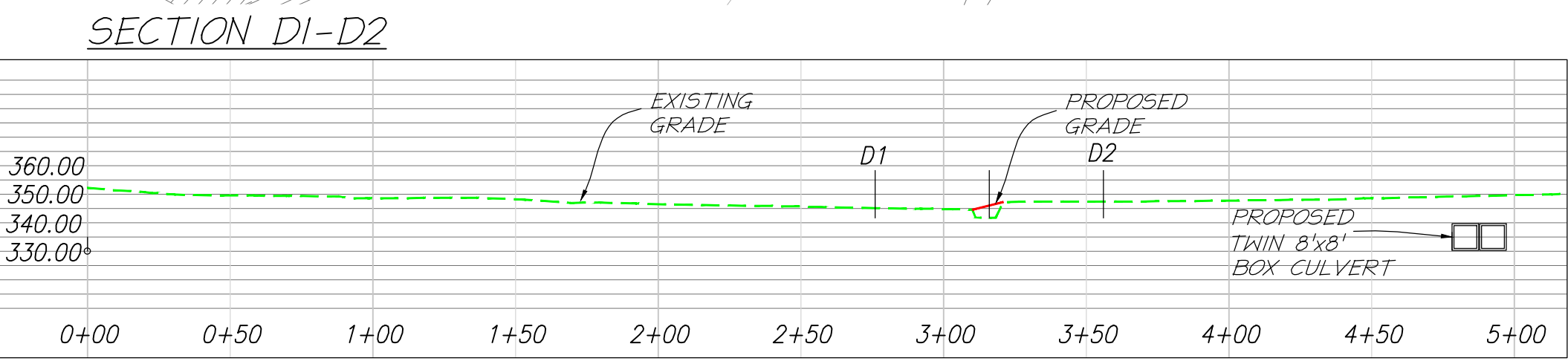
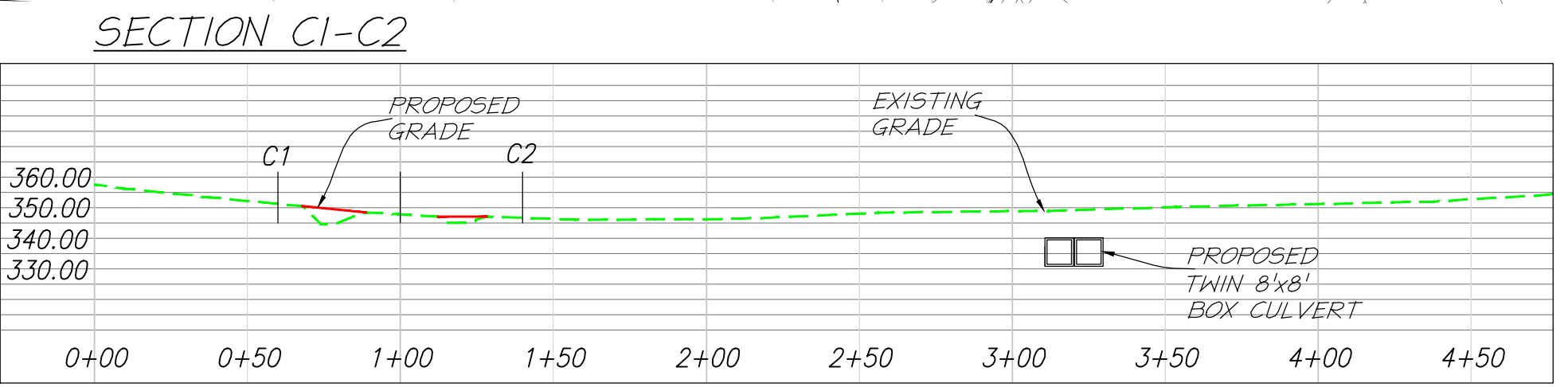
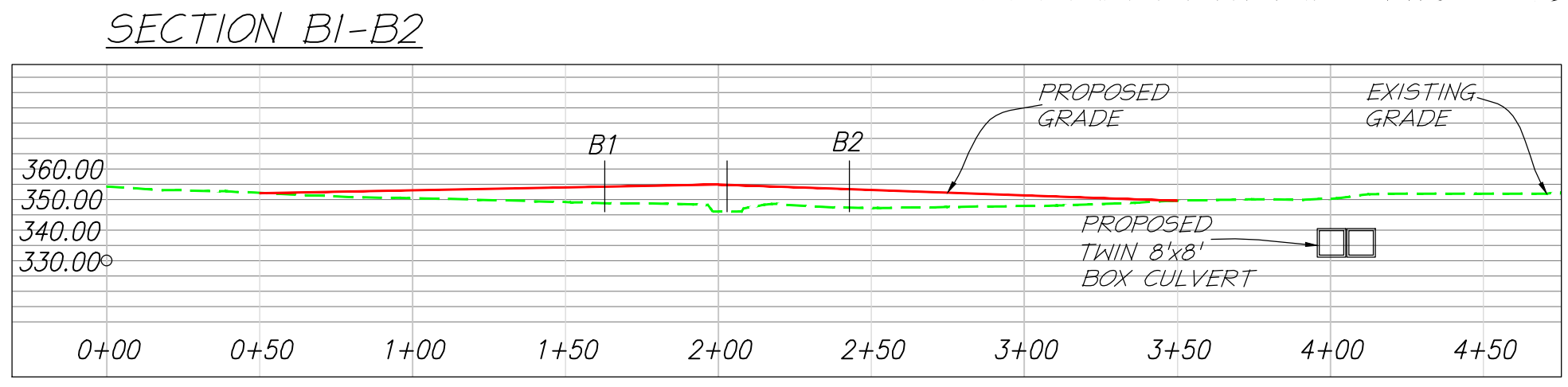


Appendix C – JPA Exhibits

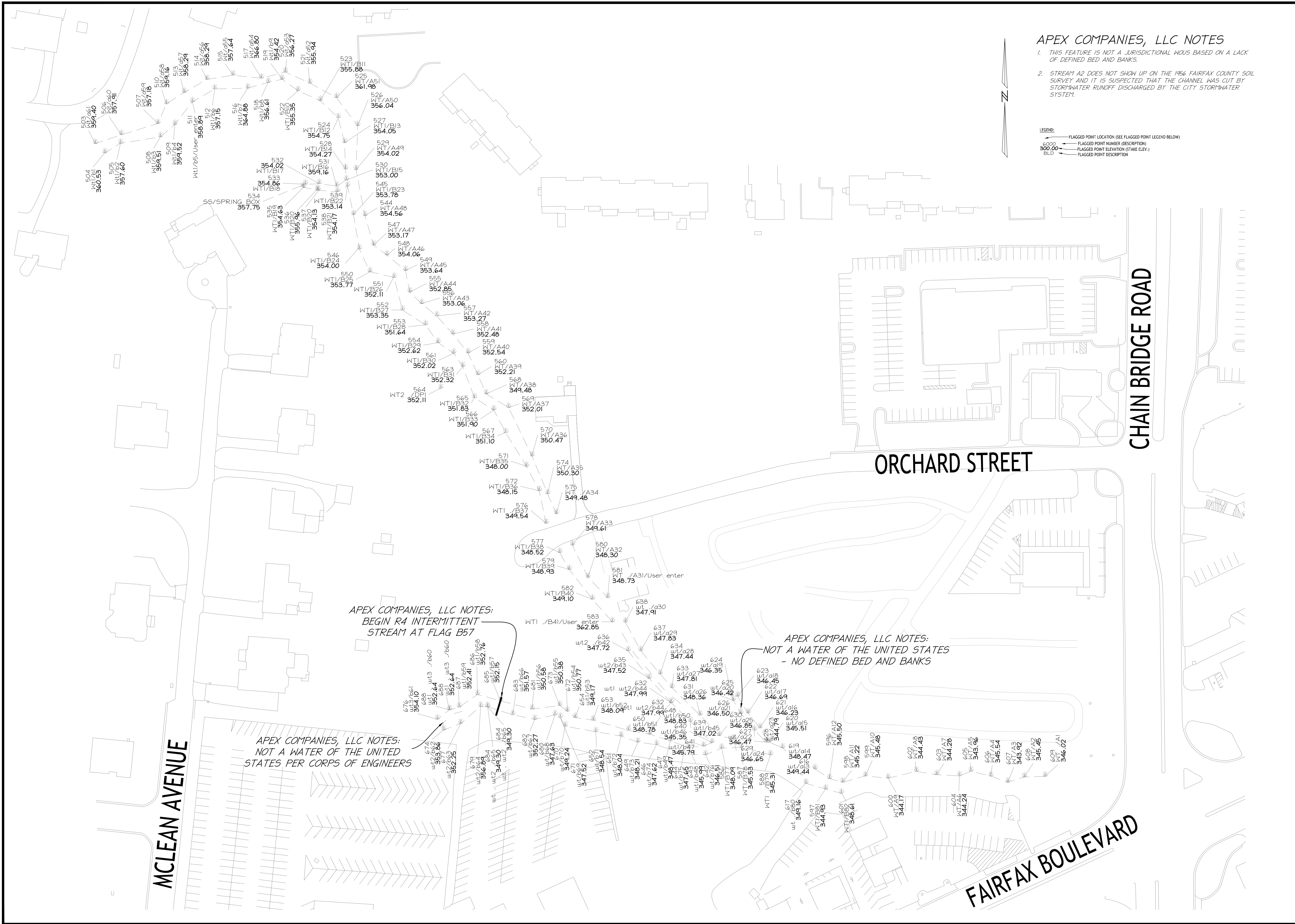


STREAM DATA:

STREAM SEGMENT A1=	797.29'
PERENNIAL STREAM	
STREAM SEGMENT B1=	345.31'
INTERMITTENT STREAM	
STREAM SEGMENT A2=	311.66'
PERENNIAL STREAM	
STREAM SEGMENT A3=	295.11'
MANMADE ARMORED CHANNEL	
TOTAL LENGTH	= 1749.37'



P:\Projects\13139.004\004\EXHIBITS\108133 Wetland Concept Exhibit C-2 Stream Impact Exhibit.dwg, 06/15/2018 09:15:59 AM, 1:1



APEX COMPANIES, LLC NOTES

1. THIS FEATURE IS NOT A JURISDICTIONAL H2OUS BASED ON A LACK OF DEFINED BED AND BANKS.
2. STREAM A2 DOES NOT SHOW UP ON THE 1966 FAIRFAX COUNTY SOIL SURVEY AND IT IS SUSPECTED THAT THE CHANNEL WAS CUT BY STORMWATER RUNOFF DISCHARGED BY THE CITY STORMWATER SYSTEM.

LEGEND:

- 6000 — FLAGGED POINT LOCATION (SEE FLAGGED POINT LEGEND BELOW)
- 300.00 — FLAGGED POINT NUMBER (DESCRIPTION)
- ELD — FLAGGED POINT ELEVATION (STAKE ELEV.)
- FLAGGED POINT DESCRIPTION

APEX COMPANIES, LLC NOTES:
 BEGIN RA INTERMITTENT
 STREAM AT FLAG B57

APEX COMPANIES, LLC NOTES:
 NOT A WATER OF THE UNITED STATES
 - NO DEFINED BED AND BANKS

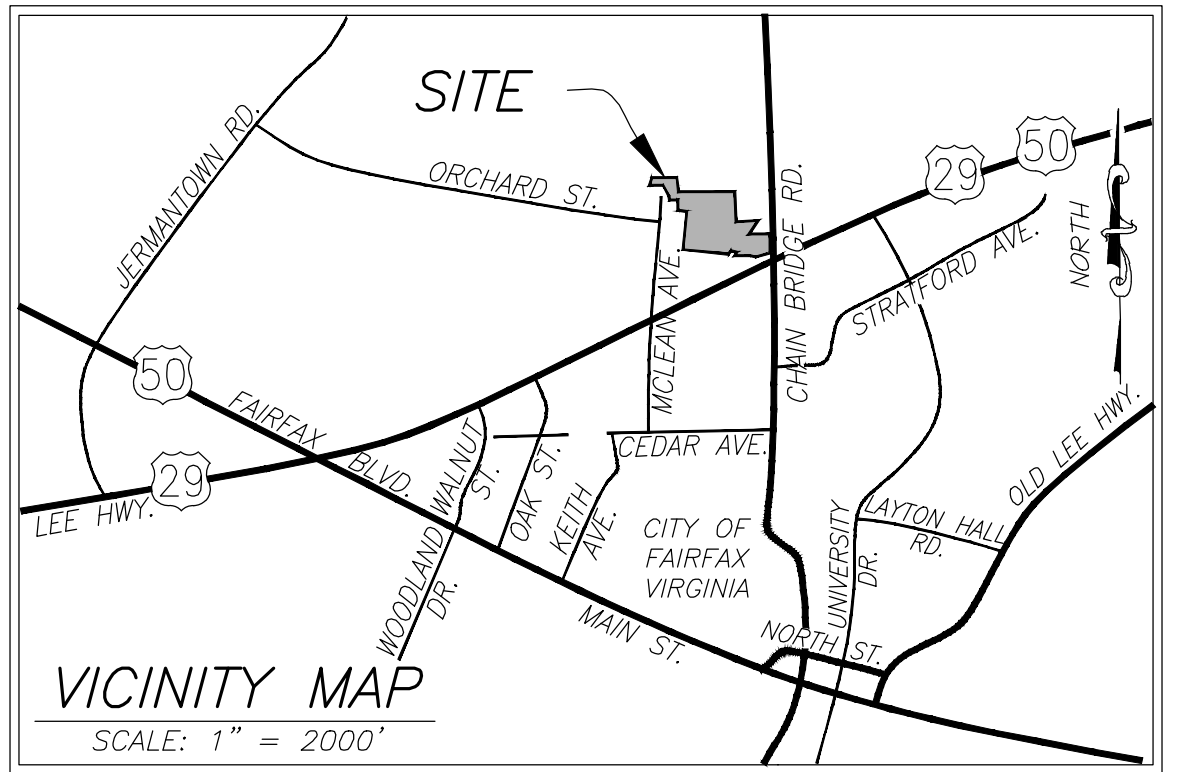
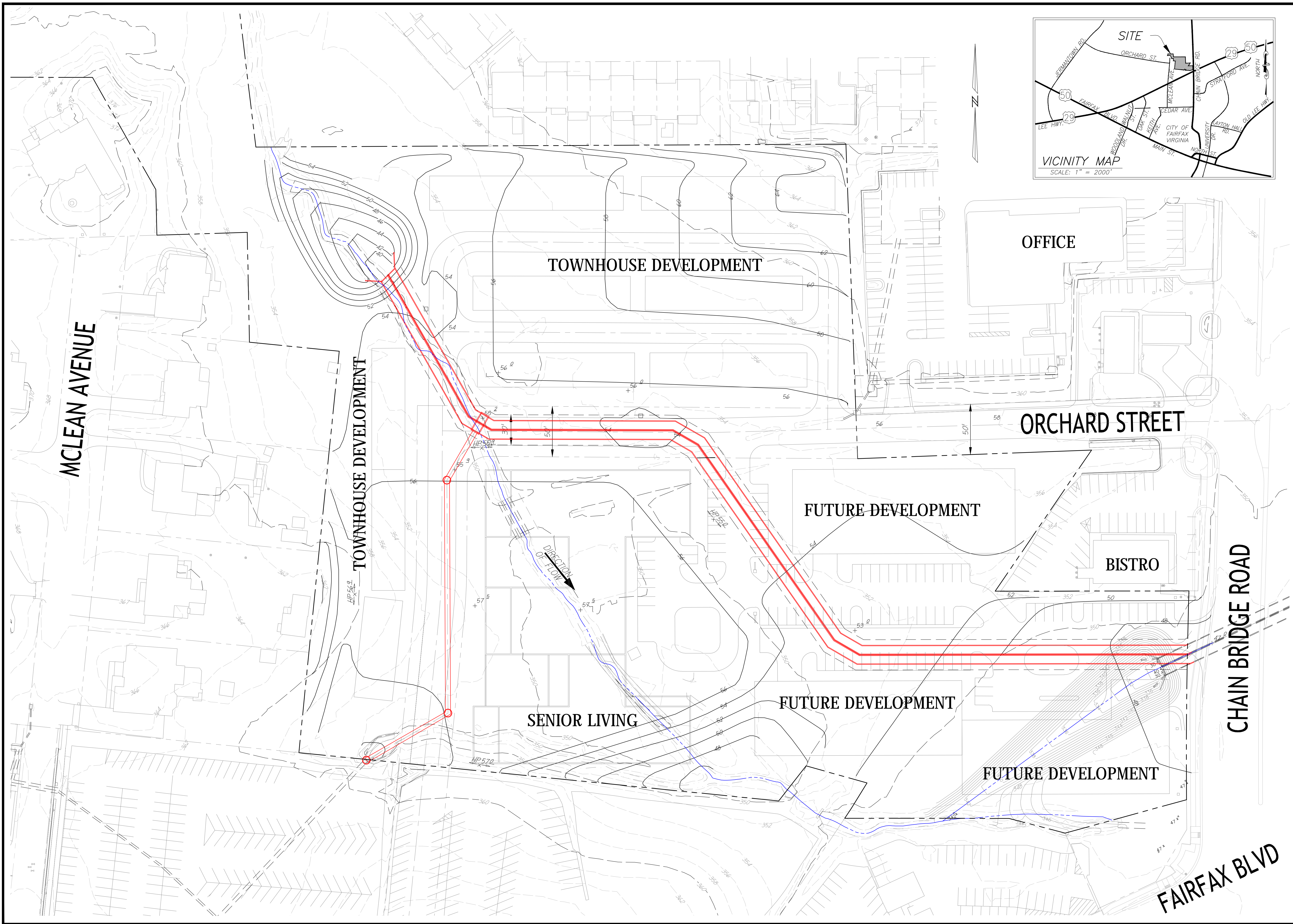
APEX COMPANIES, LLC NOTES:
 NOT A WATER OF THE UNITED
 STATES PER CORPS OF ENGINEERS



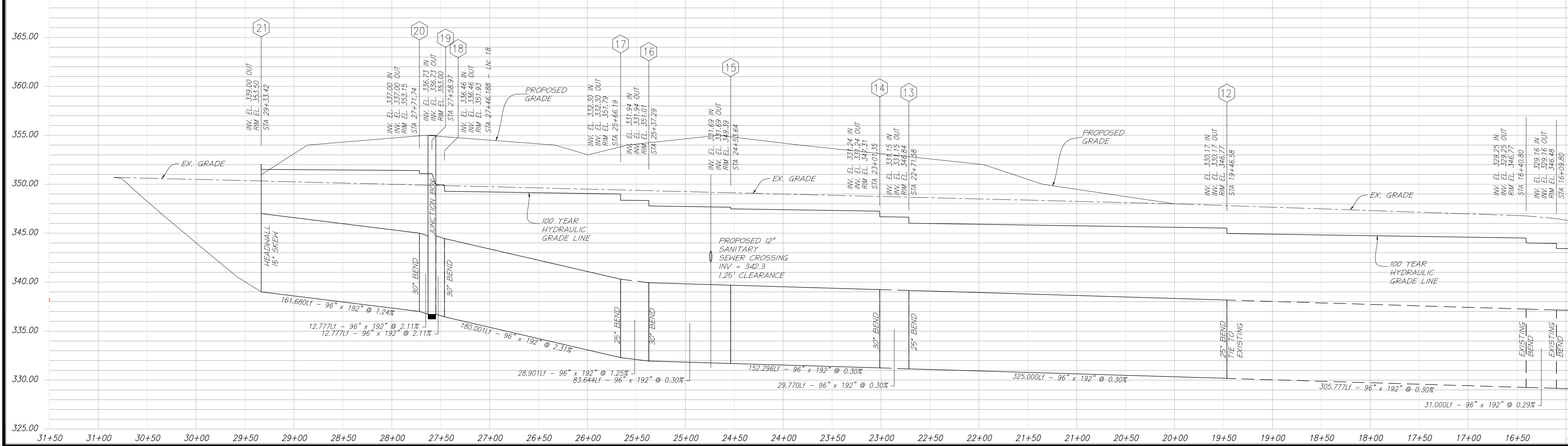
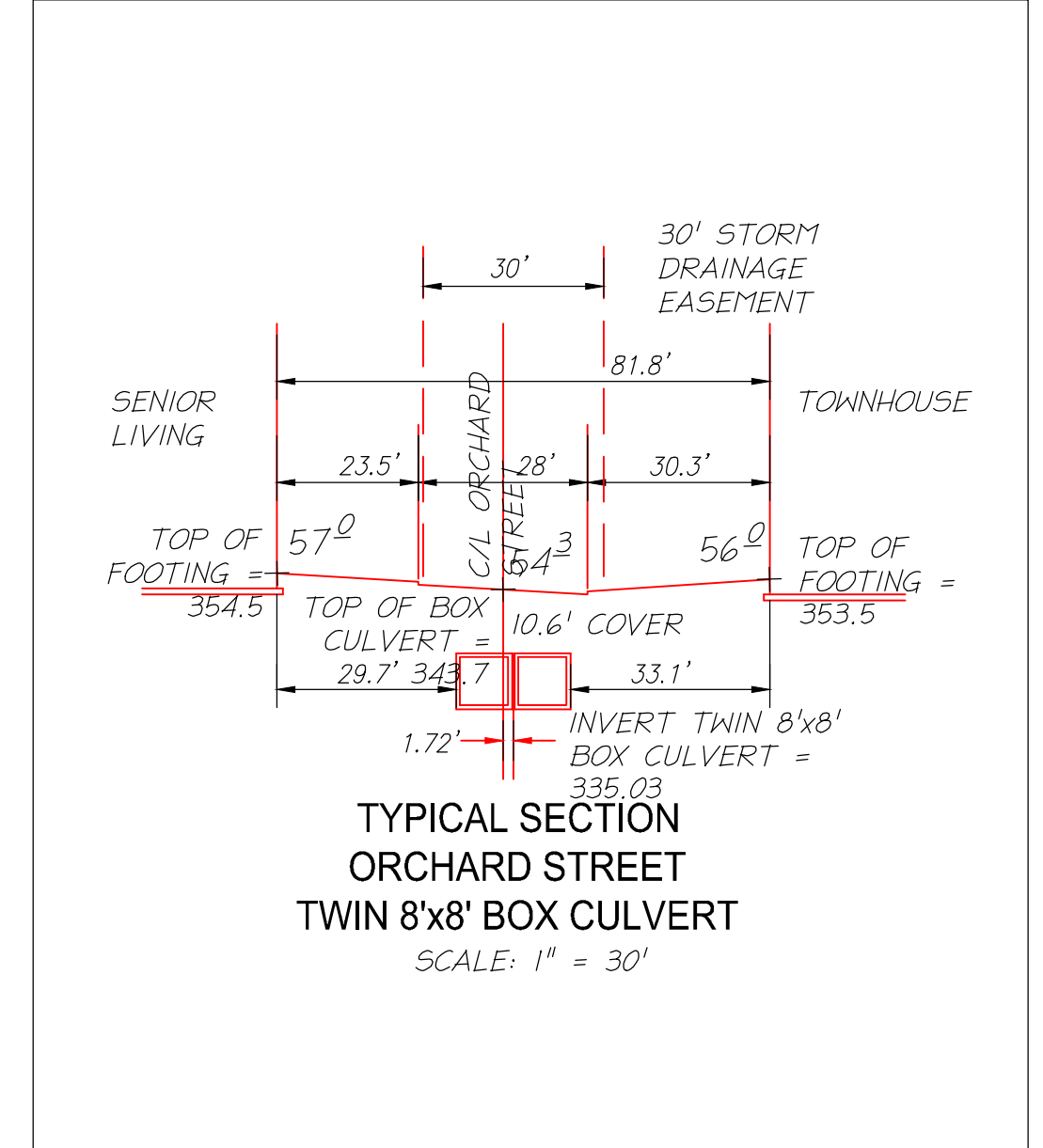
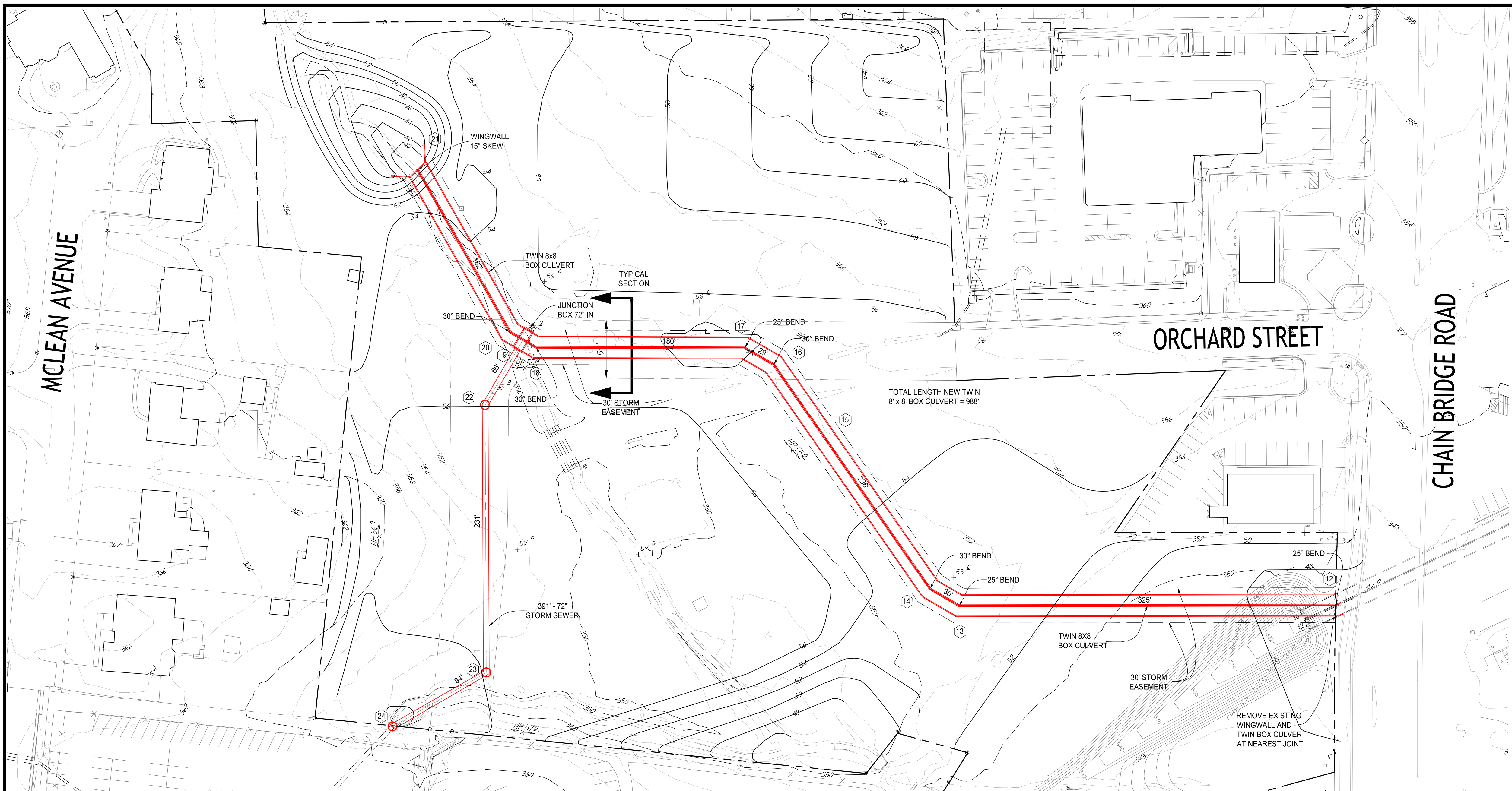
WETLAND
 EXHIBIT

NORTHFAK AREA
 CITY OF FAIRFAX

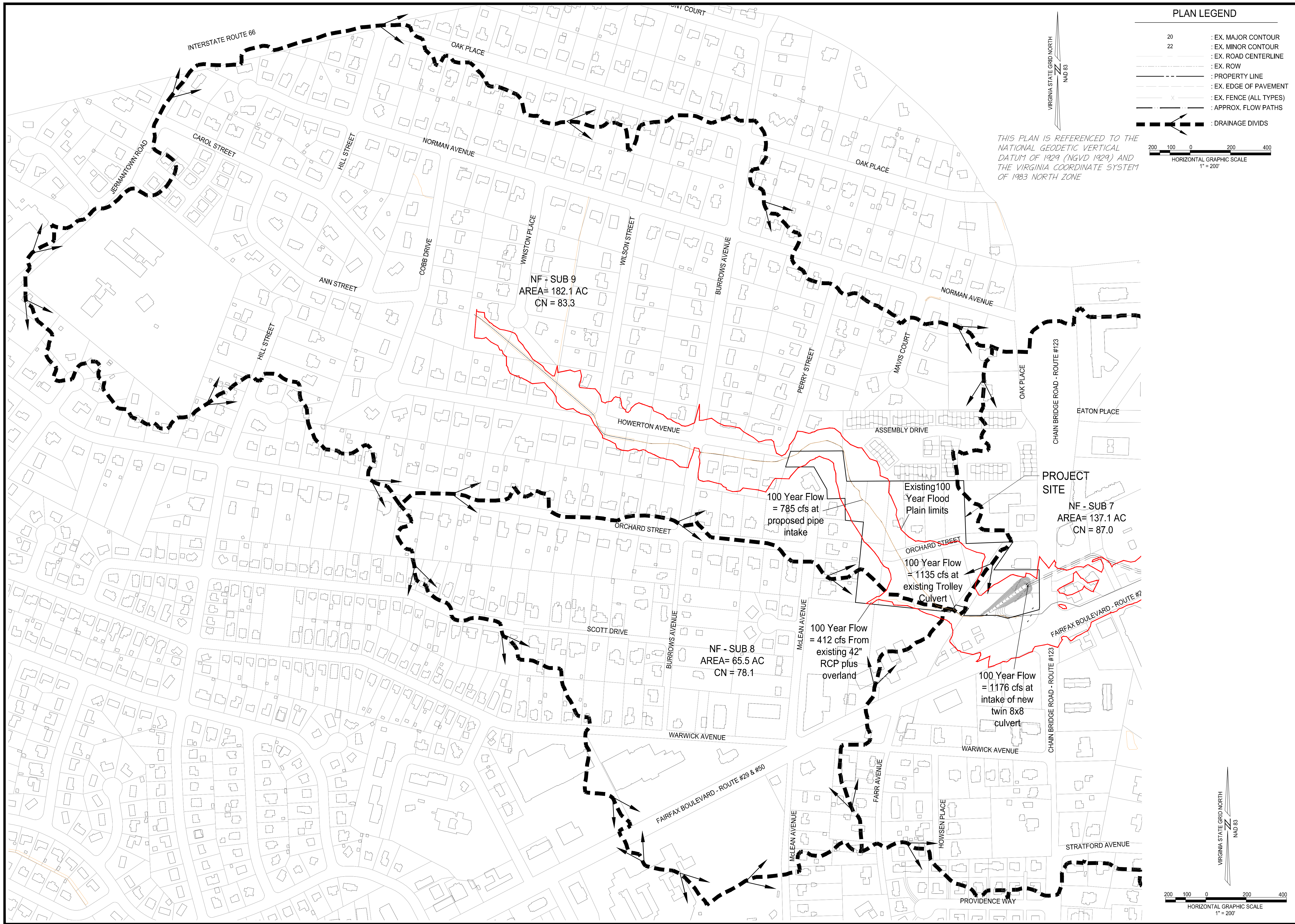
PROJECT NO: 13139,004.00
 SCALE: 1"=50'
 DATE: 06/08/2018
 DESIGN: EJ
 DRAWN: JS
 CHECKED: KMW
 SHEET No.



P:\Projects\13139\004000\EXHIBITS\108133 McLean Concept Exhibit C-5-D Grading Exhibit.dwg, 6/15/2018 9:16:51 AM, L1



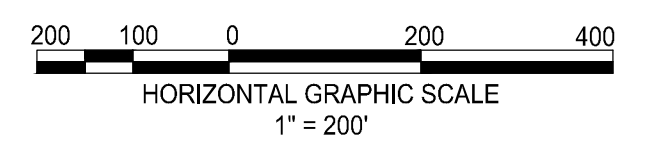
P:\Projects\13139\004\000\EXHIBITS\108133 Wetland Concept Exhibit\CS-D Profile Exhibit.dwg, 0/15/2018 9:17:51 AM, 1:1



PLAN LEGEND

20	: EX. MAJOR CONTOUR
22	: EX. MINOR CONTOUR
---	: EX. ROAD CENTERLINE
- - - -	: EX. ROW
---	: PROPERTY LINE
---	: EX. EDGE OF PAVEMENT
---	: EX. FENCE (ALL TYPES)
---	: APPROX. FLOW PATHS
---	: DRAINAGE DIVIDS

THIS PLAN IS REFERENCED TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 1929) AND THE VIRGINIA COORDINATE SYSTEM OF 1983 NORTH ZONE



DRAINAGE EXHIBIT

NORTHFAK AREA
CITY OF FAIRFAX

PROJECT NO:	13139,004,00
SCALE:	1"=200'
DATE:	06/15/2018
DESIGN:	EJ
DRAWN:	JS
CHECKED:	KMW
SHEET NO.	

STORM SEWER DESIGN
COMPUTATIONS

NORTHFAX
PROPOSED STORM COMPUTATIONS

06/12/2018 EJ

FROM POINT	TO POINT	DRAIN. AREA ACRES	RUNOFF COEFF. C	CA		INLET TIME MIN.	RAINFALL INTENSITY IN./HR.	RUNOFF Q100yr C.F.S.	INVERT ELEVATIONS (ft)		LENGTH ft	SLOPE ft/ft	DIA. IN.	n	CAPACITY C.F.S.	VELOCITY FPS	FLOW TIME SEC.	V			NOTES
				INCREM.	ACCUM.				UPPER	LOWER								Q/Qfull	V/Vfull	Vfull	
		100 YEAR RUNOFF PER FEMA EFFECTIVE HYDROLOGIC MODEL																			
24	23							411.69	346.50	344.72	93.40	0.0191	72	0.013	584.66	22.2	4.2	0.70	1.07	20.68	PROP. 72" RCP STORM
23	22							411.69	344.47	340.04	231.01	0.0192	72	0.013	586.47	22.2	10.4	0.70	1.07	20.74	PROP. 72" RCP STORM
22	21							411.69	339.79	338.54	65.43	0.0191	72	0.013	585.36	22.2	2.9	0.70	1.07	20.70	PROP. 72" RCP STORM
		100 YEAR RUNOFF PER FEMA EFFECTIVE HYDROLOGIC MODEL																			
21	20							785.80	339.00	337.00	161.68	0.0124	146.5	0.013	3131.33	22.2	7.3	0.25	0.83	26.75	PROP. TWIN 8"x 8" BOX CULVERT
20	19							785.80	337.00	336.73	12.78	0.0211	146.5	0.013	4092.70	26.1	0.5	0.19	0.75	34.96	PROP. TWIN 8"x 8" BOX CULVERT
19	18							1135.30	336.73	336.46	12.78	0.0211	146.5	0.013	4092.70	29.9	0.4	0.28	0.86	34.96	PROP. TWIN 8"x 8" BOX CULVERT
18	17							1135.30	336.46	332.30	180.00	0.0231	146.5	0.013	4280.08	30.4	5.9	0.27	0.83	36.56	PROP. TWIN 8"x 8" BOX CULVERT
17	16							1163.96	332.30	331.97	28.90	0.0114	146.5	0.013	3008.45	23.7	1.2	0.39	0.92	25.70	PROP. TWIN 8"x 8" BOX CULVERT
16	15							1163.96	331.97	331.71	83.64	0.0031	146.5	0.013	1569.68	14.7	5.7	0.74	1.09	13.41	PROP. TWIN 8"x 8" BOX CULVERT
15	14							1167.48	331.71	331.24	152.30	0.0031	146.5	0.013	1564.04	14.6	10.4	0.75	1.09	13.36	PROP. TWIN 8"x 8" BOX CULVERT
14	13							1167.78	331.24	331.15	29.77	0.0030	146.5	0.013	1548.01	14.5	2.1	0.75	1.09	13.22	PROP. TWIN 8"x 8" BOX CULVERT
13	12							1175.85	331.15	330.17	325.00	0.0030	146.5	0.013	1546.02	14.5	22.5	0.76	1.09	13.21	PROP. TWIN 8"x 8" BOX CULVERT

THE PIPE CAPACITIES SHOWN ARE BASED ON GRAVITY FLOW. THIS SYSTEM WILL OPERATE UNDER PRESSURE FLOW BASED ON DOWNSTREAM HYDRAULIC CONDITIONS.



Appendix D – Master Development Plan

GENERAL NOTES:

1. THE SUBJECT PROPERTY SHOWN HEREON IS RECORDED IN THE LAND RECORDS OF FAIRFAX CITY, VIRGINIA AS FOLLOWS:

PARCEL ID	OWNER	ADDRESS	ACREAGE	EXISTING ZONING
57-02-02-017	ARG II, LLC	3590 CHAIN BRIDGE ROAD	0.92	CR (COMMERCIAL RETAIL)
57-02-02-018	ARG II, LLC	3580 CHAIN BRIDGE ROAD	0.59	CR (COMMERCIAL RETAIL)
57-02-02-019	ARG II, LLC	10505 ORCHARD STREET	0.41	CR (COMMERCIAL RETAIL)
57-02-02-020	NORTHFAX JV LLC	3570 CHAIN BRIDGE ROAD	0.54	CR (COMMERCIAL RETAIL)
57-02-08-011	ARG II, LLC	10507 ORCHARD STREET	0.51	RM (RESIDENTIAL MEDIUM)
57-02-08-012	ARG II, LLC	10509 ORCHARD STREET	0.57	RM (RESIDENTIAL MEDIUM)
57-02-08-013	ARG II, LLC	10511 ORCHARD STREET	0.69	RM (RESIDENTIAL MEDIUM)
57-02-08-014	ARG II, LLC	10513 ORCHARD STREET	0.82	RM (RESIDENTIAL MEDIUM)
57-02-08-010	ORCHARD RE INVESTMENTS, LLC	10515 ORCHARD STREET	0.73	RM (RESIDENTIAL MEDIUM)
57-02-02-025	ORCHARD RE INVESTMENTS, LLC	10517 ORCHARD STREET	0.82	RM (RESIDENTIAL MEDIUM)
57-02-08-005	ORCHARD RE INVESTMENTS, LLC	10508 ORCHARD STREET	0.82	RM (RESIDENTIAL MEDIUM)
57-02-08-006	ORCHARD RE INVESTMENTS, LLC	10510 ORCHARD STREET	0.67	RM (RESIDENTIAL MEDIUM)
57-02-08-007	ORCHARD RE INVESTMENTS, LLC	10512 ORCHARD STREET	0.73	RM (RESIDENTIAL MEDIUM)
57-02-08-008	ORCHARD RE INVESTMENTS, LLC	10514 ORCHARD STREET	0.68	RM (RESIDENTIAL MEDIUM)
57-02-02-003	ORCHARD RE INVESTMENTS, LLC	10516 ORCHARD STREET	0.84	RM (RESIDENTIAL MEDIUM)
57-02-07-015B	ORCHARD RE INVESTMENTS, LLC	NONE	0.45	RM (RESIDENTIAL MEDIUM)
57-02-47-000A	ORCHARD RE INVESTMENTS, LLC	NONE	0.93	RM (RESIDENTIAL MEDIUM)
TOTAL = 11.32				

2. THIS MOP SUBMISSION IS AN APPLICATION TO REZONE THE SUBJECT PROPERTIES FROM CR (COMMERCIAL RETAIL) AND RM (RESIDENTIAL MEDIUM) TO PD-M (PLANNED DEVELOPMENT MEDIUM DENSITY USE) DISTRICT. THE CURRENT SITE CONSISTS OF 17 PARCELS THAT WILL BE CONSOLIDATED AND THEN SUBDIVIDED INTO THREE PARCELS FOR DEVELOPMENT. THE THREE PARCELS WILL CONSIST OF A PARCEL FOR TOWNHOUSES, A PARCEL FOR A SENIOR LIVING BUILDING AND A FUTURE DEVELOPMENT PARCEL WITH USES THAT HAVE YET TO BE DETERMINED. THIS MOP SUBMISSION SERVES AS A PRELIMINARY PLAT AND IS IN CONFORMANCE WITH ZONING ORDINANCE SECTION 6.6.5.B. AND THE SUBDIVISION ORDINANCE.

3. THE BOUNDARY AND PHYSICAL IMPROVEMENTS SHOWN HEREON ARE BASED UPON AN AERIAL TOPOGRAPHIC SURVEY PERFORMED BY MAKENZIE SNYDER, INC. FLOWN APRIL 8, 2015 AND COMPILED NOVEMBER 14, 2017. THIS DATA HAS BEEN SUPPLEMENTED BY CONVENTIONAL METHODS BY THIS FIRM BETWEEN THE DATES OF NOVEMBER 16 AND DECEMBER 5, 2017 AND JANUARY 2 AND JANUARY 9, 2018 AND FURTHER SUPPLEMENTED BETWEEN THE DATES OF APRIL 9 AND APRIL 17, 2019. CONTOUR INTERVAL FOR TOPOGRAPHIC SURVEY IS 2 FEET.

4. THE FOLLOWING DATUM WERE USED:
A. HORIZONTAL DATUM SHOWN HEREON IS REFERENCED TO THE VIRGINIA COORDINATE SYSTEM (VCS) 1983 - NORTH AS ESTABLISHED FROM A GPS SURVEY.
B. THE VERTICAL DATUM SHOWN HEREON IS REFERENCED TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29) AS ESTABLISHED FROM A CURRENT GPS SURVEY.

5. THE AREA SHOWN HEREON IS LOCATED ON THE FLOOD INSURANCE RATE MAPS (FIRM), COMMUNITY PANEL NO. 5155240002 D, WITH AN EFFECTIVE DATE OF JUNE 2, 2006.
BY GRAPHICAL DEPICTION ONLY, THE PROPERTY IS SHOWN IN:

- FLOOD ZONE "AE" (SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD); BASE FLOOD ELEVATIONS DETERMINED.

A FIELD SURVEY HAS BEEN PERFORMED TO DETERMINE THE FLOOD ZONES LISTED HEREON. A CLOMR (PLAN # 18-03-2238R) HAS BEEN SUBMITTED AND APPROVED BY THE CITY OF FAIRFAX AND FEMA TO ADJUST THE FLOODPLAIN BOUNDARIES AROUND THE PROPERTY BASED ON THE PROPOSED SITE IMPROVEMENTS. REFER TO SHEET 18 FOR THE PRE-DEVELOPED FLOODPLAIN BOUNDARY AND SHEET 18A FOR THE POST-DEVELOPED FLOOD PLAIN BOUNDARY.

6. A TITLE REPORT WAS PROVIDED BY FIRST AMERICAN TITLE INSURANCE COMPANY, COMMITMENT NO. A1401113-TD WITH AN EFFECTIVE DATE OF NOVEMBER 18, 2014 AND REVISED JANUARY 6, 2015, ALL EASEMENTS, SERVITUDES AND OTHER MATTERS OF TITLE REFERENCED THEREIN ARE SHOWN ON THIS PLAN.

7. THE SUBJECT PROPERTY IS CURRENTLY SERVED BY PUBLIC WATER AND PUBLIC SEWER PROVIDED BY CITY OF FAIRFAX AND FAIRFAX WATER.

8. DURING THE PROCESS OF THE PHYSICAL SURVEY CONDUCTED BY CHRISTOPHER CONSULTANTS, LTD. NO INDICATIONS OF A CEMETERY WERE FOUND. NO FURTHER INSPECTION OF THESE PROPERTIES HAVE BEEN MADE FOR POSSIBLE CEMETERIES. THE SUBJECT PROPERTY IS NOT LISTED UNDER THE NATIONAL REGISTER OF HISTORIC PLACES.

9. NO GEOTECHNICAL FIELD REVIEWS, RESEARCH, GOVERNMENTAL RECORD REVIEWS, OR OTHER INVESTIGATIONS HAVE BEEN MADE FOR THE PURPOSE OF LOCATING, OR DETERMINING THE EXISTENCE OF HAZARDOUS MATERIALS, OR OTHER ENVIRONMENTAL CONCERNS ON THIS SITE. A PRELIMINARY JURISDICTIONAL DETERMINATION HAS BEEN SUBMITTED TO THE ARMY CORPS OF ENGINEERS TO DELINEATE THE RPA.

10. THIS DEVELOPMENT PROPOSAL IS COMPATIBLE WITH THE EXISTING DEVELOPMENT IN THE VICINITY OF THIS SITE. NO ADVERSE EFFECTS TO NEIGHBORING PROPERTIES ARE ANTICIPATED WITH THIS PROJECT.

11. NOTWITHSTANDING THE IMPROVEMENTS AND TABULATIONS SHOWN ON THIS PLAN, THE APPLICANT RESERVES THE RIGHT TO MAKE MODIFICATIONS TO THE FINAL DESIGN TO COMPLY WITH FINAL ENGINEERING AND NEW CRITERIA AND REGULATIONS WHICH MAY BE ADOPTED BY THE CITY OF FAIRFAX SUBSEQUENT TO THE SUBMISSION OF THIS APPLICATION, PROVIDED THAT SUCH MODIFICATIONS ARE SUBSTANTIALLY CONSISTENT WITH THE APPROVED DEVELOPMENT PLAN.

12. THE PROPOSED BUILDING FOOTPRINTS AND SITE IMPROVEMENTS SHOWN HEREIN ARE PRELIMINARY. THE PROPOSED SQUARE FOOTAGE FOR THE PROPOSED BUILDINGS IS APPROXIMATE ONLY AND MAY BE SUBJECT TO REVISIONS AT THE TIME OF SITE PLAN, SUBJECT TO MARKET CONDITIONS, BUT SUBSTANTIALLY CONSISTENT WITH THE APPROVED DEVELOPMENT PLAN.

13. ALL EXISTING UTILITY EASEMENTS HAVING A WIDTH GREATER THAN 25 FEET ARE SHOWN ON THE EXISTING CONDITIONS PLAN.

14. SITE LIGHTING WITHIN THE PROJECT SITE AREA (I.E. ALONG SIDEWALKS AND PATHWAYS) WILL BE DETERMINED DURING FINAL SITE PLAN REVIEW AND SHALL BE IN GENERAL CONFORMANCE WITH SECTION 4.8 OF THE ZONING ORDINANCE AND SECTION 2.10 OF THE PUBLIC FACILITIES MANUAL.

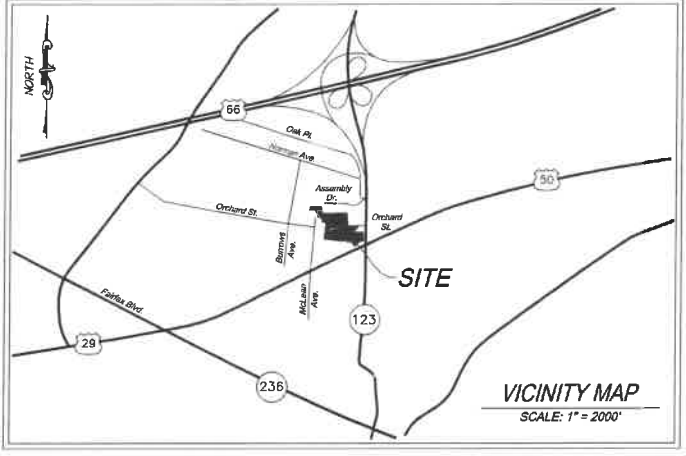
15. ONSITE STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICES SHALL BE PROVIDED AS REQUIRED BY CITY REGULATIONS AT THE TIME OF FINAL SITE PLAN. DETENTION TO PROVIDE THE REQUIRED STORMWATER QUANTITY CONTROLS AND ONSITE BEST MANAGEMENT PRACTICES (BMPs) TO MEET THE STORMWATER QUALITY REQUIREMENTS ARE SHOWN ON SHEETS 4 AND 4A.

16. ALL SIGNAGE WILL BE IN CONFORMANCE WITH SECTION 4.6 OF THE ZONING ORDINANCE.

17. TO THE BEST KNOWLEDGE OF THE ENGINEER AND APPLICANT, THIS DEVELOPMENT PLAN CONFORMS TO ALL APPLICABLE ORDINANCES, REGULATIONS AND ADOPTED STANDARDS, WITH THE FOLLOWING MODIFICATIONS, WAIVERS, AND SPECIAL USE PERMIT:

- A. A MODIFICATION HAS BEEN REQUESTED OF SECTION 4.5.5.C.2.D.2. OF THE ZONING ORDINANCE FOR THE PERIMETER BUFFER TRANSITIONAL YARD (TY).
- B. A MODIFICATION HAS BEEN REQUESTED OF SECTION 4.5.6.B. OF THE ZONING ORDINANCE FOR THE STREET TREE SPACING. THE APPLICANT PROPOSES NO STREET TREES ALONG ALL PRIVATE ALLEYS.
- C. SUPPORT FOR A WAIVER HAS BEEN REQUESTED OF SECTION 401-01 OF THE FAIRFAX PFM FOR THE TYPICAL CURB AND GUTTER STREET SECTION ON PRIVATE ACCESSWAYS THAT ARE LESS THAN 30 FEET FROM FACE OF CURB TO FACE OF CURB OR EDGE OF PAVEMENT.
- D. SUPPORT FOR A WAIVER HAS BEEN REQUESTED OF SECTION 2.4.5.3 THAT BLOCKS SHALL NOT BE LESS THAN 300 FEET IN LENGTH.
- E. A MODIFICATION HAS BEEN REQUESTED OF SECTION 4.5.7.D. OF THE ZONING ORDINANCE FOR INTERIOR PARKING LANDSCAPE ISLANDS.
- F. A MODIFICATION HAS BEEN REQUESTED OF SECTION 4.4.4.A.1. OF THE ZONING ORDINANCE. THE APPLICANT PROPOSES NO SIDEWALKS ALONG ALL PRIVATE ALLEYS.
- G. A MODIFICATION HAS BEEN REQUESTED OF SECTION 3.5.1.C.2. OF THE ZONING ORDINANCE THAT REQUIRES NO MORE THAN ONE OF ANY THREE TO FIVE ADJUTING DWELLING UNITS HAVE THE SAME FRONT YARD SETBACKS.
- H. A MODIFICATION HAS BEEN REQUESTED OF SECTION 4.2.3.E. OF THE ZONING ORDINANCE FOR THE PARKING RATIO REQUIREMENTS.
- I. A SPECIAL USE PERMIT HAS BEEN REQUESTED OF SECTION 4.15.7.C. OF THE ZONING ORDINANCE FOR DISTURBANCE IN THE FLOODPLAIN.

MASTER DEVELOPMENT PLAN/ PRELIMINARY PLAT NORTHFAX WEST CITY OF FAIRFAX, VIRGINIA



PROJECT TEAM:

OWNER / APPLICANT
NORTHFAX JV LLC c/o THE LANN COMPANIES
3900 JERMANTOWN ROAD, SUITE 300
FAIRFAX, VA 22030

CONTRACT PURCHASERS
MHI-NORTHFAX, LLC c/o MADISON HOMES, INC.
1950 OLD GALLOWES ROAD, SUITE 200
TYSONS CORNER, VA 22181

BRIGHTVIEW SENIOR LIVING DEVELOPMENT, LLC
218 N. CHARLES STREET, SUITE 220
BALTIMORE, MD 21201

ATTORNEY
WALSH COLUCCI LUBELEY & WALSH, P.C.
2200 CLARENDON BOULEVARD, SUITE 1300
ARLINGTON, VA 22201

ARCHITECTS
DEVEREAUX & ASSOCIATES, P.C. (for MADISON HOMES)
1477 CHAIN BRIDGE ROAD
MCLEAN, VA 22101

SK&I ARCHITECTURAL DESIGN GROUP, LLC (for BVSL)
4800 EAST WEST HIGHWAY, SUITE 700
BETHESDA, MD 20814

ENGINEER
christopher consultants
9900 MAIN STREET, SUITE 400
FAIRFAX, VA 22031

TRANSPORTATION ENGINEER
GOROVE / SLADE
1140 CONNECTICUT AVE. NW, SUITE 800
WASHINGTON, DC 20036

ENVIRONMENTAL AND GEOTECH CONSULTANTS
APEX COMPANIES, LLC
8700 CAPITAL COURT, SUITE 100
MANASSAS, VA 20110

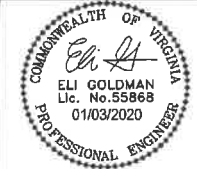
HILLIS-CARNES ENGINEERING ASSOCIATES, INC.
14155 SULLYFIELD CIRCLE, SUITE A
CHANTILLY, VA 20151

SHEET INDEX	
MARK	DATE
1	COVER SHEET
2	EXISTING CONDITIONS PLAN
2A	EXISTING CONDITIONS PLAN
3	TREE MANAGEMENT PLAN
3A	TREE MANAGEMENT PLAN
3B	TREE MANAGEMENT SCHEDULE
3C	TREE MANAGEMENT SCHEDULE
3D	TREE MANAGEMENT NOTES & DETAILS
4	MASTER DEVELOPMENT PLAN
4A	MASTER DEVELOPMENT PLAN
4B	STREET SECTIONS AND TYPICAL TOWNHOUSE YARDS
5	PRELIMINARY GRADING PLAN
5A	PRELIMINARY GRADING PLAN
6	CONCEPTUAL LANDSCAPE PLAN
6A	CONCEPTUAL LANDSCAPE PLAN
7	OPEN SPACE PLAN
8	SANITARY SEWER OFF-SITE MAP
9	SANITARY SEWER ANALYSIS
10-15	SIGHT DISTANCE
16	TURNING MOVEMENTS
17	FIRE SERVICE PLAN
18	FLOODPLAIN AND RPA PRE-DEVELOPED
18A	FLOODPLAIN AND RPA POST-DEVELOPED

christopher consultants
9900 main st
suite 400
fairfax, va 22031

703.273.6820
p 703.273.6820

engineering surveying land planning



**NORTHFAX WEST
MASTER DEVELOPMENT PLAN**

CITY OF FAIRFAX, VIRGINIA

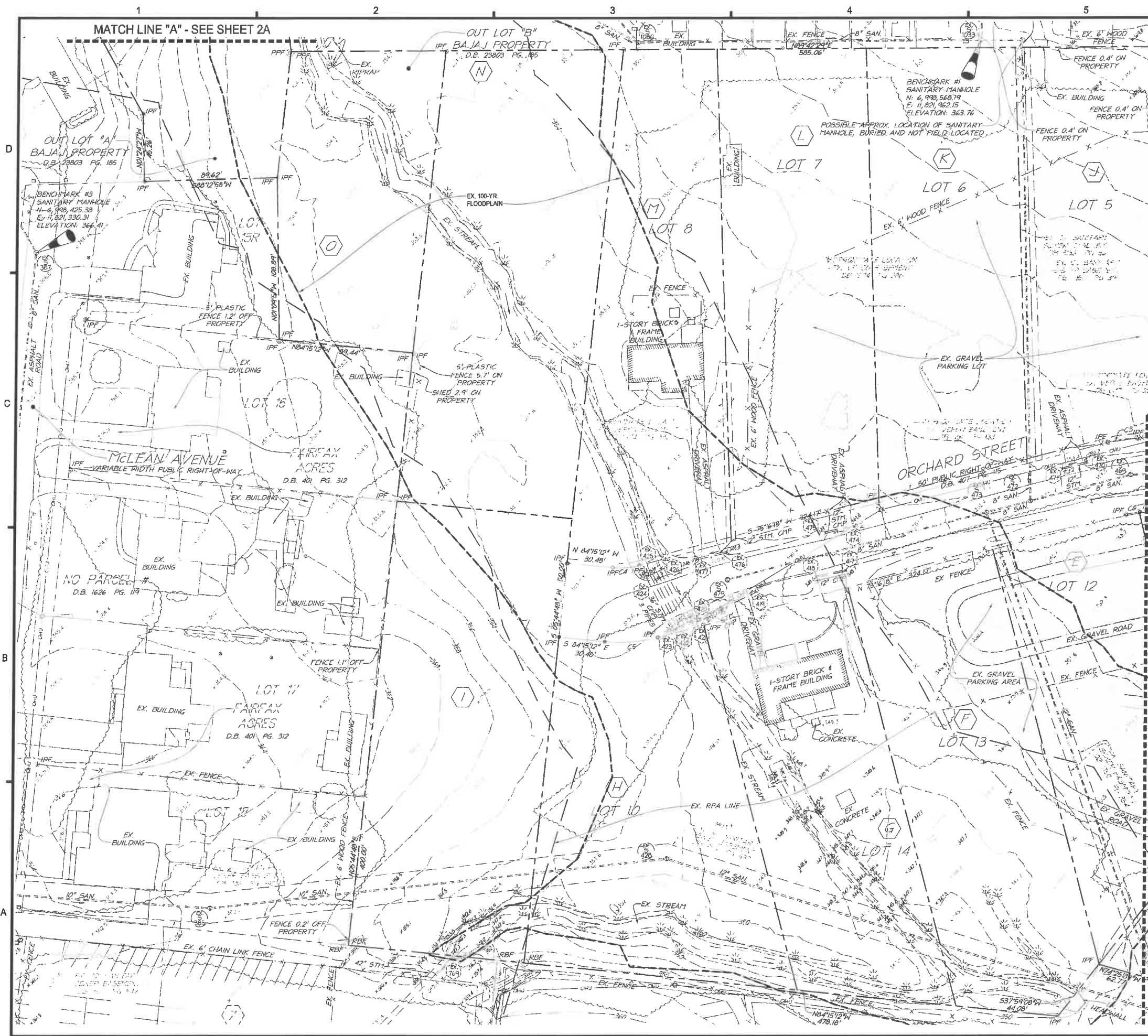
MARK	DATE	DESCRIPTION

PROJECT No.: 13139.005.00
DRAWING No.: 109532
DATE: 11-21-2018
DESIGN: EG
DRAWN: JS
CHECKED: KMW

SHEET TITLE:

COVER SHEET

SHEET No.
1



LEGEND

Utilities - Storm: STORM MANHOLE, STORM CULVERT

Utilities - Sanitary: SANITARY MANHOLE

Utilities - Water: WATER VALVE, WATER METER, FIRE HYDRANT, WATER MANHOLE

Utilities - Electric: LIGHT POLE, UTILITY POLE, LAMP POST, GUY WIRE

Utilities - Communication: TELEPHONE PEDESTAL/POST

Misc. Structures: SPOT SHOT, SIGN, TREE, BUSH, FLAG POLE, UNIDENTIFIED UTILITY

Abbreviations: EX (EXISTING), CONC (CONCRETE), C&G (CURB AND GUTTER), EP (EDGE OF PAVEMENT), IPF (IRON PIPE FOUND), IPS (IRON PIPE SET), RBF (REBAR FOUND), PPF (PINCH PIPE FOUND), CMF (CONCRETE MONUMENT FOUND), NS (NOT SET)

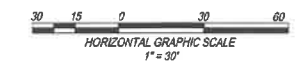
Line Types: INDEX CONTOUR (5'), INT. CONTOUR (1'), FENCE, OVERHEAD UTILITY WIRE, VEGETATION LINE

- NOTES:**
- SEE SHEET 2A FOR OWNERSHIP TABLE.
 - SEE SHEET 2A FOR STORM AND THIS SHEET FOR SANITARY AS-BUILT INFORMATION.

SANITARY STRUCTURE DATA

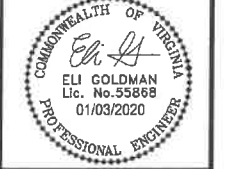
MARK	DATE	DESCRIPTION
38		RIM EL. = 370.21 INV IN (8" DIP FROM SOUTH) = 381.58 INV OUT (8" DIP TO 378) = 361.54
39		RIM EL. = 365.73 INV IN (8" DIP FROM 378) = 357.00 INV OUT (8" DIP TO 381) = 358.96
40		RIM EL. = 367.08 INV OUT (8" PVC TO 381) = 358.53
41		RIM EL. = 363.54 INV IN (8" PVC FROM 369) = 355.24 INV IN (8" DIP FROM 373) = 354.92 INV OUT (8" DIP TO 384) = 354.83
42		RIM EL. = 364.95 INV IN (8" DIP FROM NW) = 357.15 INV OUT (8" DIP TO 384) = 357.13
43		RIM EL. = 362.55 INV IN (8" PVC FROM WEST) = 357.68 INV IN (8" DIP FROM NORTHEAST) = 358.00 INV OUT (8" DIP TO 387) = 357.63
44		RIM EL. = 368.42 INV IN (8" DIP FROM 1018) = 356.10 INV OUT (8" DIP TO 386) = 356.07
45		RIM EL. = 367.74 INV IN (8" DIP FROM 387) = 355.17 INV OUT (8" DIP TO 384) = 355.11
46		RIM EL. = 363.37 INV IN (8" DIP FROM 381) = 354.04 INV IN (8" DIP FROM 371) = 354.05 INV IN (8" DIP FROM 385) = 353.92 INV OUT (10" DIP TO 385) = 353.88
47		RIM EL. = 360.45 INV IN (10" DIP FROM 384) = 352.05 INV OUT (10" DIP TO 428) = 351.91
48		RIM EL. = 354.14 INV IN (10" DIP FROM 385) = 344.80 INV OUT (12" DIP TO 615) = 344.86
49		RIM EL. = 368.90 INV OUT (8" DIP TO 1013) = 363.86
50		RIM EL. = 360.71 INV IN (8" DIP FROM 541) = 355.01 INV OUT (8" DIP TO 381) = 354.79
51		RIM EL. = 358.29 INV IN (8" DIP FROM 465) = 344.68 INV OUT (8" DIP TO 468) = 344.34
52		RIM EL. = 365.00 INV IN (8" DIP FROM 488) = 343.18 INV OUT (8" DIP TO 472) = 343.12
53		RIM EL. = 353.21 INV IN (8" DIP FROM NORTH) = 343.04 INV IN (8" DIP FROM 468) = 342.73 INV OUT (8" DIP TO 473) = 342.71
54		RIM EL. = 350.55 INV OUT (8" DIP TO 473) = 343.05
55		RIM EL. = 362.65 INV IN (8" DIP FROM 472) = 342.43 INV IN (8" DIP FROM 479) = 342.51 INV OUT (8" DIP TO 615) = 342.20
56		RIM EL. = 350.94 INV IN (8" DIP FROM 473) = 337.11 INV IN (12" DIP FROM 428) = 337.15 INV OUT (12" DIP TO 1008) = 336.89
57		RIM EL. = 358.99 INV IN (8" DIP FROM NORTHWEST) = 350.34 INV OUT (8" DIP TO 1033) = 350.29
58		RIM EL. = 363.78 INV IN (8" DIP FROM NORTH) = 348.55 INV IN (8" DIP FROM 1080) = 348.59 INV OUT (8" DIP TO EAST) = 348.52

MATCH LINE "B" - SEE SHEET 2A



ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT CITY OF FAIRFAX STANDARDS AND SPECIFICATIONS

christopher consultants
9900 main st
suite 400
fairfax, va 22031
engineering surveying land planning



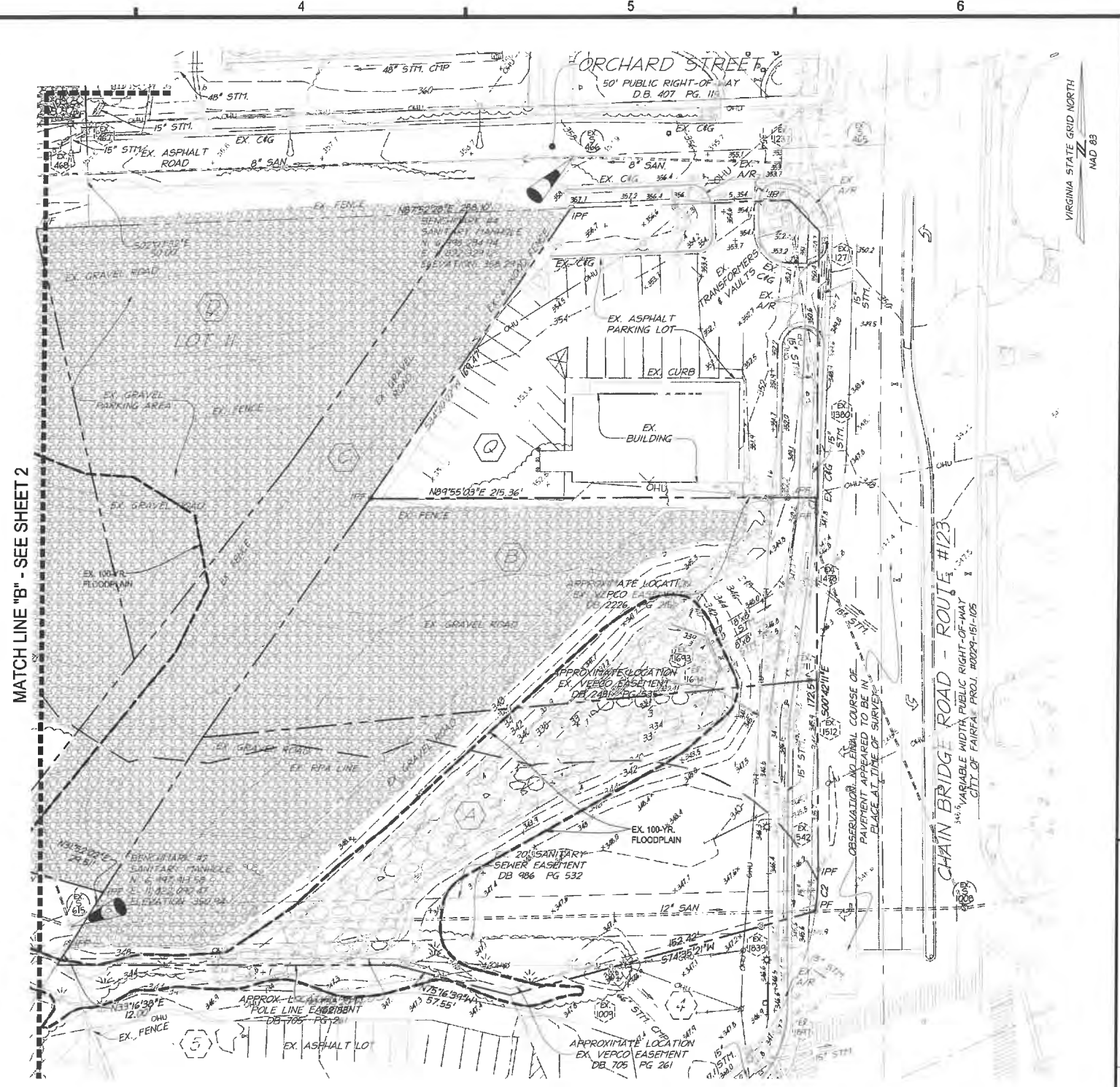
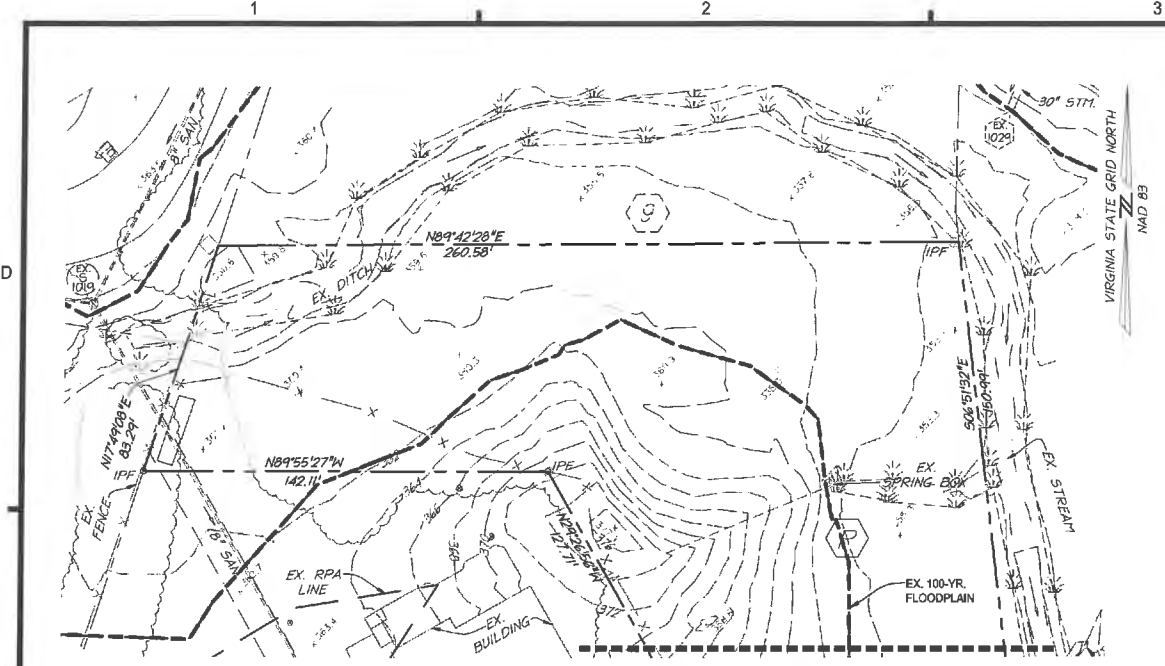
**NORTHFAX WEST
MASTER DEVELOPMENT PLAN**
CITY OF FAIRFAX, VIRGINIA

MARK	DATE	DESCRIPTION

PROJECT No.: 13139.005.00
DRAWING No.: 109632
DATE: 11-21-2019
DESIGN: EG
DRAWN: JS
CHECKED: KMW
SHEET TITLE:

**EXISTING
CONDITIONS PLAN**

SHEET No. **2**
SCALE: 1"=30'



A	MAP #57-2-02-017 #3590 CHAIN BRIDGE ROAD ARG II, LLC D.B. 13408 PG. 1070 D.B. 15230 PG. 1182 ZONED: COMMERCIAL RETAIL
B	MAP #57-2-02-016 #3580 CHAIN BRIDGE ROAD ARG II, LLC D.B. 13408 PG. 1070 D.B. 15230 PG. 1182 ZONED: COMMERCIAL RETAIL
C	MAP #57-2-02-019 #10505 ORCHARD STREET ARG II, LLC D.B. 13408 PG. 1070 D.B. 15230 PG. 1182 ZONED: COMMERCIAL RETAIL
D	MAP #57-2-08-011 #10507 ORCHARD STREET ARG II, LLC D.B. 13408 PG. 1070 D.B. 15230 PG. 1182 ZONED: RESIDENTIAL MEDIUM
E	MAP #57-2-08-012 #10509 ORCHARD STREET ARG II, LLC D.B. 15339 PG. 102 ZONED: RESIDENTIAL MEDIUM
F	MAP #57-2-08-013 #10511 ORCHARD STREET ARG II, LLC D.B. 15339 PG. 102 ZONED: RESIDENTIAL MEDIUM
G	MAP #57-2-08-014 #10513 ORCHARD STREET ARG II, LLC D.B. 16739 PG. 1026 ZONED: RESIDENTIAL MEDIUM
H	MAP #57-2-08-010 #10515 ORCHARD STREET ORCHARD RE INVESTMENTS D.B. 18823 PG. 1535 ZONED: RESIDENTIAL MEDIUM
I	MAP #57-2-02-005 #10517 ORCHARD STREET ORCHARD RE INVESTMENTS D.B. 19218 PG. 1148 ZONED: RESIDENTIAL MEDIUM
J	MAP #57-2-08-005 #10508 ORCHARD STREET ORCHARD RE INVESTMENTS D.B. 17602 PG. 631 ZONED: RESIDENTIAL MEDIUM

OWNERSHIP TABLE

K	MAP #57-2-08-006 #10510 ORCHARD STREET ORCHARD RE INVESTMENTS D.B. 19837 PG. 1921 ZONED: RESIDENTIAL MEDIUM
L	MAP #57-2-08-007 #10512 ORCHARD STREET ORCHARD RE INVESTMENTS D.B. 17434 PG. 444 ZONED: RESIDENTIAL MEDIUM
M	MAP #57-2-08-008 #10514 ORCHARD STREET ORCHARD RE INVESTMENTS D.B. 18388 PG. 265 ZONED: RESIDENTIAL MEDIUM
N	MAP #57-2-02-003 #10516 ORCHARD STREET ORCHARD RE INVESTMENTS D.B. 20080 PG. 1216 ZONED: RESIDENTIAL MEDIUM
O	MAP #57-2-07-015B NO ADDRESS ORCHARD RE INVESTMENTS D.B. 23812 PG. 493 ZONED: RESIDENTIAL MEDIUM
P	MAP #57-2-47-000A NO ADDRESS ORCHARD RE INVESTMENTS D.B. 23812 PG. 479 ZONED: RESIDENTIAL MEDIUM
Q	MAP #57-2-02-020 #3570 CHAIN BRIDGE ROAD NORTHFAX JV LLC D.B. 9504 PG. 1517 ZONED: COMMERCIAL RETAIL

1	MAP #57-2-18-001A #10518 ORCHARD STREET THE ASSEMBLY D.B. 3161 PG. 506 ZONED: RESIDENTIAL TOWNHOUSE
2	MAP #57-2-08-004A ELE N.A., LLC D.B. 24266 PG. 1985 ZONED: COMMERCIAL OFFICE
3	MAP #57-2-08-003A #10519 ORCHARD STREET PMG NORTHERN VIRGINIA, LLC D.B. 20769 PG. 1720 ZONED: COMMERCIAL RETAIL
4	MAP #57-2-02-018 #10520 ORCHARD STREET CITY OF FAIRFAX D.B. 18604 PG. 857 ZONED: COMMERCIAL RETAIL
5	MAP #57-2-02-015 #10521 ORCHARD STREET GLASCOCK & SONS, LP D.B. 9172 PG. 571 ZONED: COMMERCIAL RETAIL
6	MAP #57-2-02-010 #10522 ORCHARD STREET SCHULING T. ALPINE, INC. D.B. 8871 PG. 1815 ZONED: COMMERCIAL RETAIL
7	MAP #57-2-02-006 #10523 ORCHARD STREET BRANCH AVENUE ASSOCIATES, LLC D.B. 14796 PG. 1926 ZONED: COMMERCIAL RETAIL
8	MAP #57-2-47-001 #10524 ORCHARD STREET SANJAY BAJAJ D.B. 23809 PG. 185 ZONED: RESIDENTIAL MEDIUM
9	MAP #57-2-02-001A #10525 ORCHARD STREET BARBARA FOWLER D.B. 5923 PG. 1416 ZONED: RESIDENTIAL MEDIUM

STORM STRUCTURE DATA

EX 378	RIM EL. = 370.32 INV IN (15' RCP FROM 378) = 367.58 INV OUT (15' RCP TO 374) = 365.31
EX 379	RIM EL. = 370.40 INV IN (30' RCP FROM 373) = 365.43 INV IN (15' RCP FROM WEST) = 363.28 INV OUT (30' RCP TO 356) = 363.26
EX 380	RIM EL. = 365.40 INV IN (30' RCP FROM 374) = 361.65 INV IN (21' RCP FROM 355) = 361.82 INV OUT (30' RCP TO 357) = 361.60
EX 381	RIM EL. = 366.13 INV OUT (15' RCP TO 361) = 359.51
EX 382	RIM EL. = 364.62 INV OUT (15' RCP TO 361) = 359.72
EX 383	RIM EL. = 365.77 INV IN (15' RCP FROM 360) = 359.31 INV IN (15' RCP FROM 362) = 359.37 INV OUT (18' RCP TO 357) = 359.23
EX 384	RIM EL. = 365.55 INV IN (30' RCP FROM 356) = 360.89 INV IN (18' RCP FROM 361) = 358.97 INV OUT (42' RCP TO 358) = 358.94
EX 385	RIM EL. = 362.61 INV OUT (12' RCP TO 382) = 350.26
EX 386	RIM EL. = 362.68 INV IN (12' RCP FROM 383) = 359.81 INV OUT (12' RCP TO 364) = 359.78
EX 387	RIM EL. = 358.82 INV OUT (29'x45' ERCP TO 364) = 362.34
EX 388	RIM EL. = 362.16 INV IN (29'x45' ERCP FROM 370) = 358.26 INV IN (12' RCP FROM 362) = 359.11 INV OUT (19'x30' ERCP TO 363A) = 358.08 INV OUT (19'x30' ERCP TO 363B) = 358.06
EX 389	RIM EL. = 361.88 INV IN (19'x30' ERCP FROM 364A) = 357.64 INV IN (19'x30' ERCP FROM 364B) = 357.71 INV OUT (19'x30' ERCP TO 365A) = 357.58 INV OUT (19'x30' ERCP TO 365B) = 357.69
EX 390	RIM EL. = 361.96 INV IN (19'x30' RCP FROM 363A) = 357.54 INV IN (19'x30' RCP FROM 363B) = 357.60 INV OUT (24' RCP TO 359) = 357.32
EX 391	RIM EL. = 360.24 INV IN (24' RCP FROM 365) = 354.69 INV OUT (24' RCP TO DOGHOUSE) = 354.55
EX 392	RIM EL. = 380.07 INV IN (42' RCP FROM 357) = 354.43 INV OUT (42' RCP TO 789) = 354.40
EX 393	RIM EL. = 380.24 INV IN (42' RCP FROM 358) = 348.74
EX 394	INV OUT (66' CMP TO SOUTH-EAST) = 340.78
EX 395	INV IN (40'x31' CMPA FROM NORTH) = 357.03
EX 396	INV OUT (36' CMP TO 423) = 346.12
EX 400	INV IN (12' CMP TO 416) = 348.69
EX 401	INV IN (12' CMP FROM 417) = 348.63
EX 402	INV IN (38' CMP FROM 425) = 348.19
EX 403	INV OUT (38' CMP TO 421) = 348.18
EX 404	INV IN (38' CMP FROM 428) = 348.12
EX 405	INV OUT (15' CPP TO 420) = 348.33
EX 406	INV IN (15' CPP FROM 419) = 347.48
EX 407	INV IN (12' CMP TO 477) = 348.81
EX 408	INV IN (12' CMP FROM 476) = 348.67
EX 409	INV OUT (12' CMP TO 475) = 349.80
EX 410	INV IN (12' CMP FROM 474) = 348.70
EX 411	INV IN (15' RCP TO 416) = 348.69
EX 412	INV IN (12' RCP TO 471) = 352.72
EX 413	INV IN (12' RCP FROM 470) = 352.24
EX 414	INV IN (38' CMP FROM 428) = 348.12
EX 415	RIM EL. = 360.36 INV OUT (48' CMP TO 447) = 353.31
EX 416	RIM EL. = 360.07 INV IN (48' CMP FROM 446) = 353.06 INV OUT (48' RCP TO 448) = 353.04
EX 417	RIM EL. = 360.00 INV IN (48' RCP FROM 447) = 353.11 INV IN (48' RCP FROM SWM) = 353.12 OUT - UNDERGROUND SWM STRUCTURE WITH WEIR WALL INV OUT (15' RCP TO 467) = 353.08
EX 418	RIM EL. = 355.85 INV IN (15' RCP FROM 449) = 362.98 INV OUT (15' RCP TO 468) = 352.85
EX 419	INV IN (12' CMP FROM 474) = 348.70
EX 420	INV IN (15' RCP FROM 467) = 352.82
EX 421	RIM EL. = 364.55 INV OUT (15' RCP TO EAST) = 359.98
EX 422	RIM EL. = 357.80 INV IN (15' RCP FROM NORTH) = 354.18 INV OUT (15' RCP TO 2538) = 354.12
EX 423	RIM EL. = 359.17 INV IN (15' RCP TO 2574) = 354.26
EX 424	RIM EL. = 359.14 INV OUT (30' RCP TO 488) = 354.14
EX 425	RIM EL. = 360.97 INV IN (30' RCP FROM 2537) = 356.52 INV OUT (42'x29' CMPA FROM 488 VIA NORTH) = 356.49 INV OUT (42'x29' CMPA TO 488 VIA WEST) = 356.53
EX 426	RIM EL. = 360.24 INV IN (42'x29' CMPA FROM 488) = 354.61 INV IN (42'x29' CMPA FROM 488) = 354.70 INV OUT (42'x29' CMPA TO SWM) = 354.60
EX 427	RIM EL. = 348.05 INV IN (15' RCP TO 1380) = 344.50
EX 428	RIM EL. = 349.05 INV IN (15' RCP FROM 1271) = 343.25 INV OUT (15' RCP FROM 1237) = 343.15 INV OUT (15' RCP TO 1478) = 343.05
EX 429	RIM EL. = 347.12 INV IN (15' RCP FROM 1380) = 340.12 INV OUT (15' RCP TO SE) = 335.32
EX 430	RIM EL. = 346.18 INV OUT (15' RCP TO 1542) = 341.88
EX 431	RIM EL. = 346.10 INV IN (15' RCP FROM 1512) = 341.50 INV OUT (15' RCP TO 1839) = 341.40
EX 432	RIM EL. = 346.21 INV IN (15' RCP FROM 1542) = 340.81 INV OUT (15' RCP TO STRUCTURE IN ROAD) = 340.81
EX 433	RIM EL. = 348.09 INV OUT (15' RCP TO 1897) = 342.89
EX 434	RIM EL. = 342.62 INV IN (15' RCP FROM 1940) = 342.22 INV OUT (15' RCP TO STRUCTURE IN ROAD) = 336.92
EX 435	RIM EL. = 353.15 INV OUT (15' RCP TO 1380) = 347.85
EX 436	TOP OF WALL = 340.05 INV OUT (6'x6' BOX CULVERT TO EAST) = 330.35
EX 437	TOP OF WALL = 339.98 INV OUT (6'x6' BOX CULVERT TO EAST) = 330.27

LINE TABLE

LINE	BEARING	DISTANCE
L1	S 81°22'28" W	26.01'

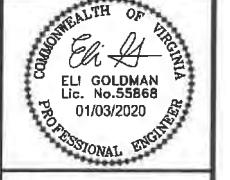
CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	BEARING	CHORD
C1	5761.58'	7.14'	0°04'15"	3.57'	S 00°40'03" E	7.14'
C2	133.14'	20.03'	8°37'11"	10.03'	S 03°36'25" W	20.01'
C3	90.75'	19.96'	12°36'07"	10.02'	S 81°34'25" W	19.92'
C4	50.00'	17.87'	20°28'30"	9.03'	S 85°30'33" W	17.77'
C5	100.00'	35.74'	20°28'30"	18.06'	N 85°30'33" E	35.55'
C6	40.75'	8.99'	12°36'07"	4.50'	N 81°34'25" E	8.94'

MATCH LINE "B" - SEE SHEET 2

MATCH LINE "A" - SEE SHEET 2

christopher consultants
9900 main st suite 400 fairfax, va 22031
p 703.273.6820
engineering surveying land planning



NORTHFAX WEST MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX, VIRGINIA

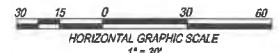
MARK	DATE	DESCRIPTION

PROJECT No.: 13139.005.00
DRAWING No.: 109632
DATE: 11-21-2019
DESIGN: EG
DRAWING: JS
CHECKED: KMW

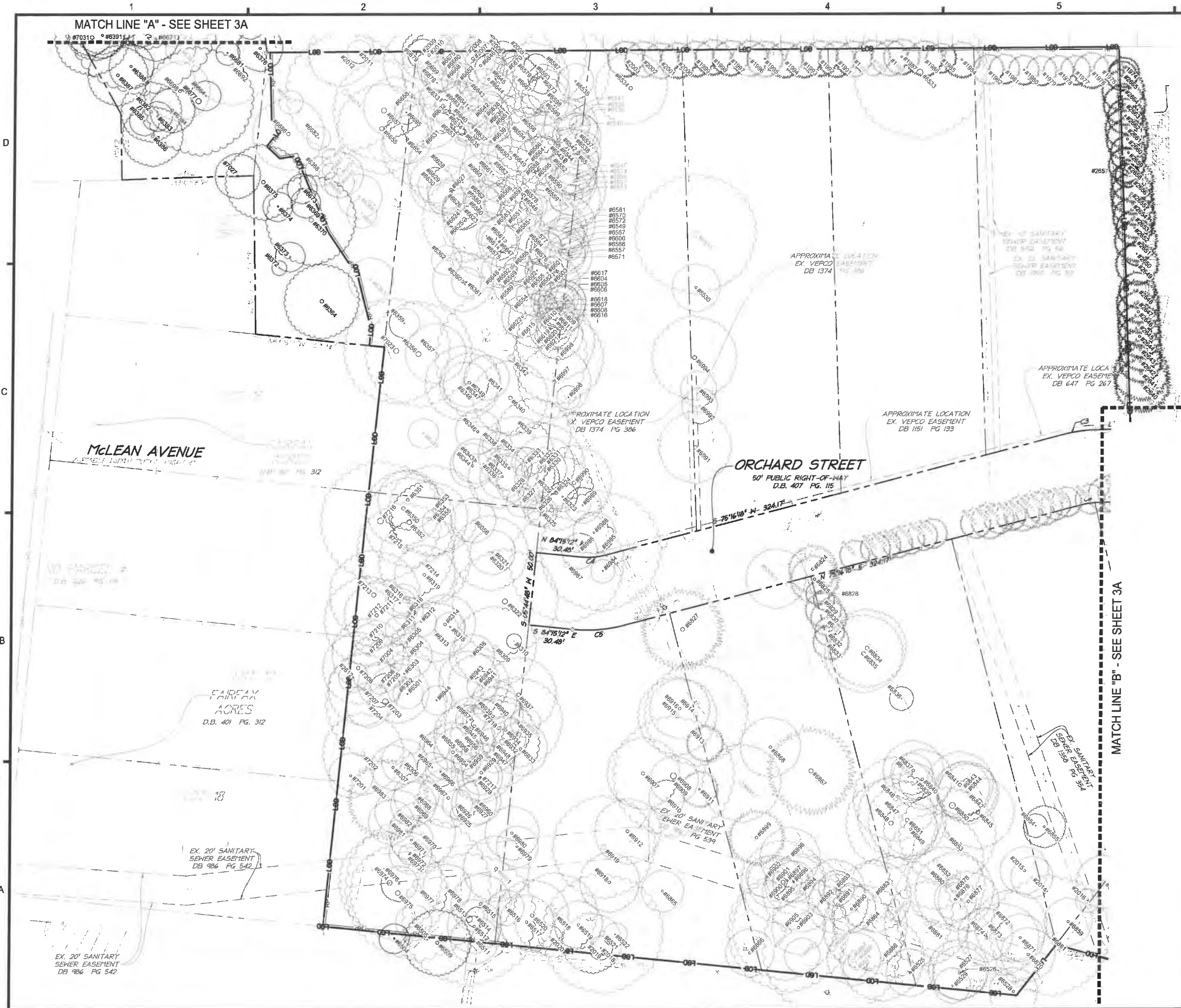
SHEET TITLE:

EXISTING CONDITIONS PLAN

SHEET No. **2A**
SCALE: 1"=30'



ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT CITY OF FAIRFAX STANDARDS AND SPECIFICATIONS



- NOTES**
- SEE SHEETS 3B AND 3C - TREE MANAGEMENT SCHEDULE.
 - SEE SHEET 3D - TREE MANAGEMENT NOTES & DETAILS.

LEGEND

- EXISTING VEGETATION LINE
- EXISTING TREE TO BE PRESERVED
- EXISTING TREE TO BE REMOVED
- LOD - LIMITS OF DISTURBANCE
- RP - TREE PROTECTION FENCE AND ROOT PRUNING

VIRGINIA STATE GRID NORTH
NAD 83

HORIZONTAL GRAPHIC SCALE
1" = 30'

ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT CITY OF FAIRFAX STANDARDS AND SPECIFICATIONS

PLAN PREPARED BY LAURIE BETH DONNACHE
ISA CERTIFIED ARBORIST NO. MA-5723A
SIGNATURE: *Laurie B. Donnache* DATE: 2020-01-03

christopher consultants
9500 main st
suite 400
fairfax, va 22031
p 703.273.6620
engineering surveying land planning

COMMONWEALTH OF VIRGINIA
Laurie B. Donnache
LAURIE B. DONNACHE
Lic. No. 0406001880
2020-01-03
LANDSCAPE ARCHITECT

**NORTHFAX WEST
MASTER DEVELOPMENT PLAN**
CITY OF FAIRFAX, VIRGINIA

MARK	DATE	DESCRIPTION

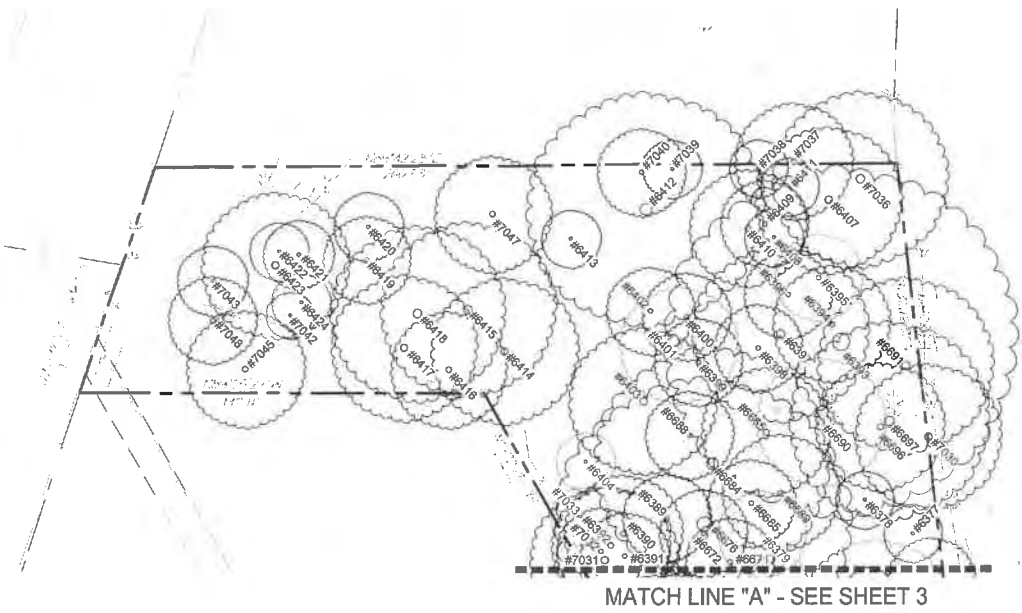
PROJECT No.: 13135.005.00
DRAWING No.: 109632
DATE: 11-21-2019
DESIGN: LBD
DRAWN: LBD
CHECKED: LBD

SHEET TITLE:

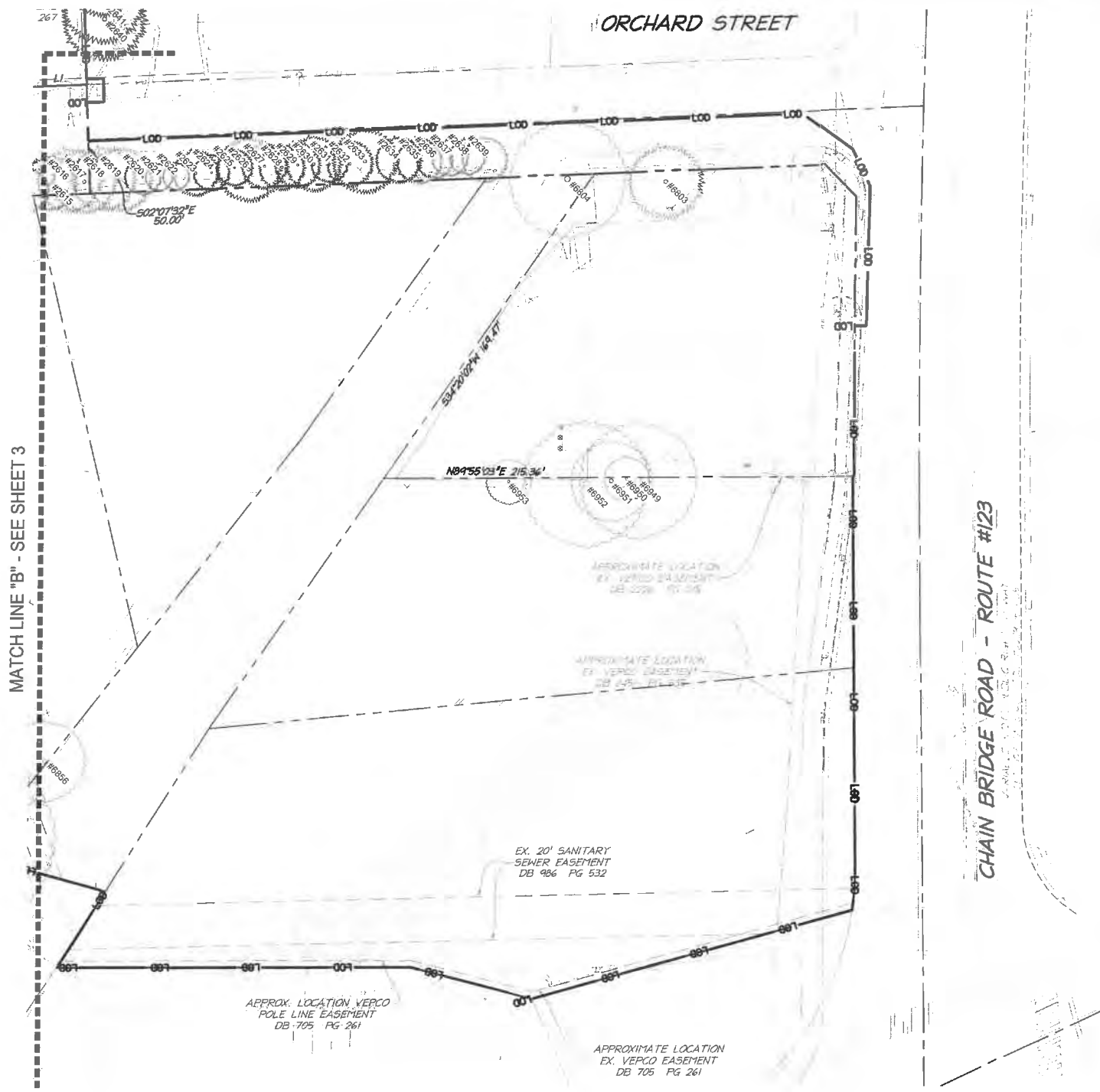
TREE MANAGEMENT PLAN

SHEET No. **3**

D
C
B
A

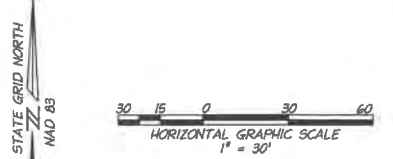
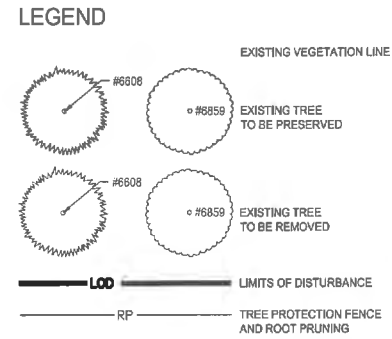


MATCH LINE "A" - SEE SHEET 3



MATCH LINE "B" - SEE SHEET 3

- NOTES
- SEE SHEETS 3B AND 3C - TREE MANAGEMENT SCHEDULE.
 - SEE SHEET 3D - TREE MANAGEMENT NOTES & DETAILS.



ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT CITY OF FAIRFAX STANDARDS AND SPECIFICATIONS

PLAN PREPARED BY LAURIE BETH DONNACHIE
ISA CERTIFIED ARBORIST NO. MA-5723A
SIGNATURE: *Laurie B. Donnachie* DATE: 2020-01-03

christopher consultants
9900 main st
suite 400
fairfax, va 22031
p 703.273.6820

engineering surveying land planning

COMMONWEALTH OF VIRGINIA
Laurie B. Donnachie
LAURIE B. DONNACHIE
Lic. No. 0406001880
2020-01-03
LANDSCAPE ARCHITECT

**NORTHFAX WEST
MASTER DEVELOPMENT PLAN**
CITY OF FAIRFAX, VIRGINIA

MARK	DATE	DESCRIPTION

PROJECT No.: 13139.005.00
DRAWING No.: 108632
DATE: 11-21-2019
DESIGN: LBD
DRAWN: LBD
CHECKED: LBD

SHEET TITLE:
TREE MANAGEMENT PLAN

SHEET No.
3A

TREE MANAGEMENT SCHEDULE

Table with columns: TREE #, BOTANICAL NAME, COMMON NAME, CRITICAL ROOT ZONE (FEET), TRUNK DIAMETER (INCHES), CONDITION, RATING, PROCEDURE. Lists various tree species and their management status.

TREE MANAGEMENT SCHEDULE

Table with columns: TREE #, BOTANICAL NAME, COMMON NAME, CRITICAL ROOT ZONE (FEET), TRUNK DIAMETER (INCHES), CONDITION, RATING, PROCEDURE. Lists various tree species and their management status.

TREE MANAGEMENT SCHEDULE

Table with columns: TREE #, BOTANICAL NAME, COMMON NAME, CRITICAL ROOT ZONE (FEET), TRUNK DIAMETER (INCHES), CONDITION, RATING, PROCEDURE. Lists various tree species and their management status.

christopher consultants logo and contact information: 9900 main st, suite 400, Fairfax, VA 22031



LAURIE B. DONNACHIE, LIC. NO. 0406001880, 2020-01-03

NORTHFAK WEST MASTER DEVELOPMENT PLAN

CITY OF FAIRFAX, VIRGINIA

Table with columns: MARK, DATE, DESCRIPTION. A grid for tracking changes to the drawing.

PROJECT No.: 13139.005.00, DRAWING No.: 109632, DATE: 11-21-2019, DESIGN: LBD, DRAWN: LBD, CHECKED: LBD

SHEET TITLE: TREE MANAGEMENT SCHEDULE

SHEET No. 3B

PLAN PREPARED BY LAURIE BETH DONNACHIE, ISA CERTIFIED ARBORIST NO. MA-5723A, SIGNATURE: Laurie B. Donnachie, DATE: 2020-01-03

TREE MANAGEMENT SCHEDULE

Table with columns: TREE #, BOTANICAL NAME, COMMON NAME, CRITICAL ROOT ZONE RADIUS (FEET), TRUNK DIAMETER (INCHES), CONDITION, RATING, PROCEDURE. Contains 676 rows of tree management data.

TREE MANAGEMENT SCHEDULE

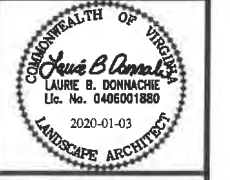
Table with columns: TREE #, BOTANICAL NAME, COMMON NAME, CRITICAL ROOT ZONE RADIUS (FEET), TRUNK DIAMETER (INCHES), CONDITION, RATING, PROCEDURE. Contains 676 rows of tree management data.

TREE MANAGEMENT SCHEDULE

Table with columns: TREE #, BOTANICAL NAME, COMMON NAME, CRITICAL ROOT ZONE RADIUS (FEET), TRUNK DIAMETER (INCHES), CONDITION, RATING, PROCEDURE. Contains 676 rows of tree management data.

D
C
B
A

christopher consultants logo and contact information: 9900 main st, suite 400, Fairfax, VA 22031. Services: engineering, surveying, land planning.



NORTHFAX WEST MASTER DEVELOPMENT PLAN CITY OF FAIRFAX, VIRGINIA

Table with columns: MARK, DATE, DESCRIPTION. Contains a grid for marking and describing items.

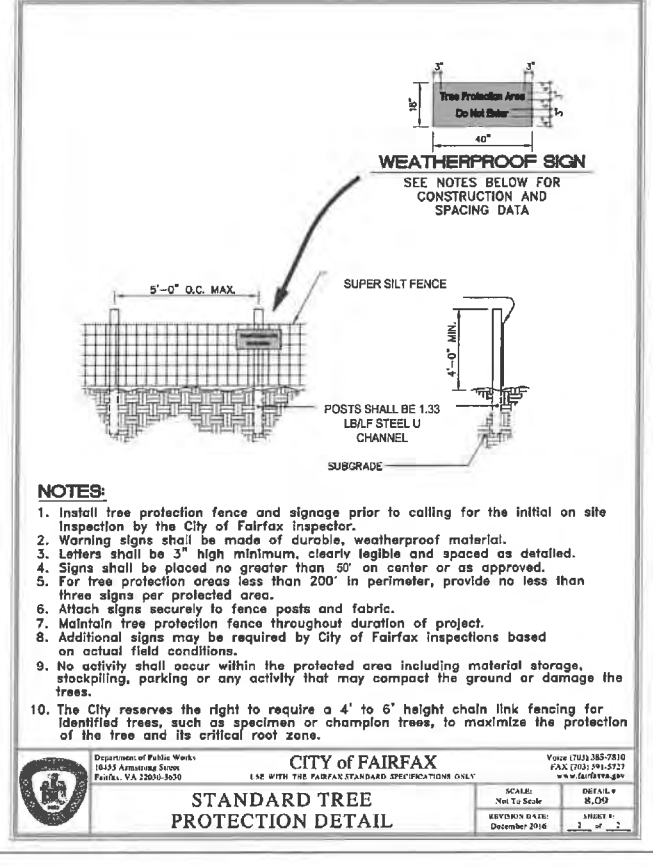
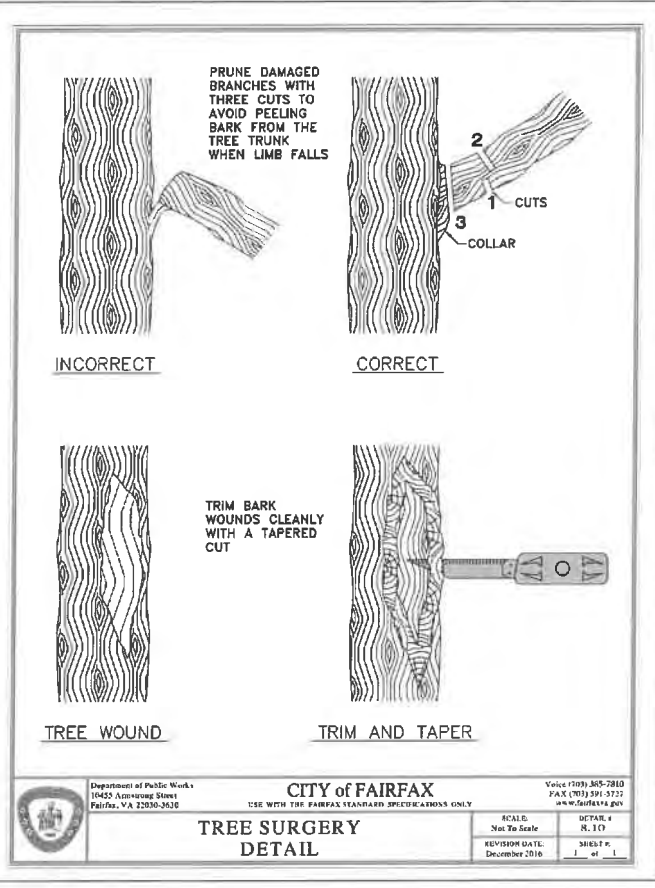
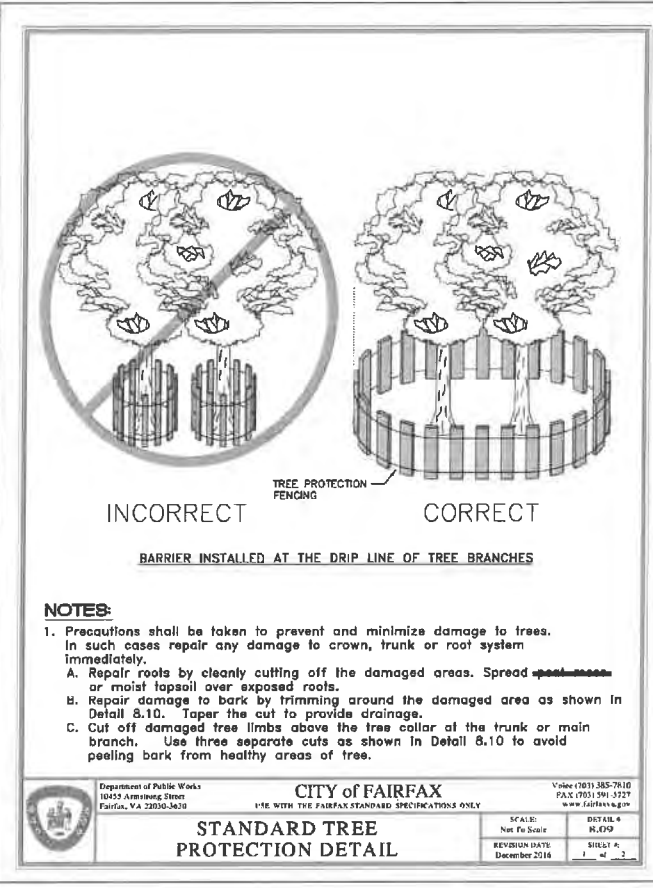
PROJECT No.: 13139.005.00
DRAWING No.: 109632
DATE: 11-21-2019
DESIGN: LBD
DRAWN: LBD
CHECKED: LBD

SHEET TITLE: TREE MANAGEMENT SCHEDULE

PLAN PREPARED BY LAURIE BETH DONNACHIE ISA CERTIFIED ARBORIST NO. MA-5723A
SIGNATURE: Laurie B. Donachie DATE: 2020-01-03
SHEET No. 3C

TREE PRESERVATION NOTES

1. PROJECT NOTES
 - 1.1. THE REQUIREMENTS OF THE CITY OF FAIRFAX ZONING ORDINANCE AND PUBLIC FACILITIES MANUAL SHALL BE FOLLOWED.
 - 1.2. ALL TREE PRESERVATION ACTIVITIES SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION OF AN ISA CERTIFIED ARBORIST.
 - 1.3. ALL TREE WORK PERFORMED SHALL MEET OR EXCEED THE MOST RECENT INDUSTRY STANDARDS, AS PUBLISHED BY THE INTERNATIONAL SOCIETY OF ARBORICULTURE (ISA).
2. PRE-CONSTRUCTION
 - 2.1. PRIOR TO THE PRE-CONSTRUCTION MEETING, THE CONTRACTOR SHALL HAVE THE LIMITS OF CLEARING AND GRADING CLEARLY MARKED IN THE FIELD WITH FLAGGING. THESE LIMITS SHALL NOT EXCEED THOSE SHOWN ON THE APPROVED PLANS.
 - 2.2. AFTER LIMITS HAVE BEEN STAKED, THE CONTRACTOR SHALL REQUEST A PRE-CONSTRUCTION MEETING WITH CITY OF FAIRFAX AND PROJECT ARBORIST.
 - 2.3. DURING THE PRE-CONSTRUCTION MEETING, THE LIMITS MAY BE ADJUSTED TO BETTER PRESERVE OR REMOVE TREES IMPACTED BY CONSTRUCTION ACTIVITIES.
3. INSTALLATION OF TREE PROTECTION MEASURES
 - 3.1. ROOT PRUNING: PRIOR TO CONSTRUCTION, ROOT PRUNING SHALL BE COMPLETED AT THE LIMITS. ROOT PRUNING SHALL BE TO THE DEPTH OF EIGHTEEN (18) TO TWENTY-FOUR (24) INCHES AND SHALL BE ACCOMPLISHED BY USING A TRENCHER, VIBRATING FLOW OR BY HAND. TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH REMOVED SOIL. WHEN EXCAVATING ALL TREE ROOTS GREATER THAN 1 INCH IN DIAMETER THAT ARE EXPOSED AND/OR DAMAGED SHALL BE TRIMMED CLEANLY, AND COVERED WITH ORGANIC MULCH, TOPSOIL, OR OTHER SUITABLE MATERIAL TO PREVENT THE EXPOSED ROOTS FROM DRYING OUT.
 - 3.2. TREE PROTECTION FENCING: IMMEDIATELY FOLLOWING ROOT PRUNING, TREE PROTECTION FENCING SHALL BE COMPLETED AT THE LIMITS. TREE PROTECTION FENCING SHALL BE INSTALLED PER TREE PRESERVATION PLAN AND SHALL CONSIST OF EITHER OF THE FOLLOWING MATERIALS:
 - 3.2.1. FOURTEEN (14) GAUGE WELDED WIRE MESH THAT IS A MINIMUM OF FOUR (4) FOOT TALL. THE MESH SHALL BE ATTACHED TO SIX (6) FOOT TALL, TWO-INCH (2") STEEL U-CHANNEL ANCHOR POSTS DRIVEN EIGHTEEN (18) INCHES INTO THE GROUND. THE POSTS SHALL BE PLACED NO FURTHER THAN TEN (10) FEET APART.
 - 3.2.2. SUPER SILT FENCE
 - 3.3. TREE PROTECTION SIGNAGE: BILINGUAL SIGNS STATING "TREE PRESERVATION AREA - KEEP OUT" SHALL BE AFFIXED TO THE TREE PRESERVATION FENCE AT LEAST EVERY 50 FEET IMMEDIATELY FOLLOWING TREE PROTECTION FENCING INSTALLATION.
 - 3.4. CITY OF FAIRFAX SHALL BE NOTIFIED AND GIVEN THE OPPORTUNITY TO INSPECT THE SITE TO ASSURE THAT ALL TREE PROTECTION DEVICES HAVE BEEN CORRECTLY INSTALLED. IF IT IS DETERMINED THAT THE FENCING HAS NOT BEEN INSTALLED CORRECTLY, NO CONSTRUCTION ACTIVITIES SHALL OCCUR UNTIL THE FENCING IS INSTALLED CORRECTLY, AS DETERMINED BY CITY OF FAIRFAX.
 - 3.5. TREES BEING REMOVED SHALL NOT BE FELLED, PUSHED OR PULLED INTO TREE PRESERVATION AREAS. EQUIPMENT OPERATORS SHALL NOT CLEAN ANY PART OF THEIR EQUIPMENT BY SLAMMING AGAINST THE TRUNKS OF TREES TO BE RETAINED.
 - 3.6. TREES ON THE EDGE OF THE LIMITS OF CLEARING AND GRADING SHALL BE CUT DOWN BY HAND WITH A CHAIN SAW. REMAINING STUMPS SHALL EITHER BE LEFT IN PLACE OR GROUND DOWN WITH A STUMP GRINDER.
 - 3.7. TREES INDICATED WILL BE MULCHED WITH WOOD CHIPS GENERATED FROM ON SITE CLEARING OR TREE REMOVAL AND PRUNING OPERATIONS WHEN POSSIBLE. SHREDDED HARDWOOD MULCH FROM OFFSITE MAY BE UTILIZED IF APPROVED BY PROJECT ARBORIST. MULCH SHALL BE SPREAD IN A UNIFORM DEPTH OF THREE (3") INCHES BY HAND. MULCH SHALL BE PLACED IN AREAS AS INDICATED ON APPROVED PLANS.
4. CONSTRUCTION
 - 4.1. DURING CLEARING AND GRADING OPERATIONS AND THROUGHOUT CONSTRUCTION, NO ACTIVITY SHALL BE PERMITTED IN TREE SAVE AREAS WITHOUT AUTHORIZATION FROM OWNER, ARBORIST, OR CITY OF FAIRFAX. PRECLUDED ACTIVITIES INCLUDE:
 - 4.1.1. FELLING OF TREES INTO PRESERVATION AREAS OR OPERATION OF HEAVY MACHINERY IN SAVE AREAS TO FELL TREES ON THE PERIMETER OF PRESERVATION AREAS.
 - 4.1.2. OPERATION OF HEAVY EQUIPMENT OR MACHINERY OF ANY KIND IN PRESERVATION AREAS FOR ANY PURPOSE.
 - 4.1.3. PLACEMENT OF EXCESS SOIL, FILL, OR MATERIALS OF ANY KIND IN PRESERVATION AREAS.
 - 4.1.4. PLACEMENT OF ANY CONSTRUCTION MATERIALS OF ANY KIND IN PRESERVATION AREAS.
 - 4.1.5. PARKING OR STORING EQUIPMENT OR VEHICLES IN PRESERVATION AREAS.
 - 4.1.6. DUMPING CHEMICALS OR CONCRETE WASHOUT IN PRESERVATION AREAS.
 - 4.1.7. BURNING OF ANY MATERIAL OR DEBRIS IN PRESERVATION AREAS OR WITHIN 200 FEET OF PRESERVATION AREAS.
 - 4.1.8. TRENCHING, GRADING, EXCAVATING FOR ANY PURPOSE IN PRESERVATION AREAS.
 - 4.2. ALL EXISTING TRASH AND/OR DEBRIS ON SITE SHALL BE REMOVED AT THE TIME OF DISTURBANCE. INDIVIDUAL TREES AND FORESTED AREAS DESIGNATED TO BE PRESERVED SHALL BE PROTECTED AND MANAGED TO ENSURE TREE SURVIVAL DURING ALL PHASES OF DEMOLITION, CLEARING AND GRADING, AND CONSTRUCTION. IN ADDITION TO PROTECTING TREES, ALL UNDERSTORY PLANTS, LEAF LITTER AND SOIL CONDITIONS FOUND IN FORESTED AREAS DESIGNATED TO BE LEFT PRESERVED SHALL BE PROTECTED.
 - 4.3. TREES TO REMAIN LOCATED ALONG THE LIMITS OF CLEARING AND GRADING SHALL BE PRUNED DURING CLEARING OPERATIONS TO AVOID MECHANICAL DAMAGE. THIS SHALL BE ADMINSTRATED UNDER THE SUPERVISION OF AN ISA CERTIFIED ARBORIST.
 - 4.4. ANY DAMAGE INFLICTED TO THE ABOVE OR BELOW-GROUND PORTIONS OF THE TREES SHOWN TO BE PRESERVED SHALL BE REPAIRED IMMEDIATELY PER ISA STANDARDS.
 - 4.5. ALL PRUNING SHALL CONFORM TO THE LATEST EDITION OF ANSI A300 (PART 1) PRUNING STANDARDS. DISEASED LIMBS SHALL BE REMOVED OR TREATED AT THE DISCRETION OF THE ARBORIST. WHILE PRUNING, THE ARBORIST SHALL MAKE NOTE OF ANY CONDITIONS WHICH AFFECT THE HEALTH OR CONDITION OF THE TREE AND RECOMMEND CORRECTIVE TREATMENT FOR THESE CONDITIONS. VINE REMOVAL SHALL BE INCLUDED IN ALL PRUNING ACTIVITIES. UNDER NO CIRCUMSTANCES SHALL THE INTERIOR OF TREES BE STRIPPED OF FOLIAGE, SUCKERS, EPICORMIC BRANCHING, OR OTHER LIVE GROWTH. INTERIOR GROWTH MAY BE THINNED AS NECESSARY TO REMOVE BRANCHES DAMAGED DURING OPERATIONS. DEBRIS FROM PRUNING SHALL BE CHIPPED AND DEPOSITED INTO THE TREE SAVE AREA AND SPREAD BY HAND TO A UNIFORM THICKNESS OR BE REMOVED FROM SITE.



ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT CITY OF FAIRFAX STANDARDS AND SPECIFICATIONS

PLAN PREPARED BY LAURIE BETH DONNACHIE
ISA CERTIFIED ARBORIST NO. MA-5723A
SIGNATURE: *Laurie B. Donnachie* DATE: 2020-01-03

christopher consultants
9900 main st
suite 400
fairfax, va 22031
p 703.279.6820
engineering surveying land planning

COMMONWEALTH OF VIRGINIA
Laurie B. Donnachie
LAURIE B. DONNACHIE
Lic. No. 0406001880
2020-01-03
LANDSCAPE ARCHITECT

**NORTHFAX WEST
MASTER DEVELOPMENT PLAN**
CITY OF FAIRFAX, VIRGINIA

MARK	DATE	DESCRIPTION

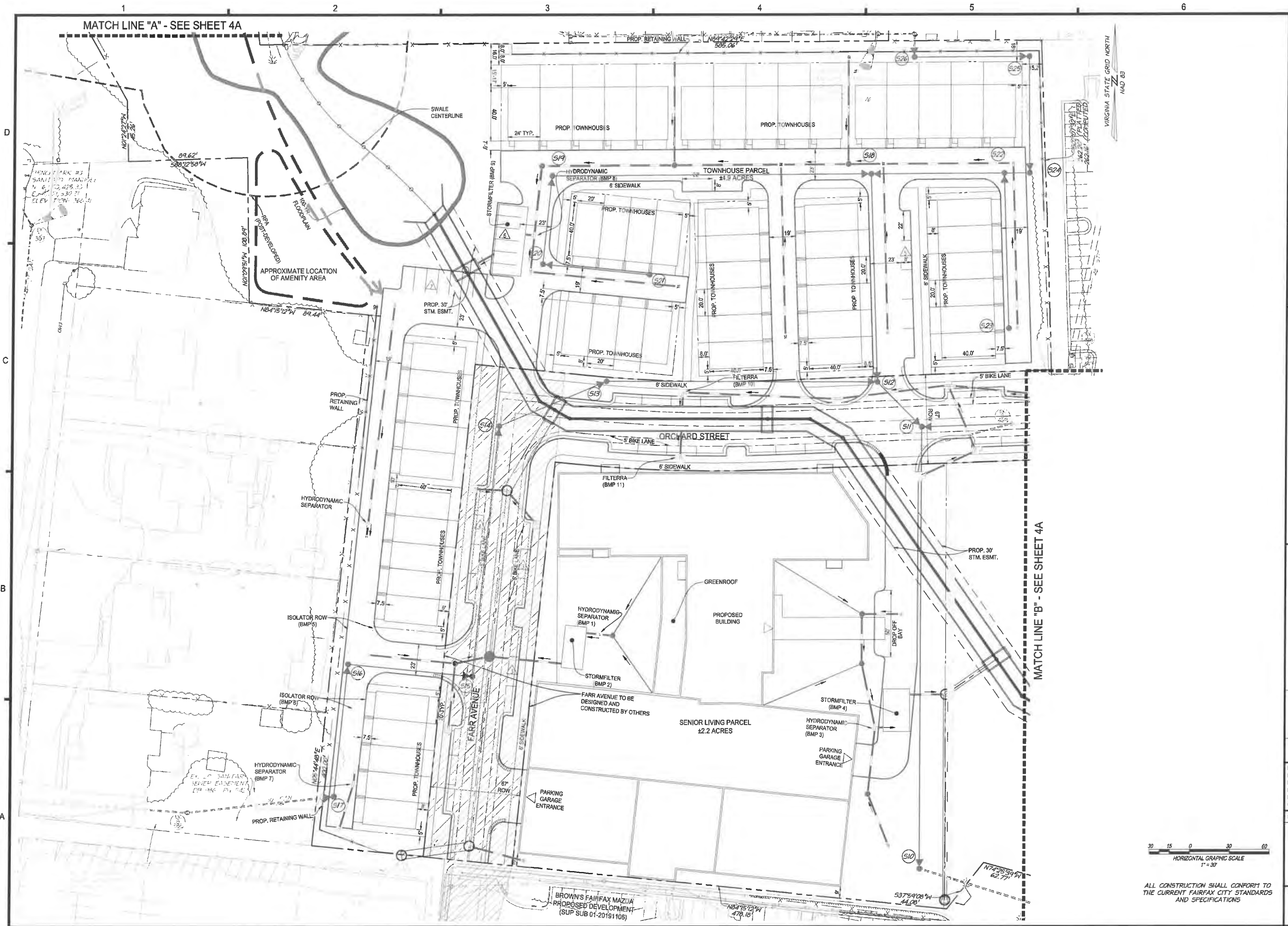
PROJECT No.: 13139.005.00
DRAWING No.: 109632
DATE: 11-21-2019
DESIGN: LBD
DRAWN: LBD
CHECKED: LBD

SHEET TITLE:

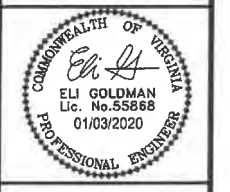
TREE MANAGEMENT NOTES & DETAILS

SHEET No. **3D**

SCALE: N/A



christopher consultants
 9900 main st
 suite 400
 fairfax va 22031
 engineering surveying land planning



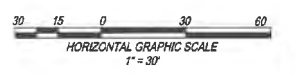
**NORTHFAX WEST
 MASTER DEVELOPMENT PLAN**
 CITY OF FAIRFAX, VIRGINIA

MARK	DATE	DESCRIPTION

PROJECT No.: 13139.005.00
 DRAWING No.: 109632
 DATE: 11-21-2019
 DESIGN: EG
 DRAWN: JS
 CHECKED: KWW

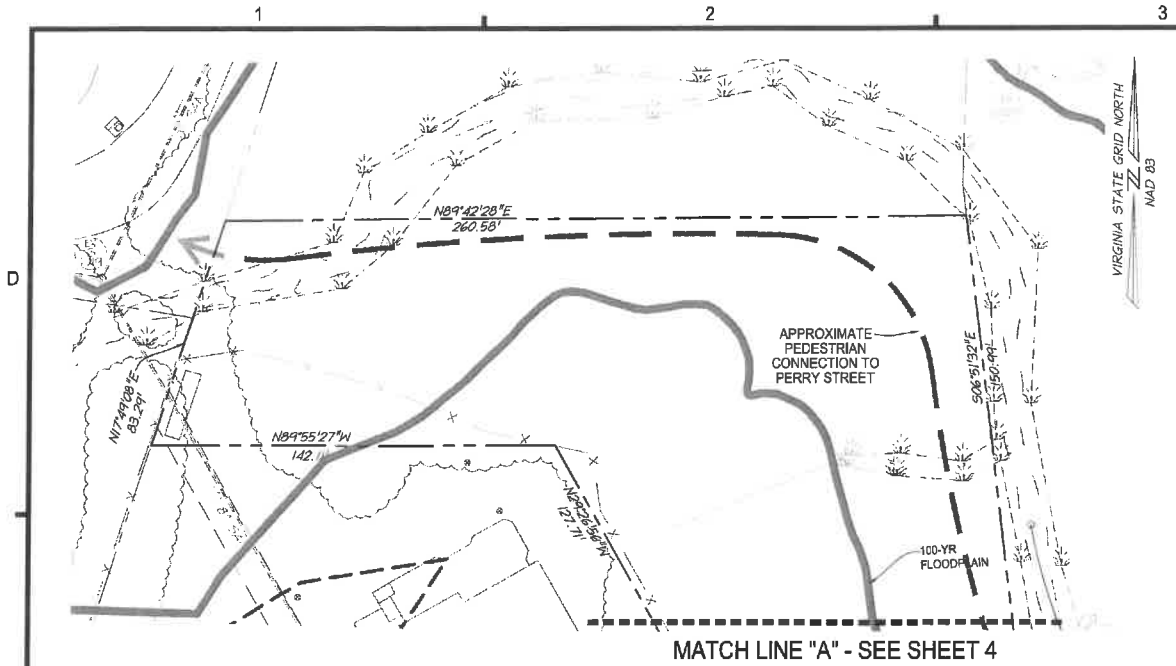
MASTER DEVELOPMENT PLAN

SHEET No. **4**



ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT FAIRFAX CITY STANDARDS AND SPECIFICATIONS

SCALE: 1"=30'



MATCH LINE "A" - SEE SHEET 4

PROPOSED TABULATIONS FOR DEVELOPMENT PROGRAM

SITE AREA
 REQUIRED: 2 ACRES (PD-M)
 PROVIDED: 10.65 AC (464,090 SF)
 TOWNHOUSE PARCEL = 4.93 AC (214,890 SF)
 SENIOR LIVING PARCEL = 2.23 AC (97,319 SF)
 FUTURE DEVELOPMENT PARCEL = 3.49 AC (151,884 SF)

NOTES:
 (1) RIGHT-OF-WAY OF ORCHARD STREET TO BE RE-ALIGNED.
 (2) RIGHT-OF-WAY TO BE DEDICATED FOR FARR AVENUE EXTENSION.
 (3) EXISTING SITE AREA IS 11.32 ACRES.

DENSITY
 PERMITTED: NO REQUIREMENT
 PROVIDED: TOWNHOUSE PARCEL = 56 TOWNHOUSES
 SENIOR LIVING PARCEL = 200 UNITS (284 BEDS)
 FUTURE DEVELOPMENT PARCEL = TO BE DETERMINED

BUILDING HEIGHT
 PERMITTED: NO REQUIREMENT
 PROVIDED: TOWNHOUSE PARCEL = 40' HIGH TO MID POINT OF ROOF
 SENIOR LIVING PARCEL = 80' HIGH TO MID POINT OF ROOF
 FUTURE DEVELOPMENT PARCEL = TO BE DETERMINED

BUILDING COVERAGE
 PERMITTED: 80% MAXIMUM
 PROVIDED: TOWNHOUSE PARCEL = 25%
 SENIOR LIVING PARCEL = 60%
 FUTURE DEVELOPMENT PARCEL = TO BE DETERMINED

SIDEWALK
 REQUIRED: 5'
 PROVIDED: 6' ALONG ORCHARD STREET & FARR AVENUE

OPEN SPACE
 REQUIRED: 20% (PD-M)
 PROVIDED: SEE SHEET 7 FOR CALCULATIONS

TREE CANOPY
 REQUIRED: 10% (PD-M)
 PROVIDED: SEE SHEET 8A FOR CALCULATIONS

OFF-STREET PARKING
 REQUIRED: NONE
 PROVIDED: SEE CHART BELOW

NOTE: 2 LOADING SPACES REQUIRED AND PROVIDED FOR THE SENIOR LIVING BUILDING.

PROPOSED PARKING TABULATION

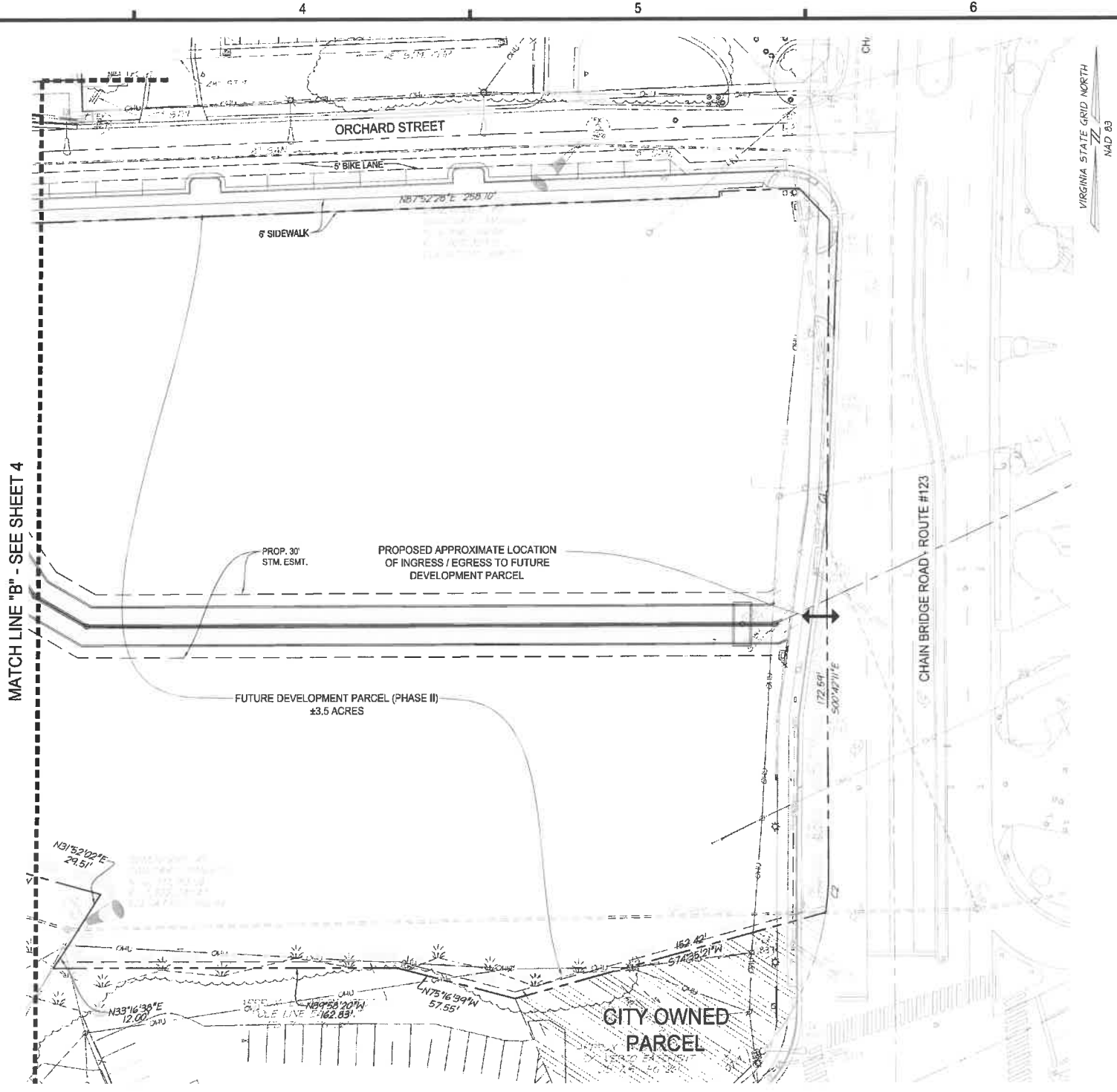
PROPOSED USE	REQUIRED PARKING SPACES	PARKING SPACES PROVIDED
TOWNHOUSES	56 UNITS 2.0 SPACES PER UNIT - 112 SPACES	112 GARAGE SPACES 20 SURFACE SPACES
SENIOR LIVING	114 UNITS 1.5 SPACES PER UNIT - 171 SPACES	120 GARAGE SPACES
ASSISTED LIVING / MEMORY CARE	96 BEDS 1 SPACE PER 4 BEDS - 24 SPACES	
TOTAL PARKING	283 SPACES	252 SPACES

NOTES
 (1) PARKING REQUIRED AND PROVIDED FOR THE FUTURE DEVELOPMENT PARCEL TO BE DETERMINED.
 (2) AN ADDITIONAL 40 STREET SPACES ARE PROVIDED IN THE PUBLIC ROW ALONG ORCHARD STREET AND FARR AVENUE.

FUTURE DEVELOPMENT PARCEL PERMITTED USES:
 SUBJECT TO APPROVAL OF AN AMENDED MASTER DEVELOPMENT PLAN, USES PERMITTED ON THE FUTURE DEVELOPMENT PARCEL SHALL INCLUDE ALL USES PERMITTED IN THE PD-M (PLANNED DEVELOPMENT MIXED USE) DISTRICT, AS MORE SPECIFICALLY DEFINED IN SECTION 3.8.4 OF THE ZONING ORDINANCE OF THE CITY OF FAIRFAX, EXCEPT FOR THE FOLLOWING PERMITTED USES, WHICH ARE SPECIFICALLY EXCLUDED:
 - CEMETERIES
 - DETENTION FACILITIES OR JAILS
 - ADULT USES
 - BUILDING SUPPLIES AND LUMBER SALES
 - FUEL STATIONS
 - VEHICLE REPAIRS
 - VEHICLE SALES AND LEASING
 - VEHICLE SERVICE

ADDITIONALLY, PERMITTED USES ON THE FUTURE DEVELOPMENT PARCEL SHALL INCLUDE ANY PERMITTED TEMPORARY USES, INCLUDING TEMPORARY VEHICLE STORAGE.

ADJACENT PROJECT NARRATIVE:
 AT THE TIME OF THIS REZONING APPLICATION THERE ARE TWO PROJECTS IN THE IMMEDIATE VICINITY THAT IMPACT THIS DEVELOPMENT AND REQUIRE COORDINATION. BROWN'S MAZDA, LOCATED SOUTH OF THE SUBJECT SITE HAS SUBMITTED A SPECIAL USE PERMIT TO ALLOW FOR A NEW DEALERSHIP WITH AN ABOVE GROUND PARKING DECK. THE CITY IS IN THE PROCESS OF DESIGNING A NEW PUBLIC ROAD (FARR AVENUE) THAT WILL CONNECT FAIRFAX BOULEVARD TO ORCHARD STREET. IN ORDER FOR BOTH OF THE PROJECTS TO MOVE FORWARD TO CONSTRUCTION, THE SUBJECT SITE WILL NEED TO BE REZONED AND RE-DEVELOPED.



MATCH LINE "B" - SEE SHEET 4

STORMWATER MANAGEMENT & BEST MANAGEMENT PRACTICE (SWM/BMP) NARRATIVE

SWM
 WATER QUANTITY FOR THIS PROJECT WILL BE PROVIDED IN ACCORDANCE WITH STATE CODE 5VAC25-870-66 WATER QUANTITY AND THE CITY OF FAIRFAX STORMWATER ORDINANCE.

THE WATER QUANTITY REQUIREMENTS WILL BE MET BY DISCHARGING STORMWATER LESS THAN 1% OF THE TOTAL DRAINAGE AREA TO A MANMADE SYSTEM. IF IT IS DETERMINED DURING THE FINAL SITE PLAN THAT DETENTION IS REQUIRED, THEN STORMWATER VAULTS OR ARCHED PIPES WILL BE USED TO MANAGE THE STORMWATER RUNOFF.

ADEQUATE OUTFALL
 THE EXISTING SITE MAINLY DISCHARGES RUNOFF TO A STREAM THAT BISECTS THE PROPERTY.

THE MAJORITY OF THE SITE WILL DRAIN TO THE PROPOSED TWIN BOX CULVERT THAT IS BEING INSTALLED TO CONTAIN THE STREAM AND PASS IT THROUGH THE SITE TO THE EAST AT THE SITE'S MAJOR OUTFALL.

BMP
 THIS PROJECT WILL USE THE VIRGINIA RUNOFF REDUCTION METHOD (VRRM) REDEVELOPMENT TO MEET THE STATE, PART II CRITERIA (5VAC25-870-65) AND CITY WATER QUALITY DESIGN CRITERIA. THE PROJECT SITE AREA FOR WATER QUALITY CALCULATIONS WILL INCLUDE ALL AREA WITHIN THE LIMITS OF CLEARING AND GRADING

(EXCLUDING THE RIGHT-OF-WAY OF FARR AVENUE TO BE DEVELOPED BY OTHERS), TO MEET WATER QUALITY DESIGN CRITERIA AND PHOSPHORUS REMOVAL, A COMBINATION OF PROPRIETARY BMP FACILITIES WILL BE USED. THESE FACILITIES MAY INCLUDE: HYDRODYNAMIC SEPARATORS, FILTERRAS AND/OR STORMFILTERS, ADDITIONAL PROPRIETARY AND NON-PROPRIETARY BMP FACILITIES MAY BE USED AS THE DESIGN OF THE SITE DEVELOPS FURTHER. PRELIMINARY LOCATIONS ARE SHOWN ON THE DEVELOPMENT PLAN.

NOTE:
 LOCATIONS AND SIZING OF SWMBMP FACILITIES SHOWN ARE BASED ON A PRELIMINARY STUDY TO ENSURE COMPLIANCE WITH STATE AND CITY REQUIREMENTS; THE LOCATION AND TYPE OF FACILITY IS SUBJECT TO CHANGE WITH FINAL DESIGN.



ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT CITY OF FAIRFAX STANDARDS AND SPECIFICATIONS

christopher consultants
 9900 main st suite 400 fairfax, va 22031
 933.273.6820
 engineering surveying land planning



NORTHFAX WEST MASTER DEVELOPMENT PLAN
 CITY OF FAIRFAX, VIRGINIA

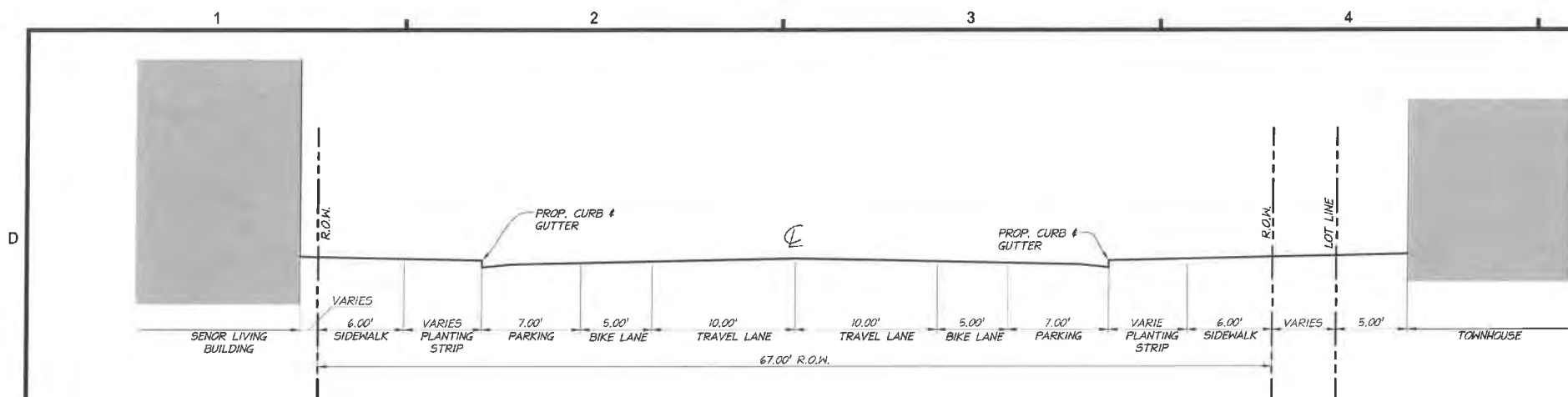
MARK	DATE	DESCRIPTION

PROJECT No.: 13139.005.00
 DRAWING No.: 109632
 DATE: 11-21-2019
 DESIGN: EG
 DRAWING: JS
 CHECKED: KMW

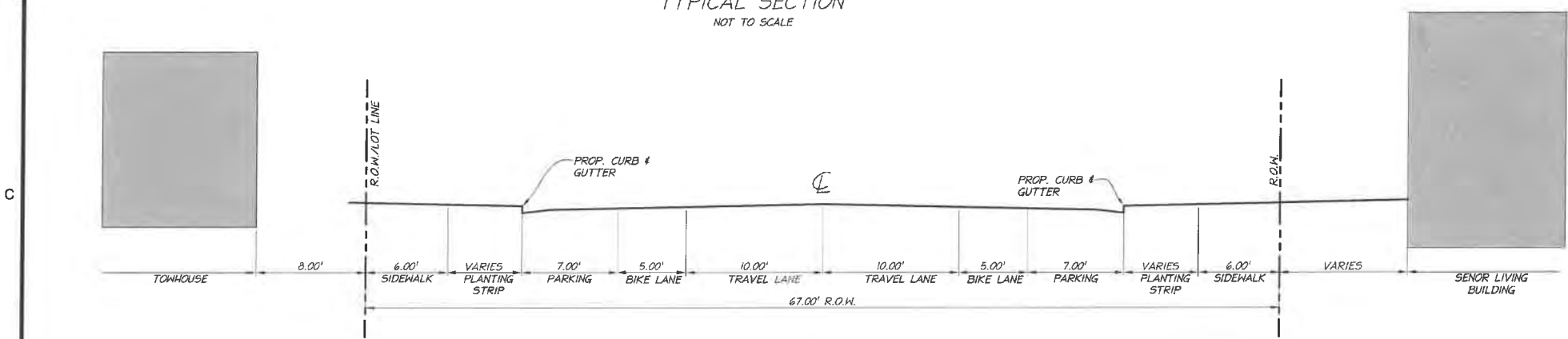
SHEET TITLE:
MASTER DEVELOPMENT PLAN

SHEET No.:
4A

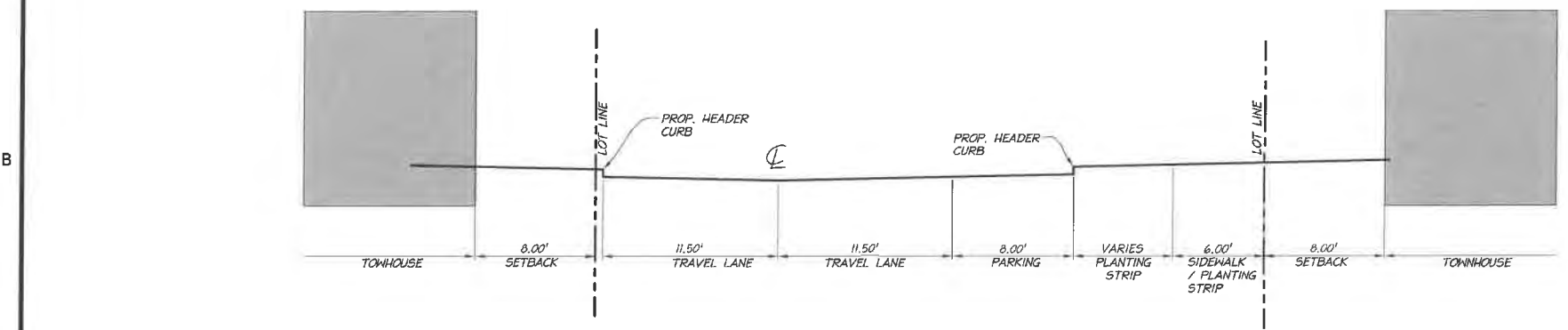
SCALE: 1"=30'



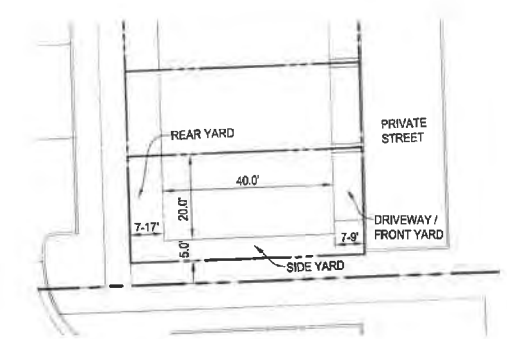
ORCHARD STREET
TYPICAL SECTION
NOT TO SCALE



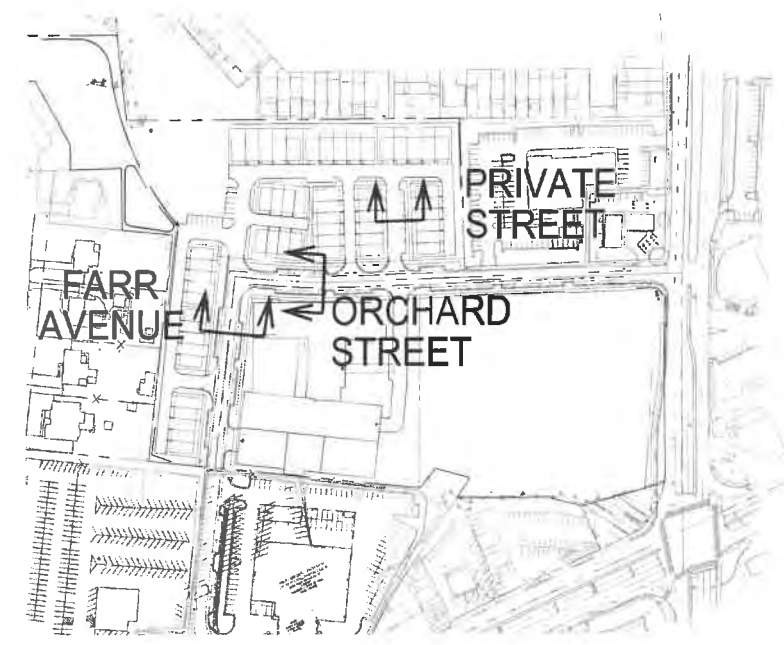
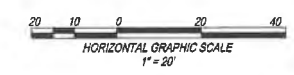
FARR AVENUE
TYPICAL SECTION
NOT TO SCALE



PRIVATE STREET
TYPICAL SECTION
NOT TO SCALE



TYPICAL TOWNHOUSE LOT DETAILS
SCALE: 1"=20'



KEY MAP
NOT TO SCALE

christopher consultants
9900 main st
suite 400
fairfax, va 22031
engineering surveying land planning

COMMONWEALTH OF VIRGINIA
ELI GOLDMAN
Lic. No. 55888
01/03/2020
PROFESSIONAL ENGINEER

NORTHFAX WEST
MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX, VIRGINIA

MARK	DATE	DESCRIPTION

PROJECT No.: 13139.005.00
DRAWING No.: 109632
DATE: 11-21-2019
DESIGN: ES
DRAWN: JS
CHECKED: KMW

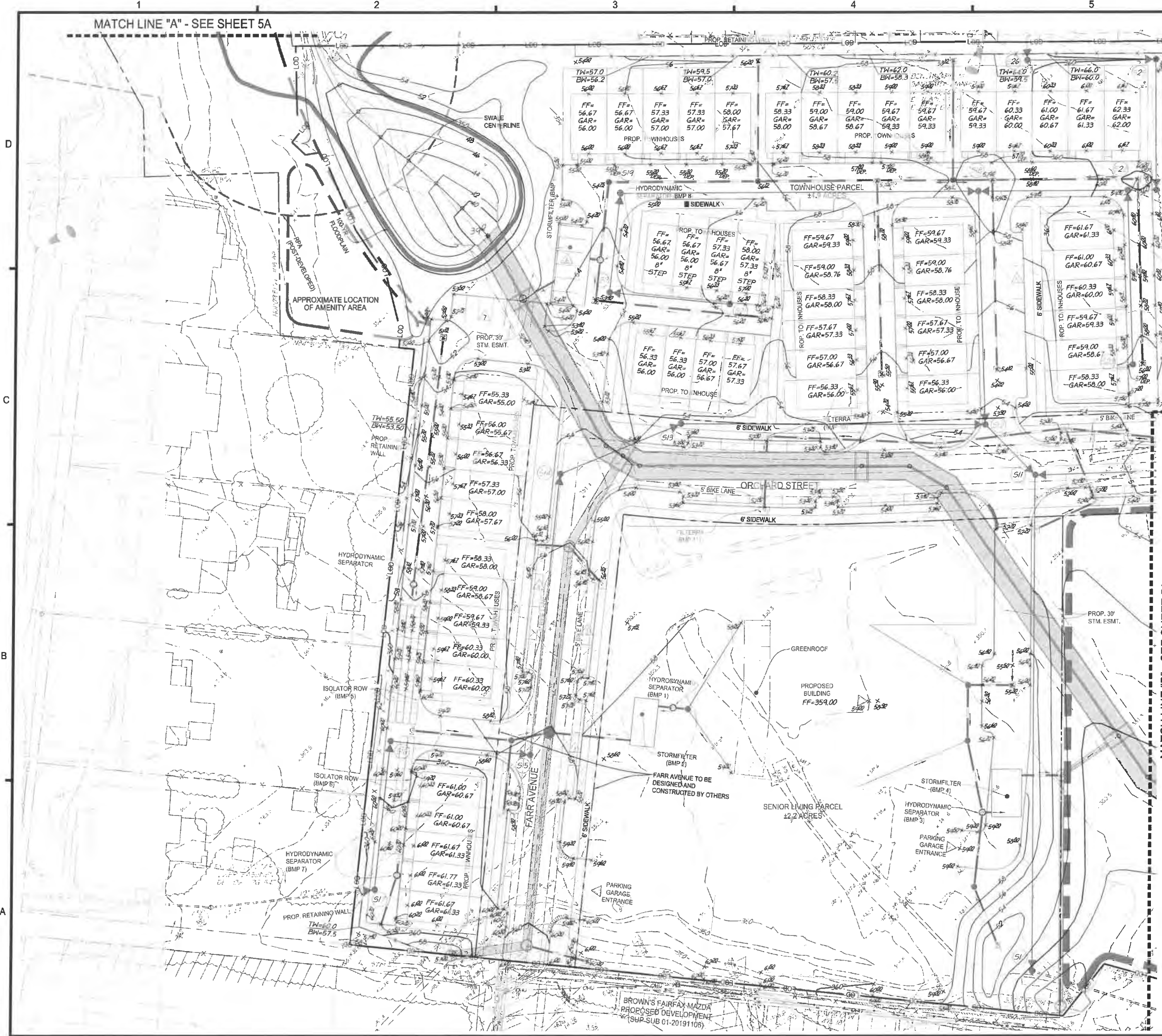
SHEET TITLE:
STREET SECTIONS
AND TYPICAL
TOWNHOUSE
YARDS

SHEET No.
4B

SCALE: SEE DWGS.

Vertical text on the left margin, likely a project or drawing reference number.

MATCH LINE "A" - SEE SHEET 5A



LEGEND

- EX. SPOT SHOT
- EX. INDEX CONTOUR (5')
- EX. INT. CONTOUR (1')
- PROP. SPOT SHOT
- PROP. INDEX CONTOUR (5')
- PROP. INT. CONTOUR (1')
- LIMITS OF DISTURBANCE

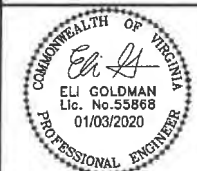
NOTE: THE GRADING FOR THE CONSTRUCTION OF THE TWIN BOX CULVERT EXTENDS INTO THE REDEFINED RPA AREA AND FOR THE CONSTRUCTION OF THE PEDESTRIAN TRAIL ARE EXEMPT PER SECTION 4.18.10 OF THE ZONING ORDINANCE.

MATCH LINE "B" - SEE SHEET 5A



ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT CITY OF FAIRFAX STANDARDS AND SPECIFICATIONS

christopher consultants
 9900 main st
 suite 400
 fairfax, va 22031
 p 703.273.8850
 engineering surveying land planning



**NORTHFAX WEST
 MASTER DEVELOPMENT PLAN**
 CITY OF FAIRFAX, VIRGINIA

MARK	DATE	DESCRIPTION

PROJECT No.: 13139.005.00
 DRAWING No.: 109932
 DATE: 11-21-2019
 DESIGN: EG
 DRAWN: JS
 CHECKED: KMW

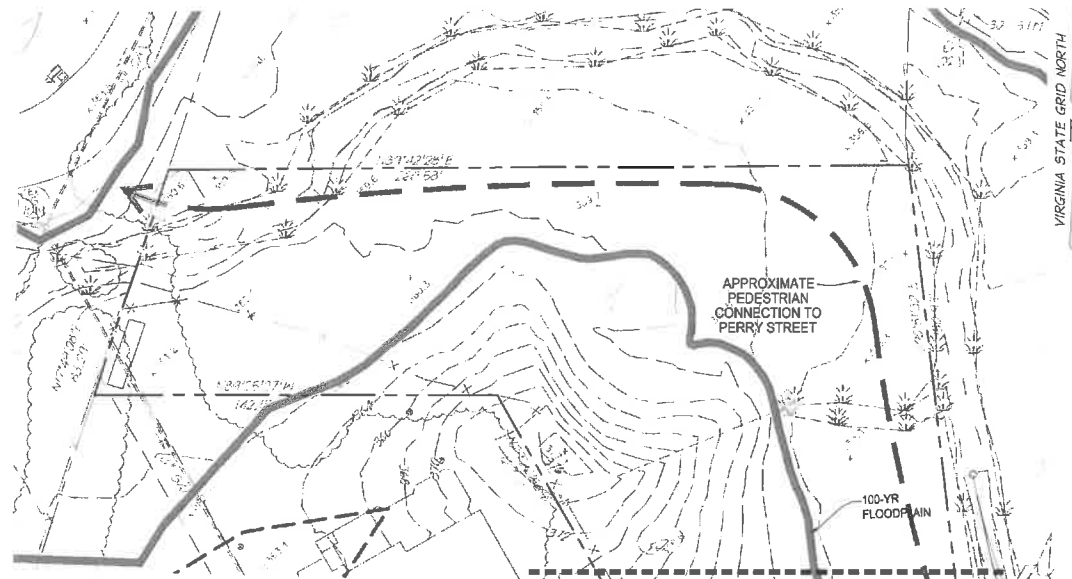
**PRELIMINARY
 GRADING PLAN**

SHEET No. **5**

SCALE: 1"=30'

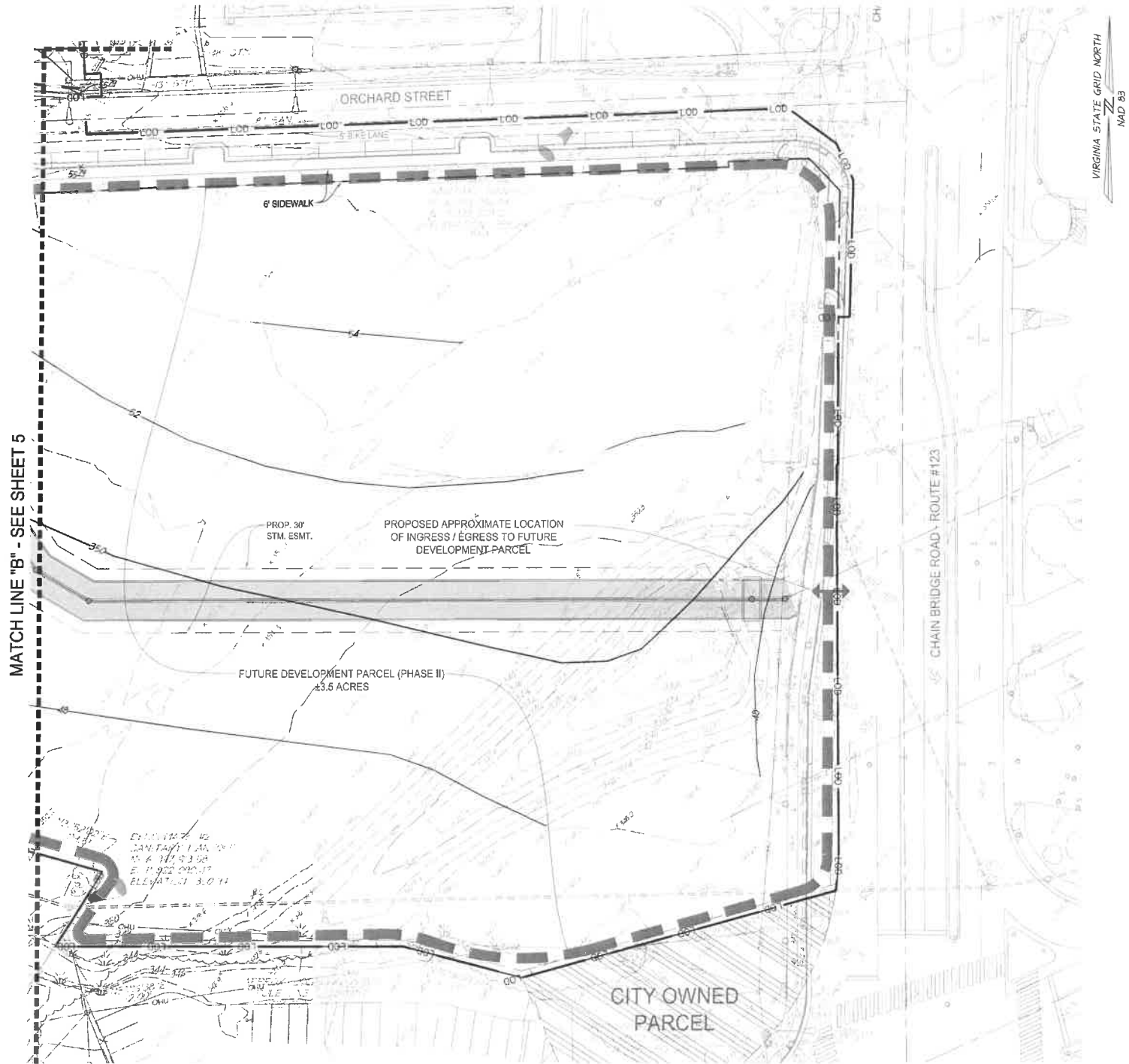
1 2 3 4 5 6

D
C
B
A



MATCH LINE "A" - SEE SHEET 5

INTERIM GRADING NARRATIVE:
 THE GRADING SHOWN ON THIS PLAN IS FINAL GRADING THAT WILL BE SET AT THE COMPLETION OF THE DEVELOPMENT. PENDING THE COMPLETION OF CONSTRUCTION OF BOTH THE BROWN'S MAZDA SITE LOCATED TO THE SOUTH AND THE CITY'S FARR AVENUE PROJECT. IF THE CONSTRUCTION OF EITHER OF THOSE PROJECTS ARE DELAYED, THE GRADING FOR THIS SITE WILL BE IMPACTED AND THUS REQUIRE INTERIM GRADING. AT THE TIME OF FINAL SITE PLAN FOR THE TOWNHOUSE PARCEL OR SENIOR LIVING PARCEL, OR FOR THE PUBLIC IMPROVEMENT PLAN (STORM CULVERT, UTILITIES AND ORCHARD STREET), THE GRADING MAY BE MODIFIED BASED ON FIELD CONDITIONS AND STILL MEET THE OVERALL INTENT OF THE GRADING THAT IS GENERALLY SHOWN ON THIS MDP.

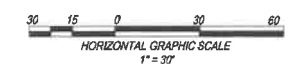


MATCH LINE "B" - SEE SHEET 5

NOTE: THE GRADING FOR THE CONSTRUCTION OF THE TWIN BOX CULVERT EXTENDS INTO THE REDEFINED RPA AREA AND FOR THE CONSTRUCTION OF THE PEDESTRIAN TRAIL ARE EXEMPT PER SECTION 4.18.10 OF THE ZONING ORDINANCE.

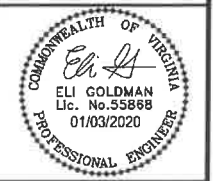
LEGEND

	EX. SPOT SHOT
	EX. INDEX CONTOUR (5')
	EX. INT. CONTOUR (1')
	PROP. SPOT SHOT
	PROP. INDEX CONTOUR (5')
	PROP. INT. CONTOUR (1')
	LIMITS OF DISTURBANCE



ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT CITY OF FAIRFAX STANDARDS AND SPECIFICATIONS

christopher consultants
 9900 main st
 suite 400
 fairfax, va 22031
 p 703.273.6820
 engineering surveying land planning



**NORTHFAX WEST
 MASTER DEVELOPMENT PLAN**
 CITY OF FAIRFAX, VIRGINIA

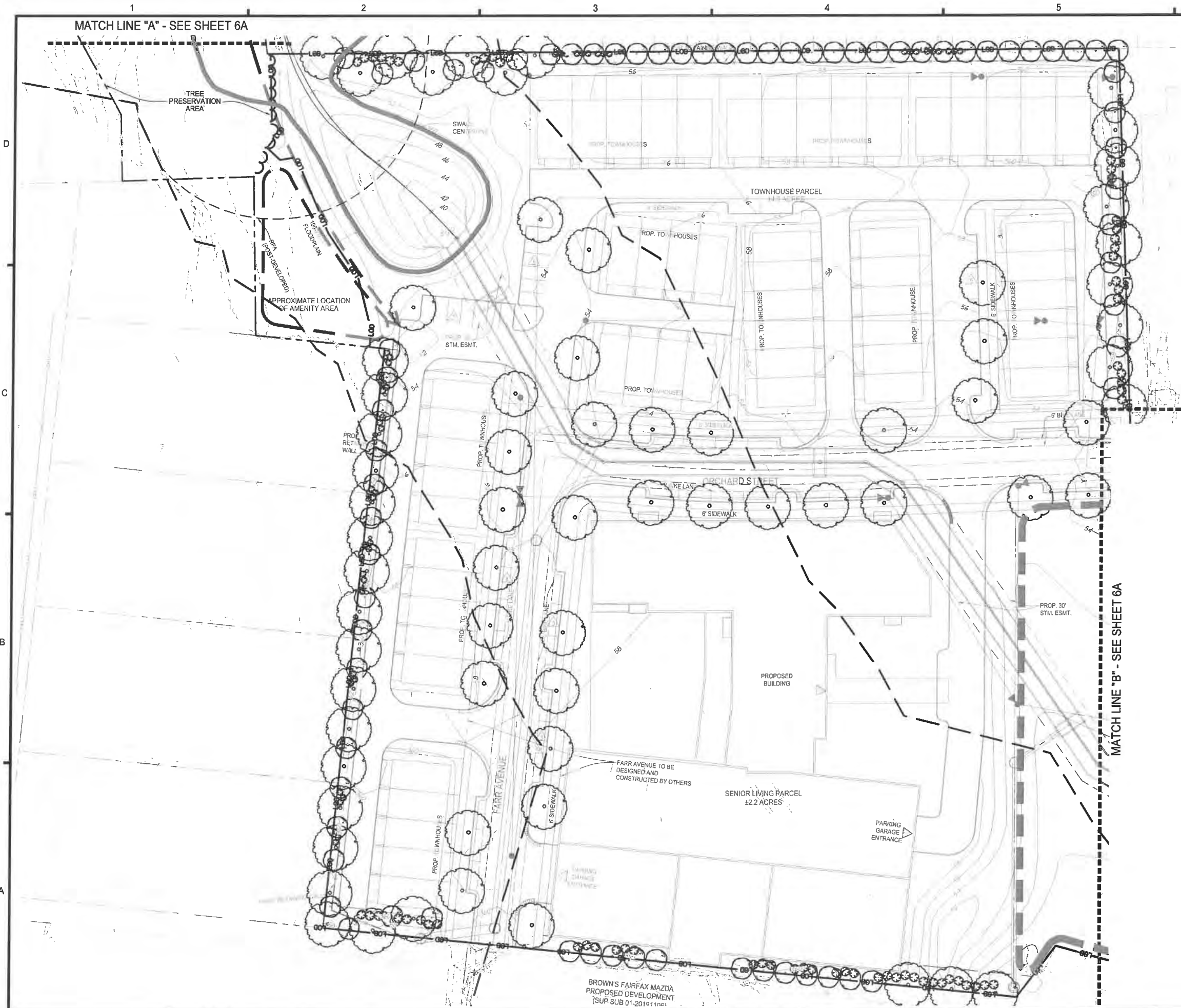
MARK	DATE	DESCRIPTION

PROJECT No.: 13139.005.00
 DRAWING No.: 106932
 DATE: 11-21-2019
 DESIGN: EG
 DRAWN: JS
 CHECKED: KMW

**PRELIMINARY
 GRADING PLAN**

SHEET No.
5A

SCALE: 1"=30'



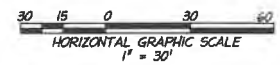
MATCH LINE "A" - SEE SHEET 6A

MATCH LINE "B" - SEE SHEET 6A

NOTES
 1. PROPOSED VEGETATION TO BE A MIXTURE OF DECIDUOUS AND EVERGREEN.

LEGEND

- LIMITS OF DISTURBANCE
- PROPOSED VEGETATION LINE
- CANOPY TREE
- UNDERSTORY TREE
- SHRUB



ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT CITY OF FAIRFAX STANDARDS AND SPECIFICATIONS

christopher consultants
 9900 main st
 suite 400
 fairfax, va 22031
 p 703.273.6820



engineering surveying land planning



**NORTHFAX WEST
 MASTER DEVELOPMENT PLAN**
 CITY OF FAIRFAX, VIRGINIA

MARK	DATE	DESCRIPTION

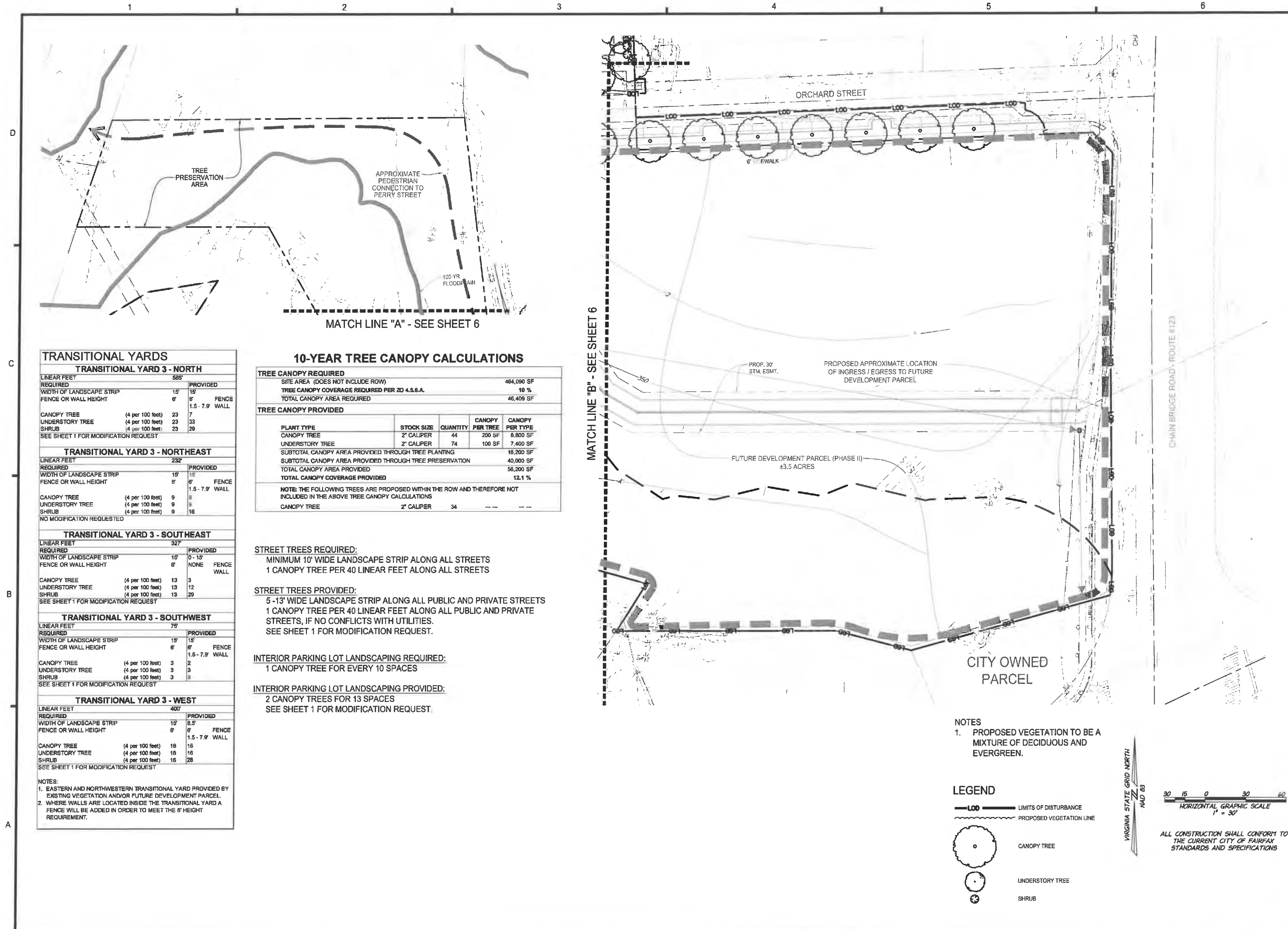
PROJECT No.: 13139.005.00
 DRAWING No.: 109632
 DATE: 11-21-2019
 DESIGN: LBD
 DRAWN: LBD
 CHECKED: LBD

SHEET TITLE:
**CONCEPTUAL
 LANDSCAPE PLAN**

SHEET No.
6

SCALE: 1"=30'

BROWN'S FAIRFAX MAZDA
 PROPOSED DEVELOPMENT
 (SUP SUB 01-2019) (11/2019)



TRANSITIONAL YARDS

TRANSITIONAL YARD 3 - NORTH			
LINEAR FEET REQUIRED	585'	PROVIDED	
WIDTH OF LANDSCAPE STRIP	15'	15'	
FENCE OR WALL HEIGHT	6'	6'	FENCE
		1.5 - 7.9'	WALL
CANOPY TREE (4 per 100 feet)	23	7	
UNDERSTORY TREE (4 per 100 feet)	23	33	
SHRUB (4 per 100 feet)	23	29	
SEE SHEET 1 FOR MODIFICATION REQUEST			
TRANSITIONAL YARD 3 - NORTHEAST			
LINEAR FEET REQUIRED	232'	PROVIDED	
WIDTH OF LANDSCAPE STRIP	15'	15'	
FENCE OR WALL HEIGHT	6'	6'	FENCE
		1.5 - 7.9'	WALL
CANOPY TREE (4 per 100 feet)	9	9	
UNDERSTORY TREE (4 per 100 feet)	9	9	
SHRUB (4 per 100 feet)	9	18	
NO MODIFICATION REQUESTED			
TRANSITIONAL YARD 3 - SOUTHEAST			
LINEAR FEET REQUIRED	327'	PROVIDED	
WIDTH OF LANDSCAPE STRIP	15'	0 - 15'	
FENCE OR WALL HEIGHT	6'	NONE	FENCE
			WALL
CANOPY TREE (4 per 100 feet)	13	3	
UNDERSTORY TREE (4 per 100 feet)	13	12	
SHRUB (4 per 100 feet)	13	29	
SEE SHEET 1 FOR MODIFICATION REQUEST			
TRANSITIONAL YARD 3 - SOUTHWEST			
LINEAR FEET REQUIRED	75'	PROVIDED	
WIDTH OF LANDSCAPE STRIP	15'	15'	
FENCE OR WALL HEIGHT	6'	6'	FENCE
		1.5 - 7.9'	WALL
CANOPY TREE (4 per 100 feet)	3	2	
UNDERSTORY TREE (4 per 100 feet)	3	3	
SHRUB (4 per 100 feet)	3	9	
SEE SHEET 1 FOR MODIFICATION REQUEST			
TRANSITIONAL YARD 3 - WEST			
LINEAR FEET REQUIRED	400'	PROVIDED	
WIDTH OF LANDSCAPE STRIP	15'	8.5'	
FENCE OR WALL HEIGHT	6'	6'	FENCE
		1.5 - 7.9'	WALL
CANOPY TREE (4 per 100 feet)	16	16	
UNDERSTORY TREE (4 per 100 feet)	16	16	
SHRUB (4 per 100 feet)	16	28	
SEE SHEET 1 FOR MODIFICATION REQUEST			

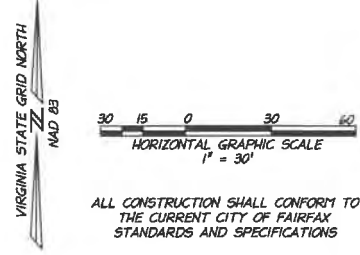
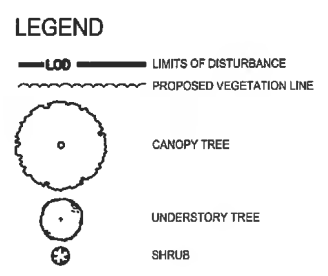
NOTES:
 1. EASTERN AND NORTHWESTERN TRANSITIONAL YARD PROVIDED BY EXISTING VEGETATION AND/OR FUTURE DEVELOPMENT PARCEL
 2. WHERE WALLS ARE LOCATED INSIDE THE TRANSITIONAL YARD A FENCE WILL BE ADDED IN ORDER TO MEET THE 6' HEIGHT REQUIREMENT.

10-YEAR TREE CANOPY CALCULATIONS

TREE CANOPY REQUIRED			
SITE AREA (DOES NOT INCLUDE ROW)			484,090 SF
TREE CANOPY COVERAGE REQUIRED PER ZD 4.5.6.A.			10 %
TOTAL CANOPY AREA REQUIRED			46,409 SF
TREE CANOPY PROVIDED			
PLANT TYPE	STOCK SIZE	QUANTITY	CANOPY PER TYPE
CANOPY TREE	2" CALIPER	44	200 SF
UNDERSTORY TREE	2" CALIPER	74	100 SF
			7,400 SF
SUBTOTAL CANOPY AREA PROVIDED THROUGH TREE PLANTING			
			18,200 SF
SUBTOTAL CANOPY AREA PROVIDED THROUGH TREE PRESERVATION			
			40,000 SF
TOTAL CANOPY AREA PROVIDED			
			58,200 SF
TOTAL CANOPY COVERAGE PROVIDED			
			12.1 %
NOTE: THE FOLLOWING TREES ARE PROPOSED WITHIN THE ROW AND THEREFORE NOT INCLUDED IN THE ABOVE TREE CANOPY CALCULATIONS			
CANOPY TREE	2" CALIPER	34	

- STREET TREES REQUIRED:**
 MINIMUM 10' WIDE LANDSCAPE STRIP ALONG ALL STREETS
 1 CANOPY TREE PER 40 LINEAR FEET ALONG ALL STREETS
- STREET TREES PROVIDED:**
 5-13' WIDE LANDSCAPE STRIP ALONG ALL PUBLIC AND PRIVATE STREETS
 1 CANOPY TREE PER 40 LINEAR FEET ALONG ALL PUBLIC AND PRIVATE STREETS, IF NO CONFLICTS WITH UTILITIES.
 SEE SHEET 1 FOR MODIFICATION REQUEST.
- INTERIOR PARKING LOT LANDSCAPING REQUIRED:**
 1 CANOPY TREE FOR EVERY 10 SPACES
- INTERIOR PARKING LOT LANDSCAPING PROVIDED:**
 2 CANOPY TREES FOR 13 SPACES
 SEE SHEET 1 FOR MODIFICATION REQUEST.

NOTES
 1. PROPOSED VEGETATION TO BE A MIXTURE OF DECIDUOUS AND EVERGREEN.



christopher consultants
 9900 main st
 suite 400
 fairfax, va 22031
 p 703.273.6820
 engineering surveying land planning

COMMONWEALTH OF VIRGINIA
Laurie B. Donachie
 LAURIE B. DONACHIE
 Lic. No. 0406001880
 2020-01-03
 LANDSCAPE ARCHITECT

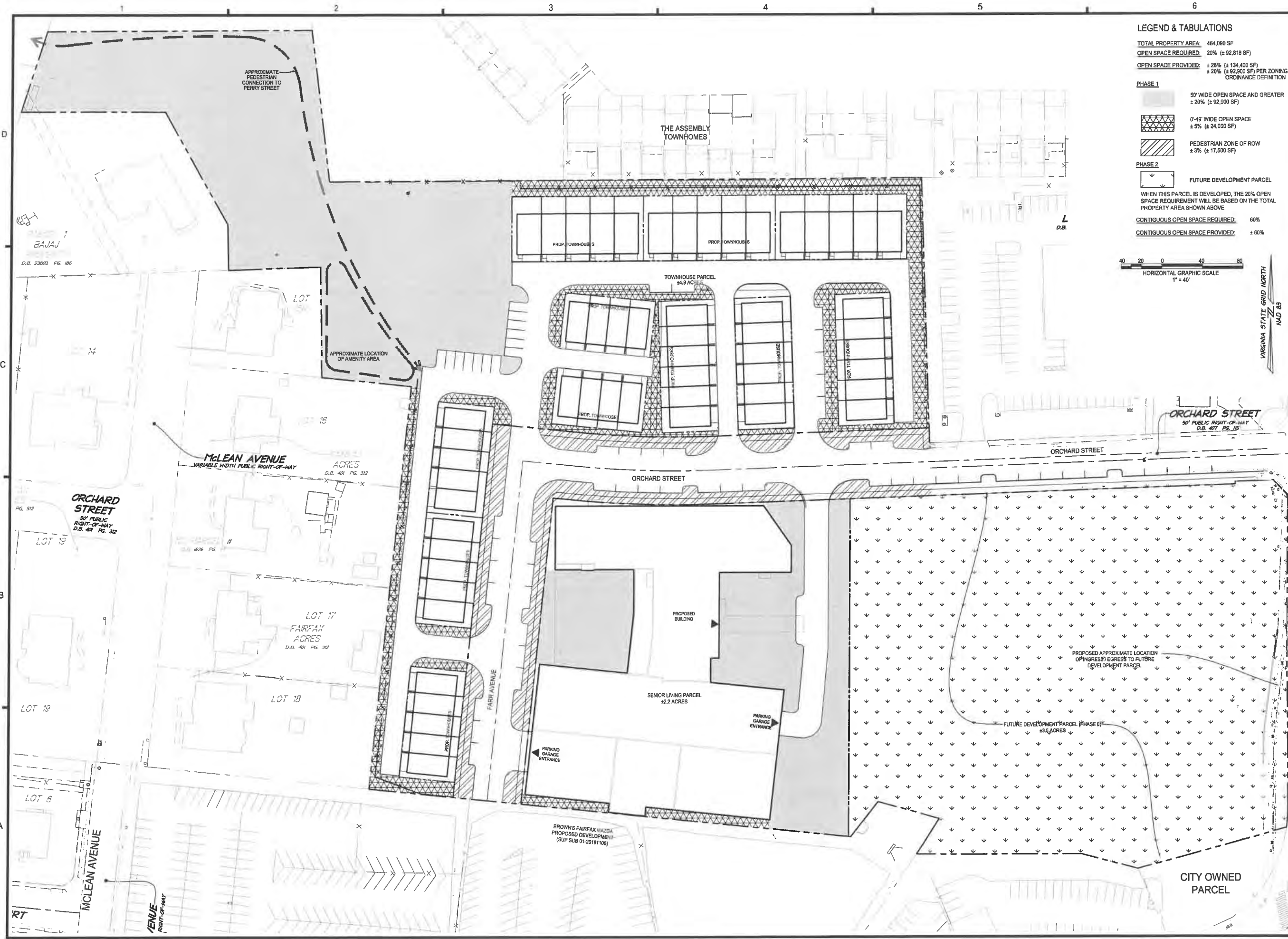
**NORTHFAX WEST
 MASTER DEVELOPMENT PLAN**
 CITY OF FAIRFAX, VIRGINIA

MARK	DATE	DESCRIPTION

PROJECT No.: 13139.005.00
 DRAWING No.: 109632
 DATE: 11-21-2018
 DESIGN: LBD
 DRAWN: LBD
 CHECKED: LBD

SHEET TITLE:
CONCEPTUAL LANDSCAPE PLAN

SHEET No.
6A



LEGEND & TABULATIONS

TOTAL PROPERTY AREA: 464,090 SF
 OPEN SPACE REQUIRED: 20% (± 92,818 SF)
 OPEN SPACE PROVIDED: ± 28% (± 134,400 SF)
 ± 20% (± 92,300 SF) PER ZONING ORDINANCE DEFINITION

PHASE 1

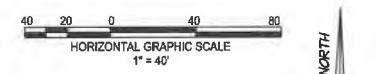
- 50' WIDE OPEN SPACE AND GREATER ± 20% (± 92,500 SF)
- 0'-4' WIDE OPEN SPACE ± 5% (± 24,000 SF)
- PEDESTRIAN ZONE OF ROW ± 3% (± 17,500 SF)

PHASE 2

- FUTURE DEVELOPMENT PARCEL

WHEN THIS PARCEL IS DEVELOPED, THE 20% OPEN SPACE REQUIREMENT WILL BE BASED ON THE TOTAL PROPERTY AREA SHOWN ABOVE

CONTIGUOUS OPEN SPACE REQUIRED: 60%
 CONTIGUOUS OPEN SPACE PROVIDED: ± 60%



VIRGINIA STATE GRID NORTH
 NAD 83

christopher consultants
 9900 main st
 suite 400
 fairfax, va 22031
 p 703.273.6820
 engineering surveying land planning

COMMONWEALTH OF VIRGINIA
Laurie B. Donkache
 LAURIE B. DONKACHE
 Lic. No. 0406001880
 2020-01-03
 LANDSCAPE ARCHITECT

**NORTHFAX WEST
 MASTER DEVELOPMENT PLAN**
 CITY OF FAIRFAX, VIRGINIA

MARK	DATE	DESCRIPTION

PROJECT No.: 13139.005.00
 DRAWING No.: 109632
 DATE: 11-21-2019
 DESIGN: LBD
 DRAWN: AK
 CHECKED: LBD

SHEET TITLE:

OPEN SPACE PLAN

SHEET No.
7

SCALE: 1"=40'

OFFSITE SANITARY FLOW ESTIMATES:

AREA #1
EXISTING DEVELOPMENT ESTIMATES:
RESIDENTIAL= 162 DWELLING UNITS

FLOW ESTIMATES:
162 UNITS x 350 GPD/UNIT = 56,700 GPD

TOTAL FLOW = 56,700 GPD

TOTAL PEAK FLOW = 226,800 GPD = 0.23 MGD

AREA #2
EXISTING DEVELOPMENT ESTIMATES:
HOTEL= 152 ROOMS

FLOW ESTIMATES:
152 UNITS x 130 GPD/UNIT = 19,760 GPD

TOTAL FLOW = 19,760 GPD

TOTAL PEAK FLOW = 79,040 GPD = 0.08 MGD

AREA #3
EXISTING DEVELOPMENT ESTIMATES:
RESIDENTIAL= 53 DWELLING UNITS

FLOW ESTIMATES:
53 UNITS x 350 GPD/UNIT = 18,550 GPD

TOTAL FLOW = 18,550 GPD

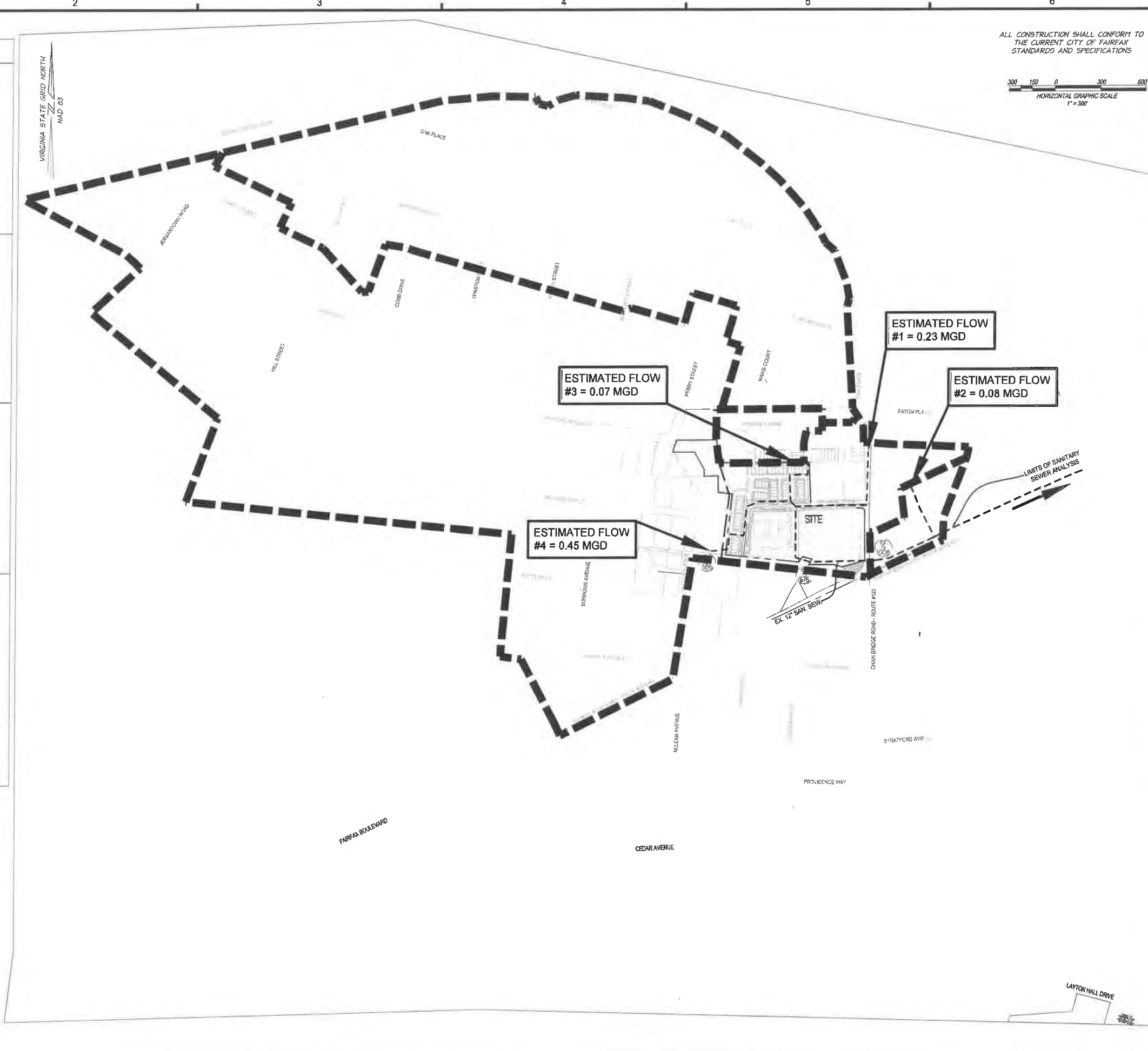
TOTAL PEAK FLOW = 74,200 GPD = 0.07 MGD

AREA #4
EXISTING DEVELOPMENT ESTIMATES:
RESIDENTIAL= 256 DWELLING UNITS
OFFICE/RETAIL = 113,830 SF

FLOW ESTIMATES:
256 UNITS x 350 GPD/UNIT = 89,600 GPD
113,830 SF OFFICE/RETAIL x 200 GPD/1000 SF =
22,766 GPD

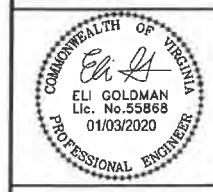
TOTAL FLOW = 112,366 GPD

TOTAL PEAK FLOW = 449,464 GPD = 0.45 MGD



ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT CITY OF FAIRFAX STANDARDS AND SPECIFICATIONS

300 150 0 300 600
HORIZONTAL GRAPHIC SCALE
1" = 300'



**NORTHFAX WEST
MASTER DEVELOPMENT PLAN**
CITY OF FAIRFAX, VIRGINIA

MARK	DATE	DESCRIPTION

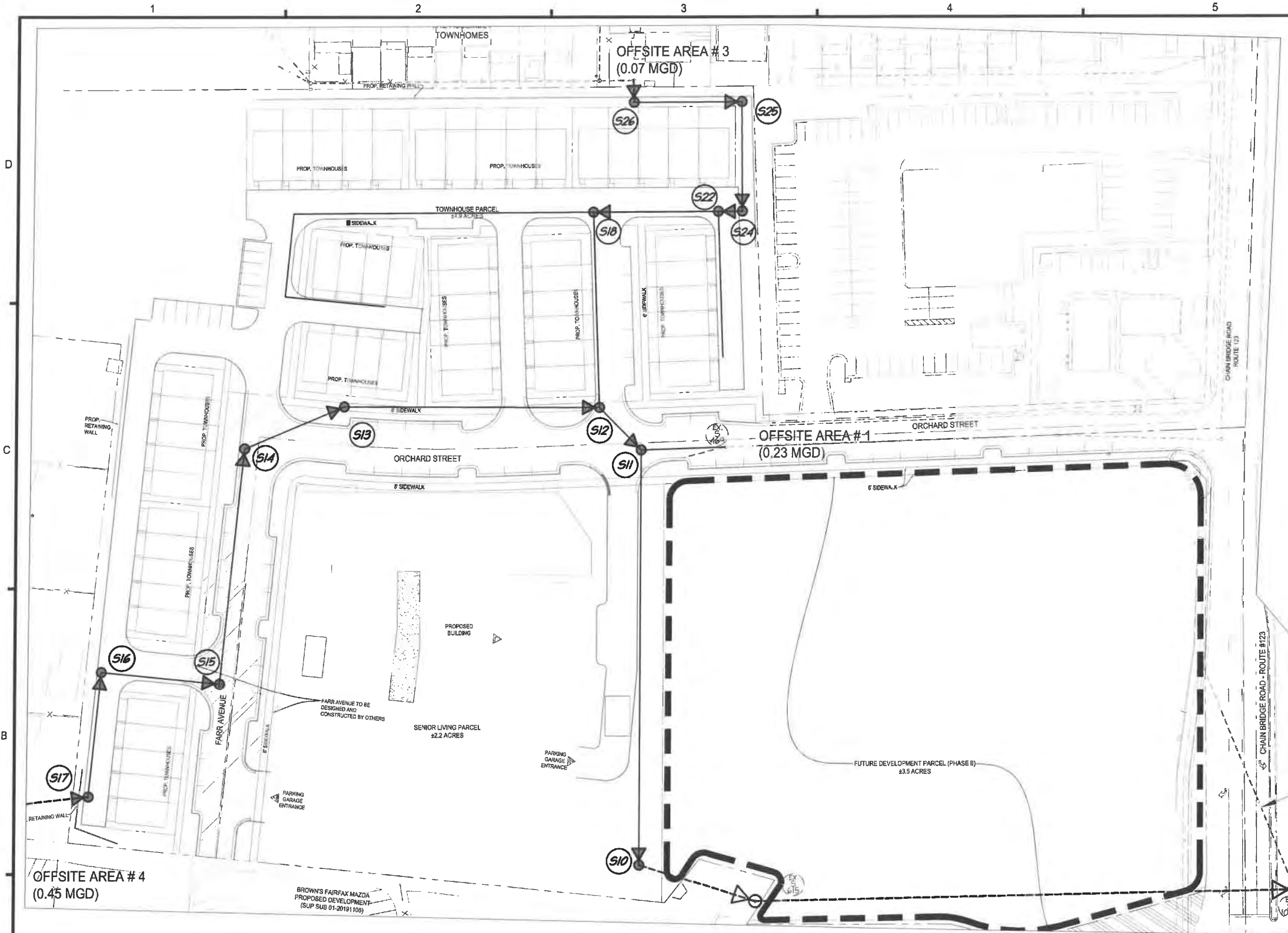
PROJECT No.: 13139.005.00
DRAWING No.: 109632
DATE: 11-21-2019
DESIGN: EG
DRAWN: JS
CHECKED: KMW

SHEET TITLE:

**SANITARY SEWER
OFF-SITE MAP**

SHEET No. **8**

- NOTES:
- SEE SHEET 9 FOR SANITARY SEWER ANALYSIS.
 - SEE THE NARRATIVE TITLED "ANALYSIS OF EXISTING 12" SEWER" NARRATIVE ON SHEET 9 FOR FLOW ASSUMPTIONS.
 - A PEAK FACTOR OF 4.0 WAS USED FOR ALL OFFSITE SANITARY FLOWS.



ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT CITY OF FAIRFAX STANDARDS AND SPECIFICATIONS

HORIZONTAL GRAPHIC SCALE
1" = 40'

SANITARY SEWER ANALYSIS

THE PURPOSE OF THIS ANALYSIS IS TO DEMONSTRATE THE CAPACITY AND HYDRAULIC ADEQUACY OF THE DOWN STREAM SANITARY SEWER MAIN.

EXISTING CONDITIONS:
CURRENTLY, THE EXISTING SITE CONSISTS OF TWO (2) 1-STORY BRICK & FRAME BUILDINGS, ONE (1) 4-STORY OFFICE BUILDING, AND ONE GASOLINE STATION WITH CONVENIENCE STORE. THE TWO (2) 1-STORY BRICK & FRAME BUILDINGS CONNECT TO EXISTING SANITARY LINE AT ORCHARD STREET. WHILE THE OFFICE BUILDING AND GASOLINE STORE CONNECT TO EXISTING SANITARY MAIN AT CHAIN BRIDGE ROAD AND ENTER INTO ORCHARD STREET (INTO THE PROJECT SITE). THE EXISTING SANITARY SEWER CONTINUE TOWARDS THE SOUTH INTO EXISTING MANHOLE S615 AND RUNS ACROSS THE CHAIN BRIDGE ROAD TO A 12-INCH SEWER MAIN INTO EXISTING MANHOLE S1008.

THE UPSTREAM FOR THIS SEWER-SHED IS SHOWN ON SHEET 8, DESIGNATED AS ESTIMATED FLOW #1, #3 AND #4.

PROPOSED CONDITIONS:
THE ON-SITE LATERALS WILL BE DEMOLISHED TO MAKE ROOM FOR THE NEW BUILDING. NEW LATERALS AND SANITARY MAIN WILL BE CONSTRUCTED. EXISTING SANITARY MAIN FROM THE WEST WILL BE REROUTED TO EX. S469. ALSO THE EXISTING SANITARY LINE FROM THE NORTH SIDE WILL BE REROUTED TO CONNECT TO THE PROPOSED MANHOLE S22.

CAPACITY AND HYDRAULIC ANALYSIS:
THE SANITARY SEWER WAS ANALYZED FROM THE ON-SITE 10-INCH AND 12-INCH SEWER TO EXISTING MANHOLE S469 AND THEN TO THE OUTFALL TO EXISTING MANHOLE S-S1.

THE VOLUME OF FLOW USED IN THIS ANALYSIS HAS BEEN COMPUTED IN ACCORDANCE WITH STATE CODE 9VAC25-790-480 AND 9VAC25-790-310. SEE COMPUTATIONS ON THIS SHEET.

CONCLUSION:
IT IS OUR CONCLUSION THAT THE PROPOSED ON-SITE 10-INCH AND 12-INCH SEWER AND EXISTING DOWNSTREAM 12-INCH SEWER HAS CAPACITY AND HYDRAULIC ADEQUACY WITH THE ADDED REDEVELOPMENT FLOWS.

A SEPARATE SANITARY SEWER ANALYSIS WILL BE COMPLETED FOR THE FUTURE DEVELOPMENT PARCEL ONCE THE PROGRAM IS KNOWN.

LEGEND

- PROPOSED SANITARY MANHOLE AND FLOW DIRECTION
- PROPOSED SANITARY SEWER
- PROPOSED SANITARY STRUCTURE NUMBER
- EXISTING SANITARY MANHOLE AND FLOW DIRECTION
- EX. SANITARY SEWER
- EX. SANITARY STRUCTURE NUMBER

SANITARY SEWER IS CURRENTLY FLOWING EMPTY AND MAY BE USED FOR THE FUTURE DEVELOPMENT PARCEL

CONTRIBUTING SEWAGE FLOW ESTIMATE:

Discharge Facility	No. of Units	No. of People	No. of Dwellings	Average Flow for Dwellings (100 gpd/person)	Average Flow per Bed (200 gpd/bed)	Ultimate Floor Space	Average Flow per 1000 sq ft (250 gpd/1,000sf)	Total Incremental Flow (gpd)	Total Cumulative Flow (gpd)	Sanitary From	Sanitary To
Townhouses	5	5	25	2500			2,500	2,500	S17	S16	
Townhouses	8	5	40	4000			4,000	6,500	S15	S14	
Townhouses	3	5	15	1500			1,500	8,000	S14	S13	
Townhouses	3	5	15	1500			1,500	1,500	S13	S12	
Townhouses	37	5	185	18500			18,500	18,500	S12	S11	
Senior Living					200	40,000		40,200	S11	S10	
Future Development							114,000	28500	114,000	EX.S615	EX.S1008

SANITARY COMPUTATION:

FROM	TO	UPPER INV	LOWER INV	L (FT)	SLOPE (%)	DIA (IN)	MATERIAL	N	CAPACITY (cfs)	CAPACITY (MGD)	DESIGN FLOW (cfs)	DESIGN FLOW (MGD)	V (ft/s)	Assumptions	Inc (MGD)	Peak Flow Factor	Design Inc (MGD)
EX. S385	S17	351.91	350.95	110.02	0.87	10	PVC	0.011	2.39	1.54	0.70	0.450	3.4	PEAK FLOW FROM OFFSITE AREA #4 = 0.45 MGD	0.002	4.0	0.450
S17	S16	350.85	349.95	99.85	0.90	10	PVC	0.011	2.43	1.57	0.71	0.458	3.4				0.008
S16	S15	349.85	349.05	94.00	0.85	10	PVC	0.011	2.39	1.54	0.71	0.458	4.3				0.000
S15	S14	348.95	347.21	188.74	0.92	10	PVC	0.011	2.46	1.59	0.73	0.470	5.7		0.003	4.0	0.012
S14	S13	347.11	346.51	86.68	0.69	12	PVC	0.011	3.50	2.26	0.73	0.474	6.7		0.001	4.0	0.005
S13	S12	346.41	343.75	203.14	1.31	12	PVC	0.011	4.82	3.12	0.74	0.479	6.7		0.001	4.0	0.005
S12	S11	343.65	342.85	47.82	1.67	12	PVC	0.011	5.44	3.52	0.93	0.604	5.7	PEAK FLOW FROM OFFSITE AREA #3 = 0.07 MGD	0.014	4.0	0.126
S11	S10	342.75	340.29	331.34	0.74	12	PVC	0.011	3.62	2.34	1.48	0.955	3.8	PEAK FLOW FROM OFFSITE AREA #1 = 0.23 MGD	0.030	4.0	0.351
S10	EX. S615	339.32	337.15	97.14	2.13	12	RCP	0.015	6.14	3.97	1.48	0.955	4.0				0.000
EX. S615	EX. S1008	336.89	332.59	430.00	1.00	12	RCP	0.015	3.30	2.13	2.01	1.297	4.3		0.086	4.0	0.342

- Notes:
- See contributing sewage flow estimates on sheet 8.
 - All velocities shown are calculated per a partial flow analysis.
 - A peak factor of 4.0 was used on all flows.
 - The lower invert of EX. S1008 is an assumed elevation and will need to be surveyed.

christopher consultants
9900 main st
suite 400
fairfax, va 22031
p 703.279.6820
engineering surveying land planning



**NORTHFAX WEST
MASTER DEVELOPMENT PLAN**
CITY OF FAIRFAX, VIRGINIA

MARK	DATE	DESCRIPTION

PROJECT No.: 13139.005.00
DRAWING No.: 109632
DATE: 11-21-2019
DESIGN: EG
DRAWN: JS
CHECKED: KMW

SANITARY SEWER ANALYSIS

SHEET No. **9**

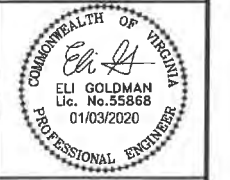
SCALE: 1"=40'

ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT FAIRFAX CITY AND VIRGINIA DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS

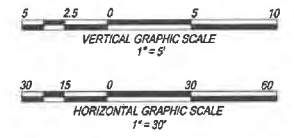
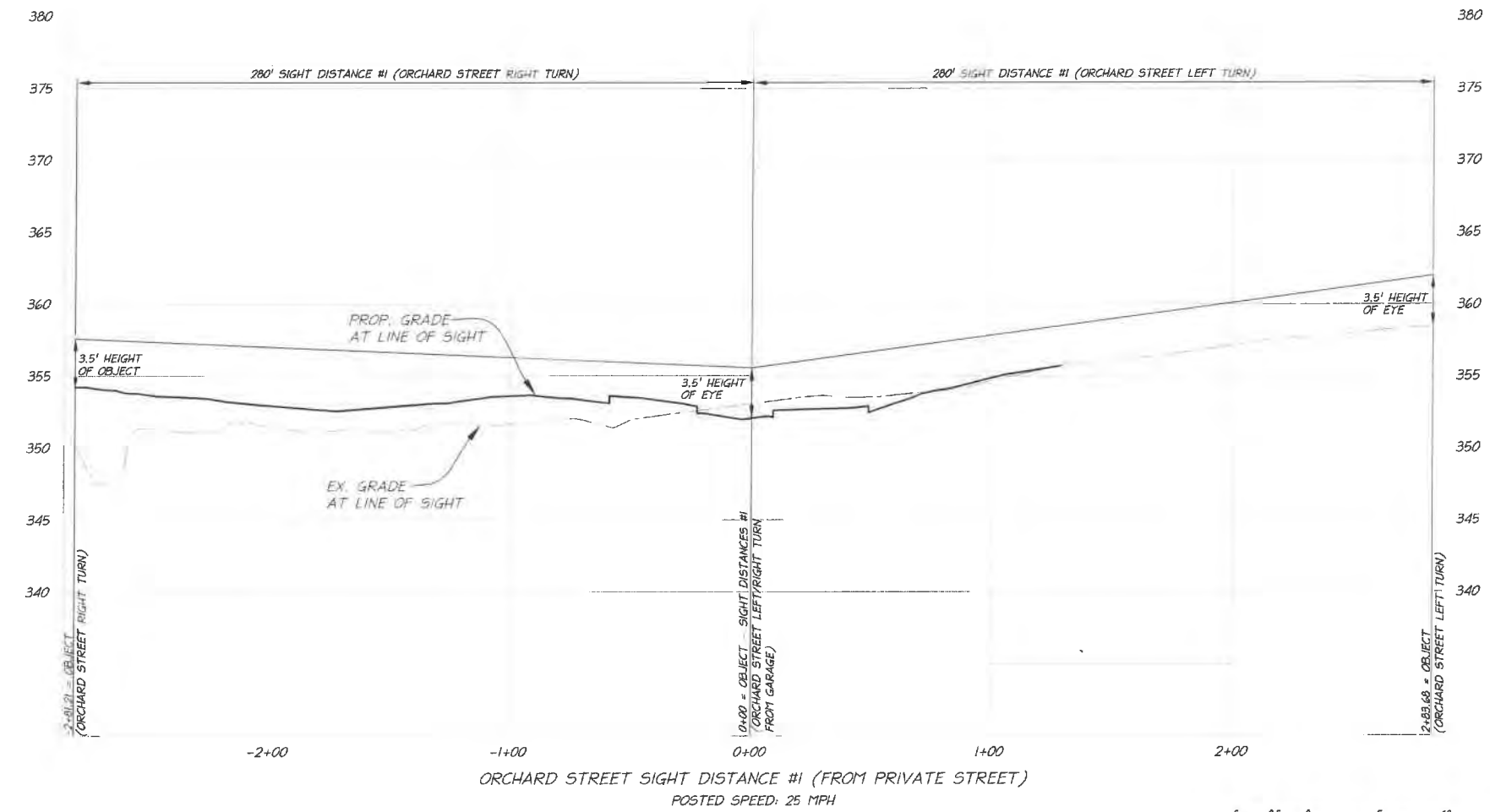
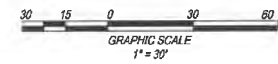
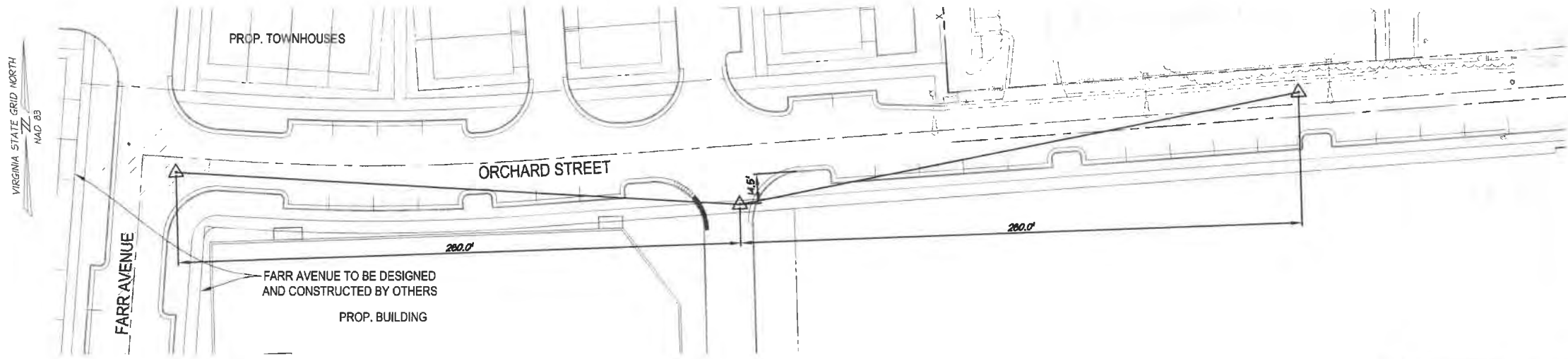
christopher consultants
 9900 main st
 suite 400
 fairfax, va 22031
 engineering surveying land planning



COMMONWEALTH OF VIRGINIA
 ELI GOLDMAN
 Lic. No. 55868
 01/03/2020
 PROFESSIONAL ENGINEER



**NORTHFAX WEST
 MASTER DEVELOPMENT PLAN**
 FAIRFAX CITY, VIRGINIA



PROJECT No.: 13139.005.00
 DRAWING No.: 106632
 DATE: 11-21-2019
 DESIGN: EG
 DRAWN: JS
 CHECKED: KMW

SHEET TITLE:

SIGHT DISTANCE

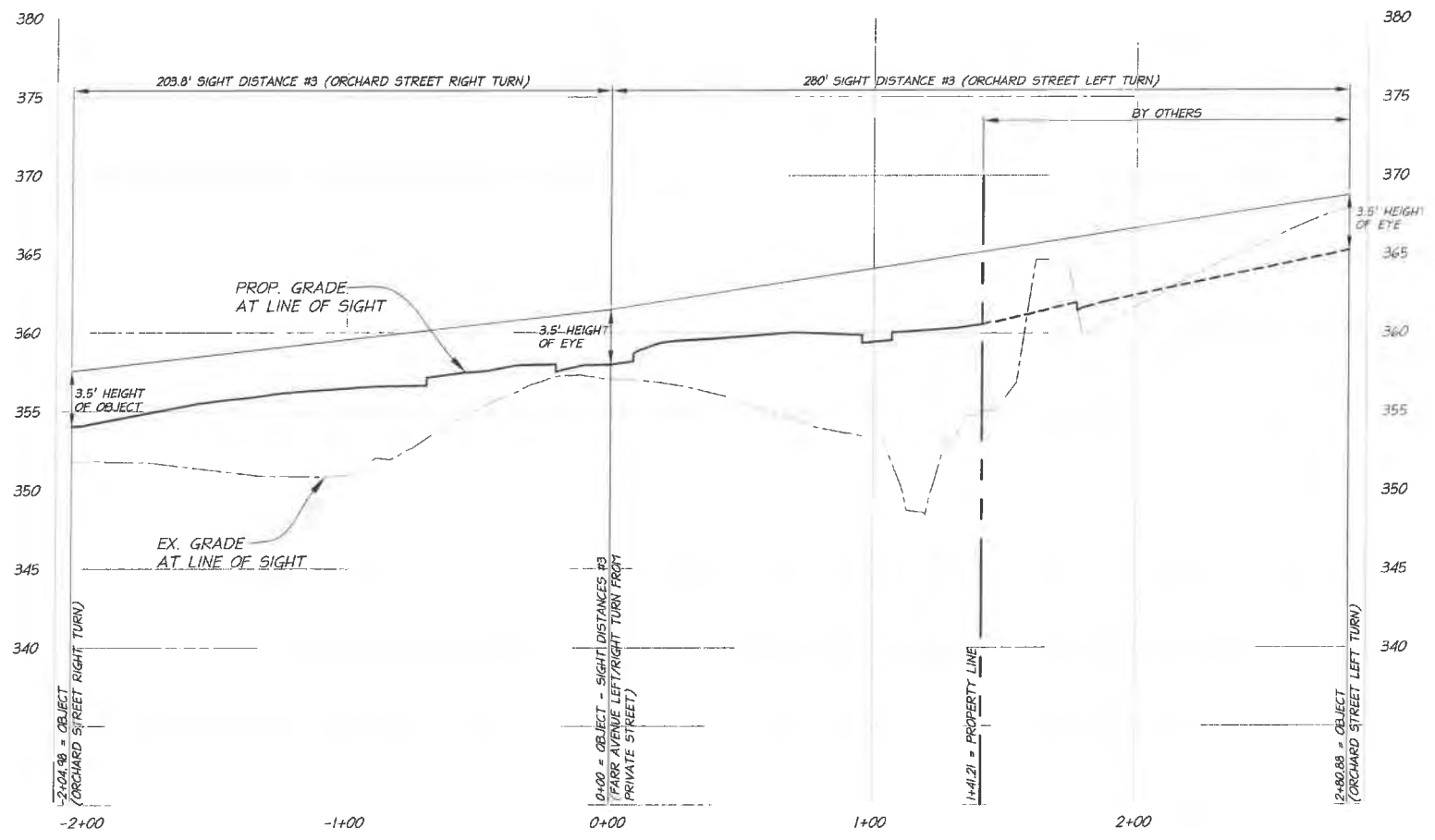
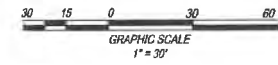
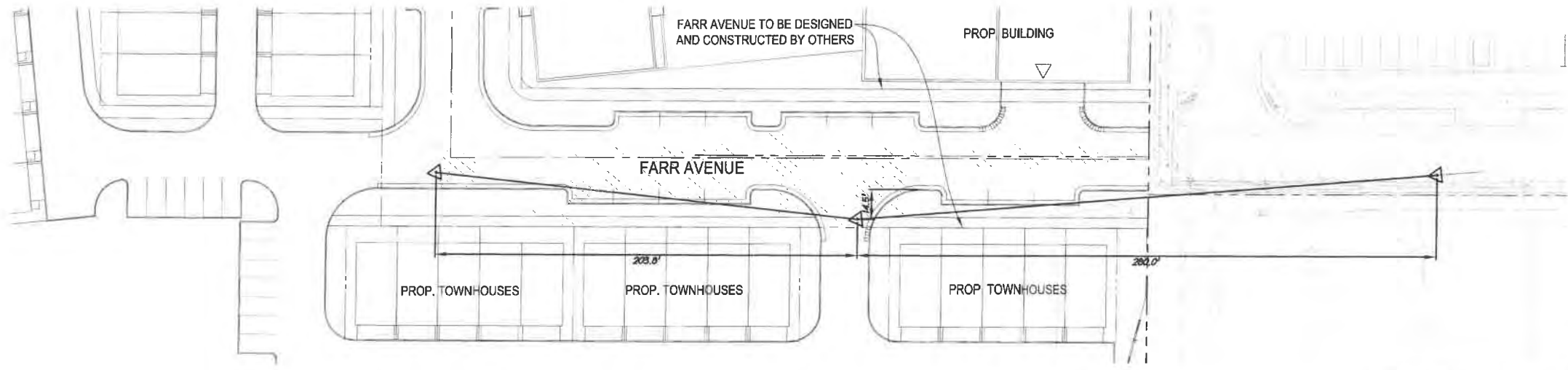
SHEET No.
10

SCALE: SEE DWGS.

MARK | DATE | DESCRIPTION

VIRGINIA STATE GRID NORTH
NAD 83

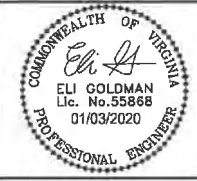
ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT FAIRFAX CITY AND VIRGINIA DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS



christopher consultants
9900 main st
suite 400
fairfax, va 22031



engineering surveying land planning



**NORTHFAX WEST
MASTER DEVELOPMENT PLAN**
CITY OF FAIRFAX, VIRGINIA

MARK	DATE	DESCRIPTION

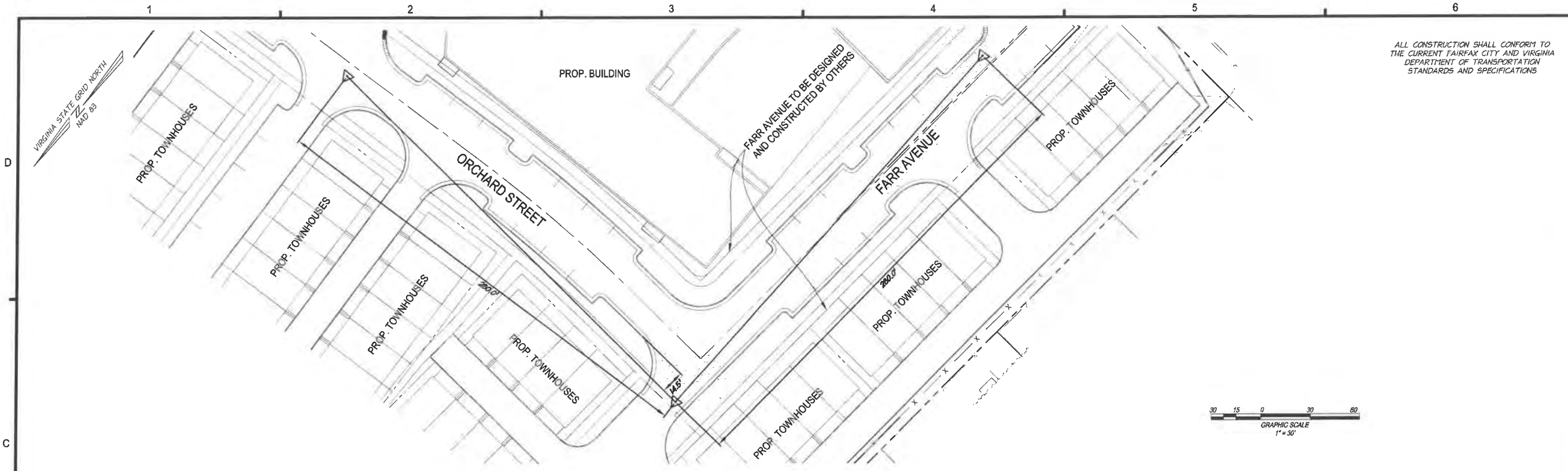
PROJECT No.: 13138.006.00
DRAWING No.: 109632
DATE: 11-24-2019
DESIGN: EG
DRAWN: JS
CHECKED: KMW

SHEET TITLE:

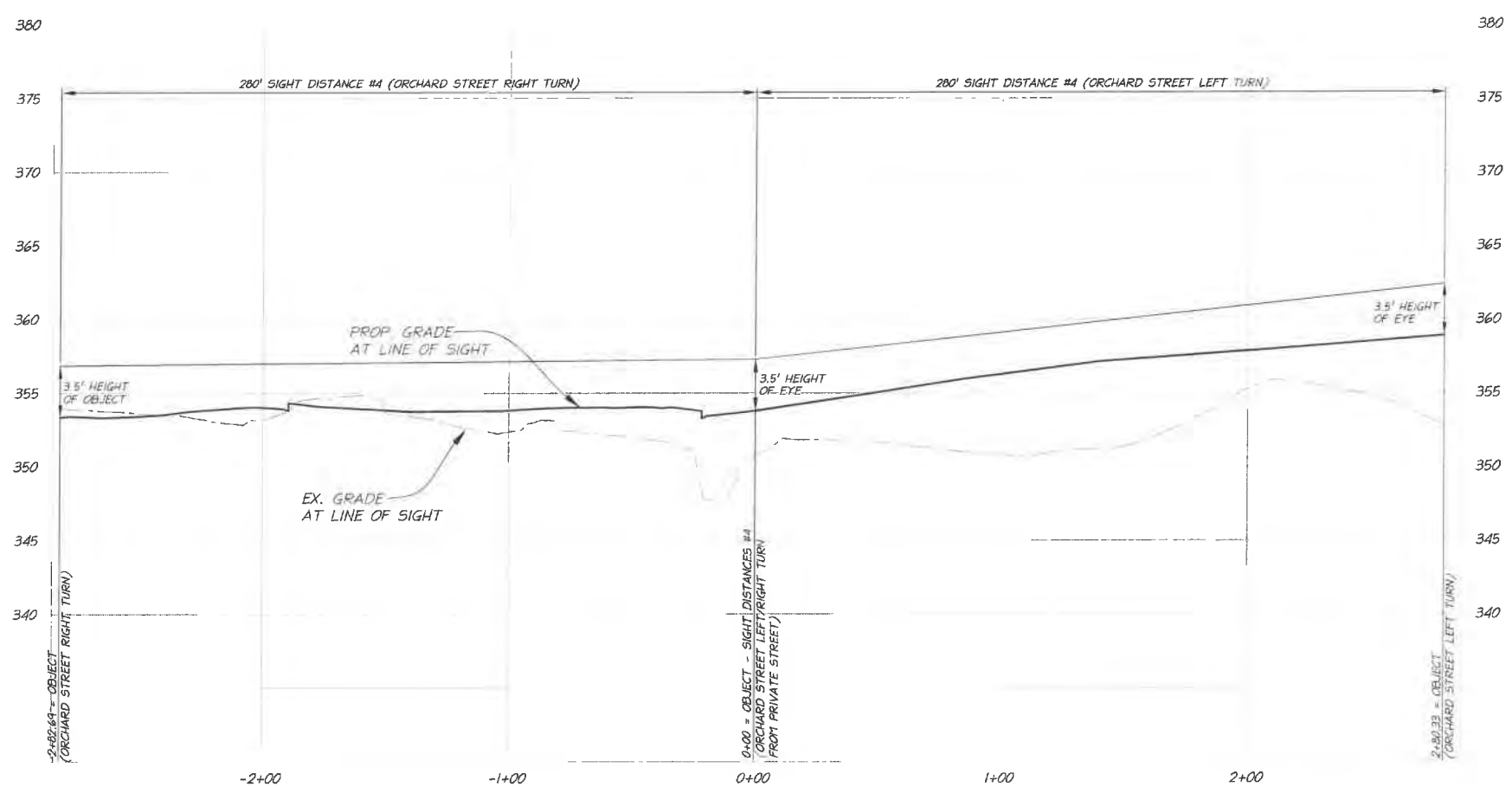
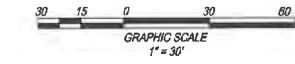
SIGHT DISTANCE

SHEET No.
11

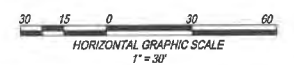
SCALE: SEE DWGS.



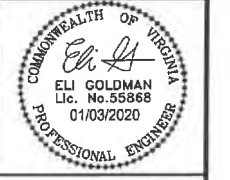
ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT FAIRFAX CITY AND VIRGINIA DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS



ORCHARD STREET SIGHT DISTANCE #4 (FROM PRIVATE STREET)
POSTED SPEED: 25 MPH



christopher consultants
 9900 main st
 suite 400
 fairfax, va 22031
 p 703.273.6820
 engineering surveying land planning



**NORTHFAX WEST
 MASTER DEVELOPMENT PLAN**
 CITY OF FAIRFAX, VIRGINIA

MARK	DATE	DESCRIPTION

PROJECT No.: 13139.005.00
 DRAWING No.: 106632
 DATE: 11-21-2018
 DESIGN: EG
 DRAWN: JS
 CHECKED: KMW

SHEET TITLE:

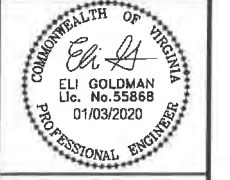
SIGHT DISTANCE

SHEET No.
12

SCALE: SEE DWGS.

ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT FAIRFAX CITY AND VIRGINIA DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS

christopher consultants
 9900 main st
 suite 400
 fairfax, va 22031
 p 703.273.6820
 engineering surveying land planning



**NORTHFAX WEST
 MASTER DEVELOPMENT PLAN**
 CITY OF FAIRFAX, VIRGINIA

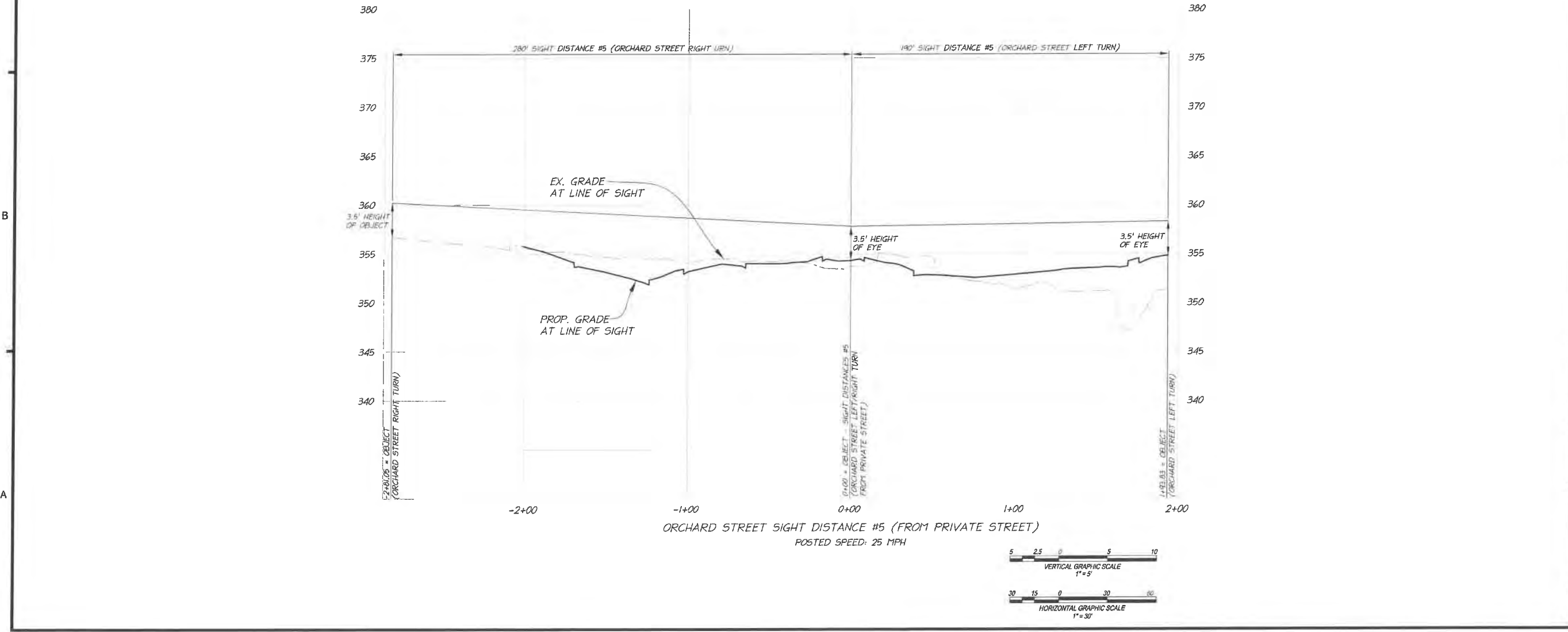
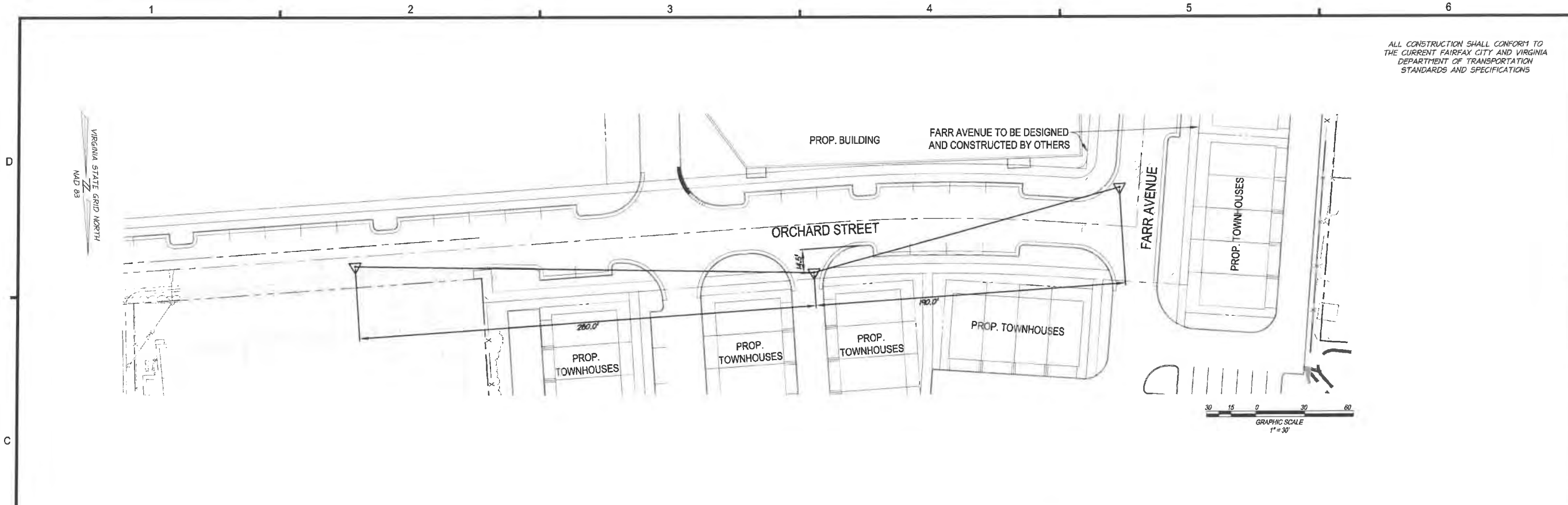
PROJECT No.: 13139.005.00
 DRAWING No.: 109632
 DATE: 11-21-2019
 DESIGN: EG
 DRAWN: JS
 CHECKED: KMW

SHEET TITLE:

SIGHT DISTANCE

SHEET No.
13

SCALE: SEE DWGS.



\p\projects\13139\13139.dwg 11/21/2019 11:21:19 AM 13139.dwg 13139.dwg 13139.dwg

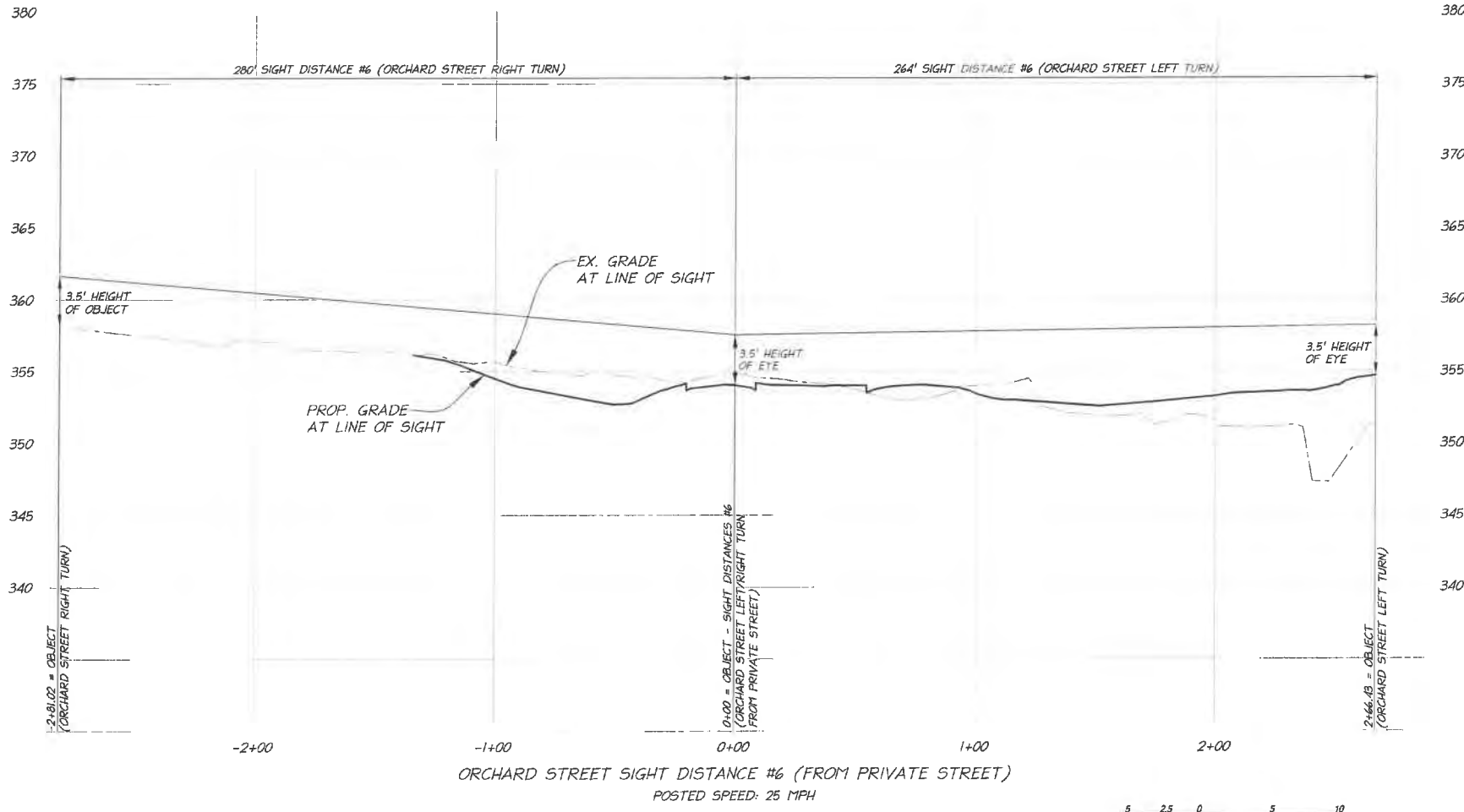
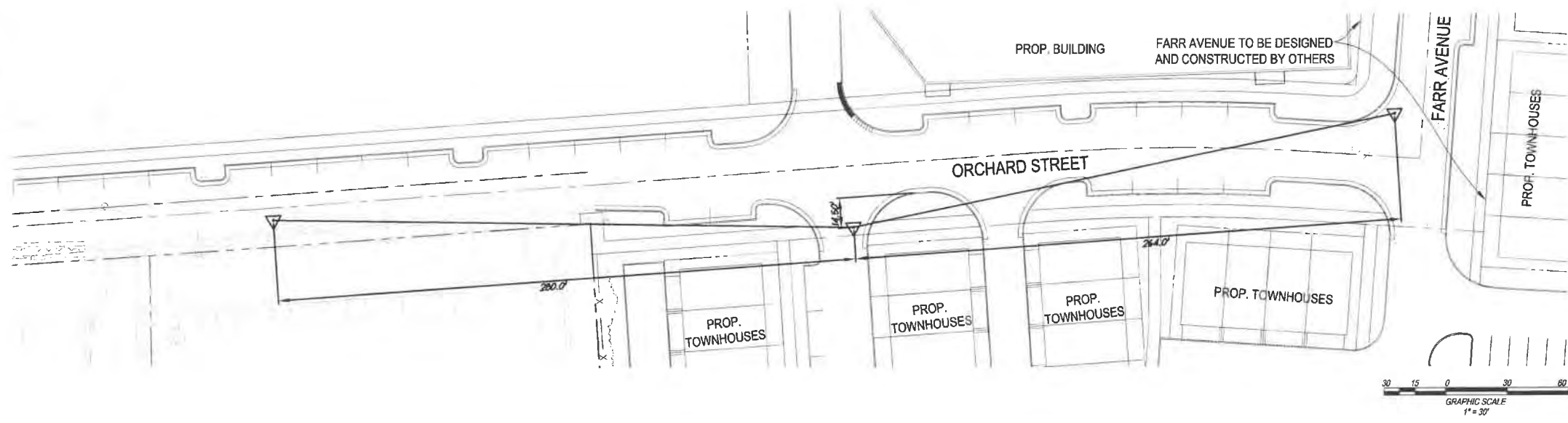
ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT FAIRFAX CITY AND VIRGINIA DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS

christopher consultants
 9900 main st
 suite 400
 fairfax, va 22031
 p 703.275.6820
 engineering surveying land planning

COMMONWEALTH OF VIRGINIA
 ELI GOLDMAN
 Lic. No. 55868
 01/03/2020
 PROFESSIONAL ENGINEER

**NORTHFAX WEST
 MASTER DEVELOPMENT PLAN**
 CITY OF FAIRFAX, VIRGINIA

VIRGINIA STATE GRID NORTH
 NAD 83



MARK	DATE	DESCRIPTION

PROJECT No.: 13139.005.00
 DRAWING No.: 109832
 DATE: 11-21-2019
 DESIGN: EG
 DRAWING: JS
 CHECKED: KRW

SHEET TITLE:

SIGHT DISTANCE

SHEET No.
14

SCALE: SEE DWGS.

P:\Projects\13139\13139.dwg

VIRGINIA STATE GRID NORTH
NAD 83

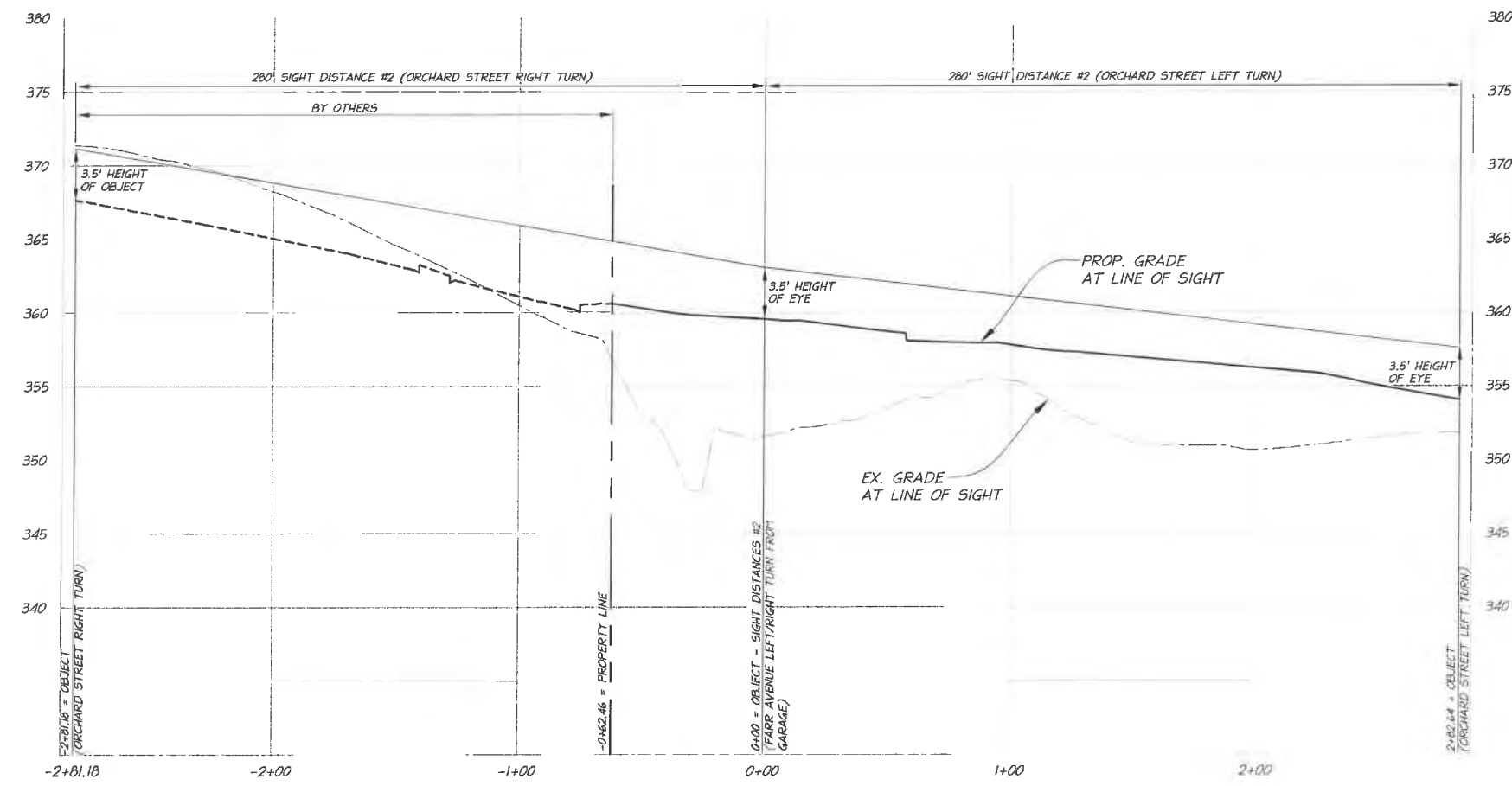
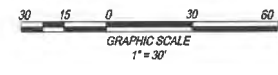
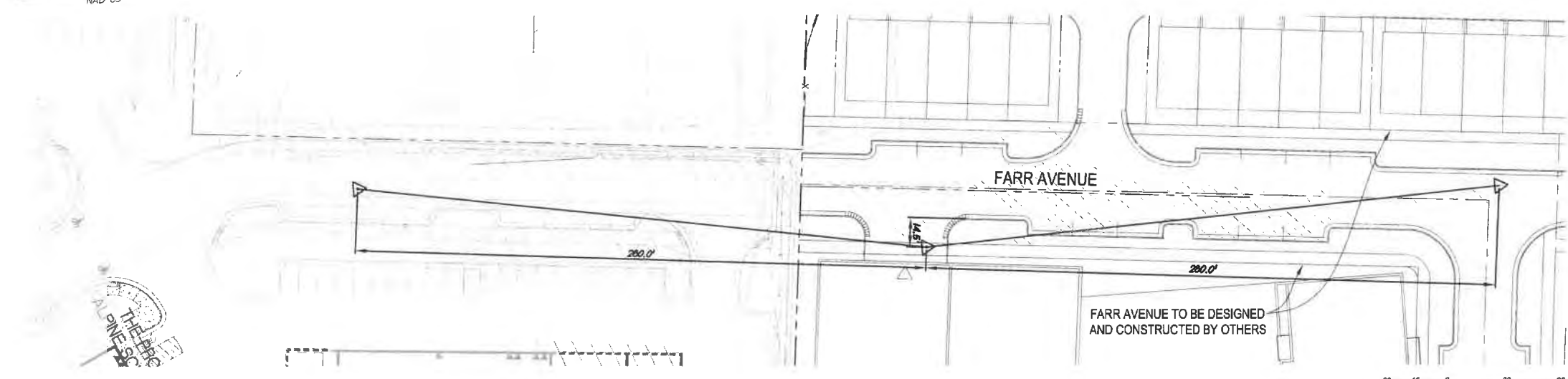
ALL CONSTRUCTION SHALL CONFORM TO
THE CURRENT FAIRFAX CITY AND VIRGINIA
DEPARTMENT OF TRANSPORTATION
STANDARDS AND SPECIFICATIONS

christopher consultants
9900 main st
suite 400
fairfax, va 22031
p 703.273.8820
engineering surveying land planning

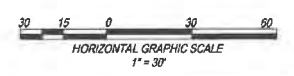


COMMONWEALTH OF VIRGINIA
ELI GOLDMAN
Lic. No. 55368
01/03/2020
PROFESSIONAL ENGINEER

**NORTHFAX WEST
MASTER DEVELOPMENT PLAN**
CITY OF FAIRFAX, VIRGINIA



FARR AVENUE SIGHT DISTANCE #2 (FROM GARAGE)
POSTED SPEED: 25 MPH



PROJECT No.: 13139.005.00
DRAWING No.: 109632
DATE: 11-21-2019
DESIGN: EG
DRAWN: JS
CHECKED: KMW

SHEET TITLE:

SIGHT DISTANCE

SHEET No.
15

SCALE: SEE DWGS.

11/21/2019 11:21:20 AM C:\Users\jsmith\OneDrive\Documents\13139.005.00\109632.dwg
 11/21/2019 11:21:20 AM C:\Users\jsmith\OneDrive\Documents\13139.005.00\109632.dwg
 11/21/2019 11:21:20 AM C:\Users\jsmith\OneDrive\Documents\13139.005.00\109632.dwg

1 2 3 4 5 6

Tower 203 Fire Truck
 Overall Length 47.375ft
 Overall Width 8.167ft
 Overall Body Height 11.082ft
 Min Body Ground Clearance 1.512ft
 Track Width 7.667ft
 Lock-to-lock time 4.00s
 Wall to Wall Turning Radius 54.980ft



D
C
B
A

VIRGINIA STATE GRID NORTH
NAD 83

christopher consultants
 9900 main st
 suite 400
 fairfax, va 22031
 p 703.275.6820
 engineering surveying land planning

COMMONWEALTH OF VIRGINIA
 ELI GOLDMAN
 Lic. No. 55868
 01/03/2020
 PROFESSIONAL ENGINEER

**NORTHFAX WEST
 MASTER DEVELOPMENT PLAN**
 CITY OF FAIRFAX, VIRGINIA

MARK	DATE	DESCRIPTION

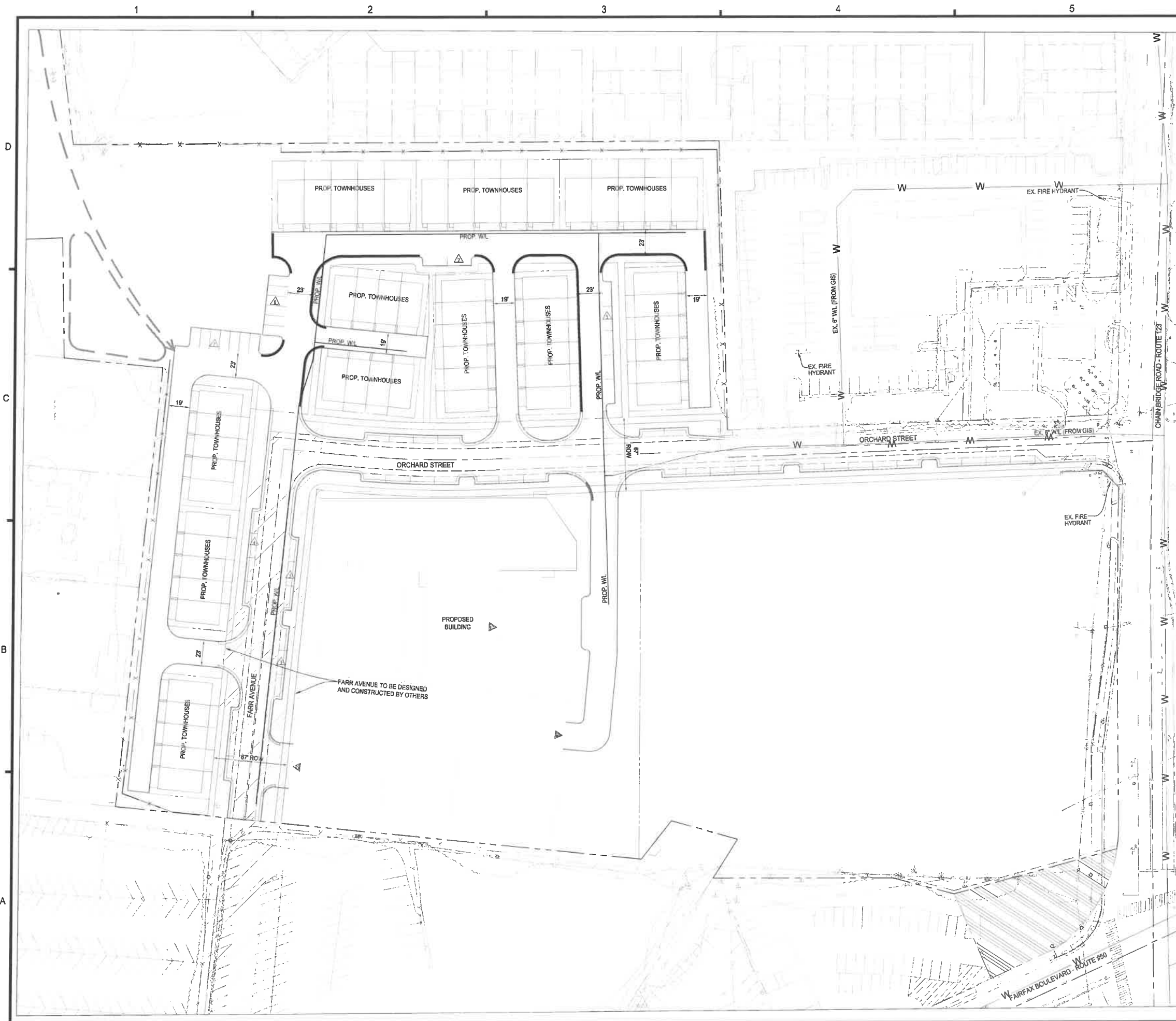
PROJECT No.: 13139.005.00
 DRAWING No.: 109632
 DATE: 11-21-2019
 DESIGN: EG
 DRAWN: JS
 CHECKED: XMW

**TURNING
 MOVEMENTS**

SHEET No.
16

SCALE: 1"=40'
 HORIZONTAL GRAPHIC SCALE
 1"=40'
 ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT FAIRFAX CITY AND VIRGINIA DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS

DATE PLOTTED: 11/21/2019 10:58:11 AM. PLOTTER: HP DesignJet T1100PS. PLOT SCALE: 1"=40'



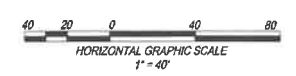
LEGEND

- - - - - : PROPOSED R.O.W.
- ▽ : BUILDING ENTRANCE
- FDC ↙ : PROPOSED FIRE DEPARTMENT CONNECTION
- : PROPOSED FIRE LANE
- : PROPOSED WATERLINE
- : EXISTING WATERLINE
- ⊕ : EXISTING FIRE HYDRANT

SENIOR LIVING BUILDING:
 BUILDING TYPE: 7 STORY
 OCCUPANCY TYPE: RESIDENTIAL R-2
 CONSTRUCTION TYPE: 1-B
 SPRINKLER TYPE: FULLY SPRINKLED, NFPA 13
 BUILDING AREA: 230,000 SF
 BUILDING HEIGHT: REFER TO ARCHITECTURAL EXTERIOR ELEVATIONS

TOWNHOUSE:
 BUILDING TYPE: TOWNHOUSE
 OCCUPANCY TYPE: RESIDENTIAL R-3
 CONSTRUCTION TYPE: 5-B
 SPRINKLER TYPE: NFPA 13R
 BUILDING HEIGHT: REFER TO ARCHITECTURAL EXTERIOR ELEVATIONS

ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT CITY OF FAIRFAX STANDARDS AND SPECIFICATIONS



christopher consultants
 9900 main st suite 400 fairfax, va 22031
 p 703.273.6820
 engineering surveying land planning



**NORTHFAX WEST
 MASTER DEVELOPMENT PLAN
 CITY OF FAIRFAX, VIRGINIA**

MARK	DATE	DESCRIPTION

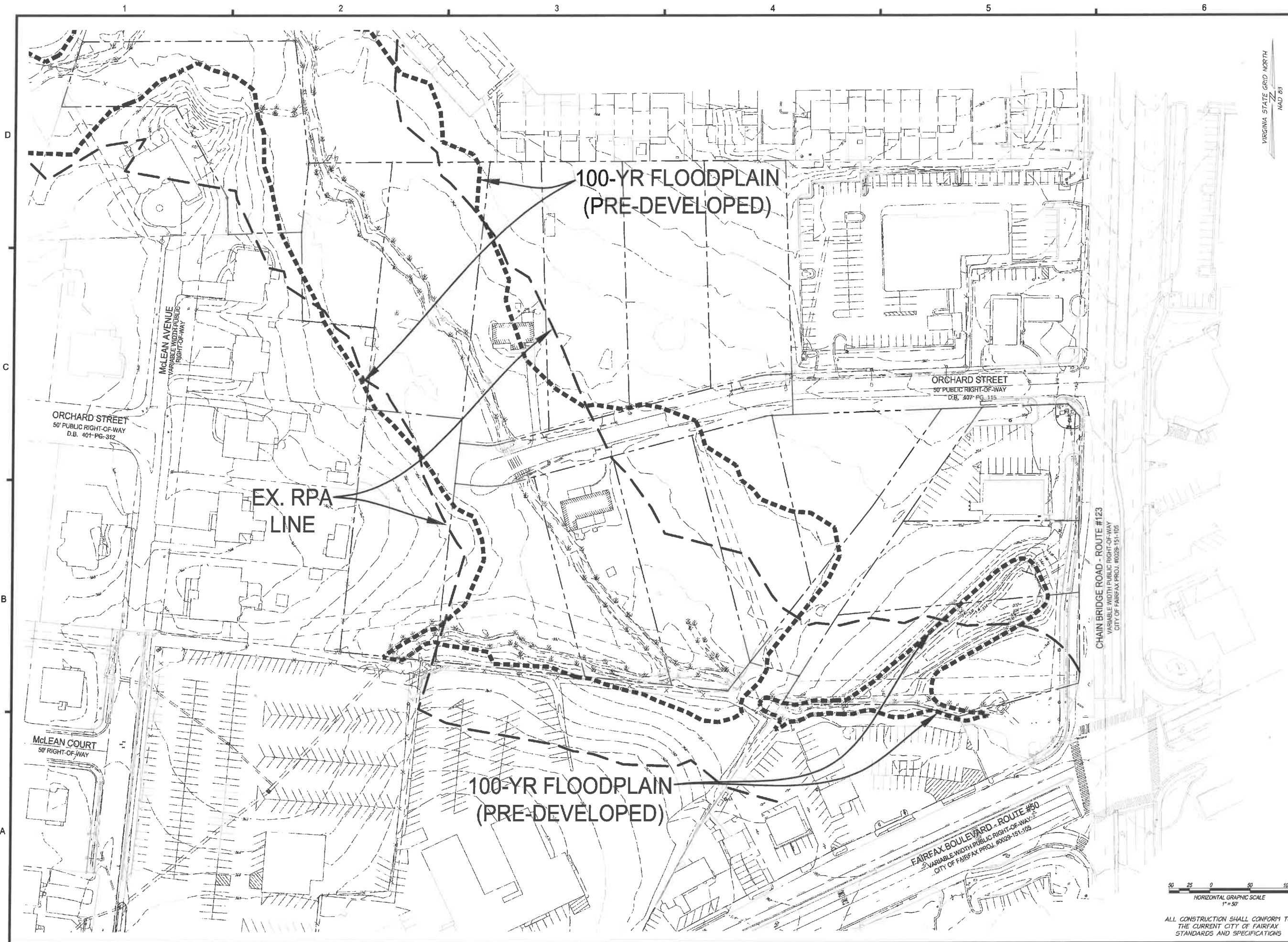
PROJECT No.: 13139.005.00
 DRAWING No.: 106632
 DATE: 11-21-2019
 DESIGN: EG
 DRAWN: JS
 CHECKED: KRW

SHEET TITLE:

FIRE SERVICE PLAN

SHEET No. **17**

SCALE: 1"=40'



VIRGINIA STATE GRID NORTH
MAD 83

christopher consultants
 9900 main st
 suite 400
 fairfax, va 22031
 p 703.273.6820
 engineering surveying land planning



**NORTHFAX WEST
 MASTER DEVELOPMENT PLAN**
 CITY OF FAIRFAX, VIRGINIA

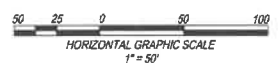
MARK	DATE	DESCRIPTION

PROJECT No.: 13139.005.00
 DRAWING No.: 109632
 DATE: 11-21-2019
 DESIGN: EG
 DRAWN: JS
 CHECKED: KMW

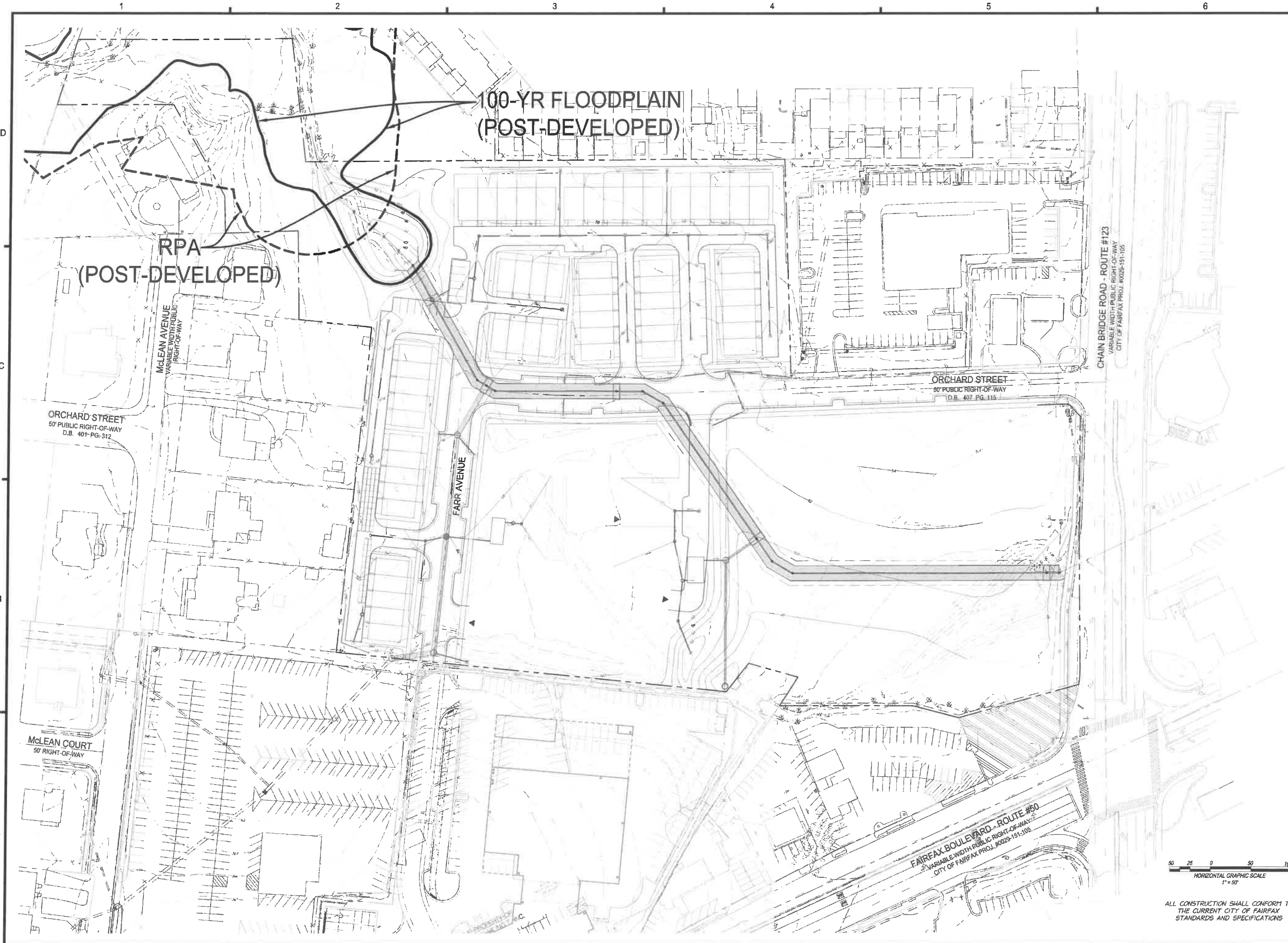
SHEET TITLE:
FLOODPLAIN AND RPA (PRE-DEVELOPED)

SHEET No.
18

SCALE: 1"=50'



ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT CITY OF FAIRFAX STANDARDS AND SPECIFICATIONS



100-YR FLOODPLAIN
(POST-DEVELOPED)

RPA
(POST-DEVELOPED)

ORCHARD STREET
50' PUBLIC RIGHT-OF-WAY
D.B. 401-PG-312

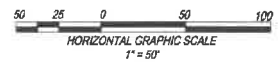
MCLEAN COURT
50' RIGHT-OF-WAY

FARR AVENUE

ORCHARD STREET
50' PUBLIC RIGHT-OF-WAY
D.B. 401-PG-312

FAIRFAX BOULEVARD - ROUTE #50
VARIABLE-WIDTH PUBLIC RIGHT-OF-WAY
CITY OF FAIRFAX PROJ. #0029-151-105

CHAIN BRIDGE ROAD - ROUTE #123
VARIABLE WIDTH PUBLIC RIGHT-OF-WAY
CITY OF FAIRFAX PROJ. #0029-151-105



ALL CONSTRUCTION SHALL CONFORM TO
THE CURRENT CITY OF FAIRFAX
STANDARDS AND SPECIFICATIONS

christopher consultants
9900 main st
suite 400
fairfax, va 22031
p 703.273.6820
engineering surveying land planning

COMMONWEALTH OF VIRGINIA
ELI GOLDMAN
Lic. No. 55868
01/03/2020
PROFESSIONAL ENGINEER

NORTHFAX WEST
MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX, VIRGINIA

MARK	DATE	DESCRIPTION

PROJECT No.: 13139.005.00
DRAWING No.: 109632
DATE: 11-21-2019
DESIGN: EG
DRAWN: JS
CHECKED: KMW

SHEET TITLE:
FOODPLAIN AND RPA (POST-DEVELOPED)

SHEET No.:
18A

SCALE: 1"=50'



Appendix E – BEHI and NBS Study



Northfax Project - Bank Erosion Hazard Index and Near Bank Stress Assessment

The following Bank Erosion Hazard Index (BEHI) and Near Bank Stress (NBS) study was conducted for two streams (A1 & A2) located on the Northfax Project in the City of Fairfax, Virginia. Stream A1 and A2 are approximately 5 to 6 feet wide with banks ranging from 1 to 6 feet high, and are bordered by riparian woodlands, residential development, and commercial property. The project area is located within the Middle Potomac-Anacostia-Occoquan watershed (HUC 02070010) and the Accotink Creek subwatershed (HUC 020700100402).

On December 16, 2019, Apex Companies, LLC (Apex) conducted a site visit to analyze potential for stream bank erosion on an approximately 1,750 linear feet (LF) of stream channel within the project area. Apex used the BEHI rating system to evaluate the bank characteristics and NBS to assess the flow distribution and risk ratings based on multiple erosional processes. Factors which affect the risk rating for a stream bank include bank-height ratio, root-depth ratio, weighted root density, bank angle, surface protection, bank material, and stratification of bank substrate. Using these factors stream banks were assigned ratings of very low, low, moderate, high, very high, or extreme erosion potential. NBS was evaluated to determine Total Suspended Sediment (TSS), Total Nitrogen (TN) and Total Phosphorus (TP) using methods discussed in *Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects* (Schueler, T., Stack, B. 2013).

The study resulted in five (5) assessment points to document bank characteristics and collect data BEHI and NBS evaluations (Figure 1: Site Location and BEHI Map). Table 1 summarizes the following results of the BEHI assessment across all streams onsite.

Table 1: Summary of BEHI Assessment Results for the Northfax Project

Stream ID	Erosion Hazard Potential				
	Extreme	Very High	High	Moderate	Low
Stream A1	321 LF	1,192 LF	434 LF	0 LF	735 LF
Stream A2	217 LF	311 LF	290 LF	0 LF	0 LF
Total	538 LF	1,503 LF	724 LF	0 LF	735 LF

The NBS data collected for each stream were assessed to predict potential sediment loading for the streams caused by near bank stress. Apex estimated the potential for approximately 3,036 tons/year of TSS caused by near bank stress and erosion for Stream A1 and Stream A2. Further, approximately 0.13 tons/year of TN and 0.12 tons/year of TP were also estimated to result from near bank stress.

Attachment 1 provides a Site Location and BEHI Map (Figure 1) and a Photograph Location Map (Figure 2) to accompany the results of Apex's assessment. The photograph log in Attachment 2 shows existing conditions along Stream A1 and A2, including the assessment points used to collect BEHI and NBS data. BEHI and NBS data collected by Apex is provided in Attachment 3 and 4, respectively.



Attachment 1: Figures

Legend

- Low
- Moderate
- High
- Very High
- Extreme
- Study Area



Apex Companies, LLC
 203 Wylderose Ct, Midlothian, VA 23113
 Phone: 804-897-2718
 www.apexcos.com

**Northfax Project
 Fairfax, Virginia**

**Figure 1.
 Site Location and BEHI Map**

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- Low
- Moderate
- High
- Very High
- Extreme
- Study Area



Apex Companies, LLC
 203 Wylderose Ct, Midlothian, VA 23113
 Phone: 804-897-2718
 www.apexcos.com

**Northfax Project
 Fairfax, Virginia**

**Figure 2
 Photograph Location Map**

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Attachment 2: Photograph Log

Photo 1

Stream A1 – Very high erosion potential on right bank and high erosion potential on left bank with low erosion potential open bottom stone culvert



Photo 2

Stream A1 – high erosion potential on right bank



Photo 3

Stream A1 – very high erosion potential on left bank



Photo 4

Stream A1 – collapsing culverts under road



Photo 5

Stream A2 – extreme erosion potential



Photo 6

Stream A2 – extreme erosion potential



Photo 7

Stream A1 – extreme erosion potential
on east bank



Photo 8

Stream A2 – high erosion potential



Photo 9

Stream A1 – high erosion potential



Photo 10

Stream A1 – very high erosion potential on both banks



Photo 11

Stream A2 – high erosion potential on right bank



Photo 12

Stream A1 – low erosion potential due to riprap on east bank



Photo 13

Stream A1 – low erosion potential due to riprap



Photo 14

Stream A1 – low erosion potential due to riprap



Photo 15

Stream A1 – very high erosion potential on both banks



Photo 16

Stream A1 – very high erosion potential on east bank and extreme erosion potential on west bank



Photo 17

Stream A1 – very high erosion potential on east bank and extreme erosion potential on west bank





Attachment 3: BEHI Data

Stream: **Stream A1, High 1** Location: _____
 Station: _____ Observers: _____
 Date: **12/16/19** Stream Type: _____ Valley Type: _____

Study Bank Height / Bankfull Height (C)						BEHI Score (Fig. 5-19)
Study Bank Height (ft) =	1.5 (A)	Bankfull Height (ft) =	0.51 (B)	(A) / (B) =	2.94 (C)	
Root Depth / Study Bank Height (E)						9
Root Depth (ft) =	0.7 (D)	Study Bank Height (ft) =	0.85 (A)	(D) / (A) =	0.824 (E)	
Weighted Root Density (G)						2.5
Root Density as % =	30% (F)	(F) x (E) =			24.71 (G)	
Bank Angle (H)						6.5
Bank Angle as Degrees =	85 (H)					
Surface Protection (I)						7
Surface Protection as % =	10% (I)					
Bank Material Adjustment:						9
Bedrock (Overall Very Low BEHI)					Bank Material Adjustment	
Boulders (Overall Low BEHI)					[]	
Cobble (Subtract 10 points if uniform medium to large cobble)					[]	
Gravel or Composite Matrix (Add 5-10 points depending on percentage of bank material that is composed of sand)					[]	
Sand (Add 10 points)					[]	
Silt/Clay (no adjustment)					[]	
Stratification Adjustment						[]
Add 5-10 points, depending on position of unstable layers in relation to bankfull stage						

Very Low	Low	Moderate	High	Very High	Extreme	Adjective Rating and Total Score
5 - 9.5	10 - 19.5	20 - 29.5	30 - 39.5	40 - 45	46 - 50	
						34

Stream: Stream A1, High 2	Location:
Station:	Observers:
Date: 12/16/19	Valley Type:

Study Bank Height / Bankfull Height (C)						BEHI Score (Fig. 5-19)
Study Bank Height (ft) =	2.5 (A)	Bankfull Height (ft) =	0.51 (B)	$(A) / (B) =$	4.9 (C)	10
Root Depth / Study Bank Height (E)						
Root Depth (ft) =	0.75 (D)	Study Bank Height (ft) =	2.5 (A)	$(D) / (A) =$	0.3 (E)	5.5
Weighted Root Density (G)						
Root Density as % =	10% (F)			$(F) \times (E) =$	3.00 (G)	9
Bank Angle (H)						
	Bank Angle as Degrees =				40 (H)	3
Surface Protection (I)						
	Surface Protection as % =				10% (I)	9
Bank Material Adjustment:						
Bedrock (Overall Very Low BEHI)			Bank Material Adjustment			
Boulders (Overall Low BEHI)			Stratification Adjustment			
Cobble (Subtract 10 points if uniform medium to large cobble)			Add 5–10 points, depending on position of unstable layers in relation to bankfull stage			
Gravel or Composite Matrix (Add 5–10 points depending on percentage of bank material that is composed of sand)						
Sand (Add 10 points)						
Silt/Clay (no adjustment)						

Very Low	Low	Moderate	High	Very High	Extreme		
5 – 9.5	10 – 19.5	20 – 29.5	30 – 39.5	40 – 45	46 – 50	Adjective Rating and Total Score	
						36.5	

Stream: **Stream A1, Extreme 1** Location:
 Station: Observers:
 Date: **12/16/19** Stream Type: Valley Type:

Study Bank Height / Bankfull Height (C)						BEHI Score (Fig. 5-19)					
Study Bank Height (ft) =	4 (A)	Bankfull Height (ft) =	0.51 (B)	(A) / (B) =	7.8 (C)		10				
Root Depth / Study Bank Height (E)											
Root Depth (ft) =	0.8 (D)	Study Bank Height (ft) =	4 (A)	(D) / (A) =	0.2 (E)		7				
Weighted Root Density (G)											
Root Density as % =	20% (F)			(F) × (E) =	4 (G)		9.5				
Bank Angle (H)											
Bank Angle as Degrees =			110 (H)				8.5				
Surface Protection (I)											
Surface Protection as % =			5% (I)				10				
Bank Material Adjustment:											
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> Bedrock (Overall Very Low BEHI) Boulders (Overall Low BEHI) Cobble (Subtract 10 points if uniform medium to large cobble) Gravel or Composite Matrix (Add 5–10 points depending on percentage of bank material that is composed of sand) Sand (Add 10 points) Silt/Clay (no adjustment) </td> <td style="width: 50%; padding: 5px; vertical-align: middle;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Bank Material Adjustment</td> <td style="background-color: #4a7ebb; color: white; width: 50px;"></td> </tr> <tr> <td style="text-align: center;">Stratification Adjustment Add 5–10 points, depending on position of unstable layers in relation to bankfull stage</td> <td style="background-color: #4a7ebb; color: white; text-align: center;">10</td> </tr> </table> </td> </tr> </table>							Bedrock (Overall Very Low BEHI) Boulders (Overall Low BEHI) Cobble (Subtract 10 points if uniform medium to large cobble) Gravel or Composite Matrix (Add 5–10 points depending on percentage of bank material that is composed of sand) Sand (Add 10 points) Silt/Clay (no adjustment)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Bank Material Adjustment</td> <td style="background-color: #4a7ebb; color: white; width: 50px;"></td> </tr> <tr> <td style="text-align: center;">Stratification Adjustment Add 5–10 points, depending on position of unstable layers in relation to bankfull stage</td> <td style="background-color: #4a7ebb; color: white; text-align: center;">10</td> </tr> </table>	Bank Material Adjustment		Stratification Adjustment Add 5–10 points, depending on position of unstable layers in relation to bankfull stage
Bedrock (Overall Very Low BEHI) Boulders (Overall Low BEHI) Cobble (Subtract 10 points if uniform medium to large cobble) Gravel or Composite Matrix (Add 5–10 points depending on percentage of bank material that is composed of sand) Sand (Add 10 points) Silt/Clay (no adjustment)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Bank Material Adjustment</td> <td style="background-color: #4a7ebb; color: white; width: 50px;"></td> </tr> <tr> <td style="text-align: center;">Stratification Adjustment Add 5–10 points, depending on position of unstable layers in relation to bankfull stage</td> <td style="background-color: #4a7ebb; color: white; text-align: center;">10</td> </tr> </table>	Bank Material Adjustment		Stratification Adjustment Add 5–10 points, depending on position of unstable layers in relation to bankfull stage	10						
Bank Material Adjustment											
Stratification Adjustment Add 5–10 points, depending on position of unstable layers in relation to bankfull stage	10										

Very Low	Low	Moderate	High	Very High	Extreme	Adjective Rating and Total Score
5 – 9.5	10 – 19.5	20 – 29.5	30 – 39.5	40 – 45	46 – 50	55

Stream: **Stream A2, Very High 1** Location:
 Station: Observers:
 Date: **12/16/19** Stream Type: Valley Type:

Study Bank Height / Bankfull Height (C)						BEHI Score (Fig. 5- 19)
Study Bank Height (ft) =	6 (A)	Bankfull Height (ft) =	0.51 (B)	(A) / (B) =	11.8 (C)	10
Root Depth / Study Bank Height (E)						
Root Depth (ft) =	2 (D)	Study Bank Height (ft) =	6 (A)	(D) / (A) =	0.33 (E)	6
Weighted Root Density (G)						
Root Density as % =	50% (F)			(F) x (E) =	16.67 (G)	8
Bank Angle (H)						
		Bank Angle as Degrees =			120 (H)	10
Surface Protection (I)						
		Surface Protection as % =			30% (I)	6
Bank Material Adjustment:						
Bedrock (Overall Very Low BEHI) Boulders (Overall Low BEHI) Cobble (Subtract 10 points if uniform medium to large cobble) Gravel or Composite Matrix (Add 5-10 points depending on percentage of bank material that is composed of sand) Sand (Add 10 points) Silt/Clay (no adjustment)					Bank Material Adjustment	5
					Stratification Adjustment Add 5-10 points, depending on position of unstable layers in relation to bankfull stage	5

Very Low	Low	Moderate	High	Very High	Extreme	Adjective Rating and Total Score
5 - 9.5	10 - 19.5	20 - 29.5	30 - 39.5	40 - 45	46 - 50	45

Stream: **Stream A2, Extreme 2** Location: _____
 Station: _____ Observers: _____
 Date: **12/16/19** Stream Type: _____ Valley Type: _____

						BEHI Score (Fig. 5-19)
Study Bank Height / Bankfull Height (C)						
Study Bank Height (ft) =	4 (A)	Bankfull Height (ft) =	0.51 (B)	(A) / (B) =	7.8 (C)	10
Root Depth / Study Bank Height (E)						
Root Depth (ft) =	0.5 (D)	Study Bank Height (ft) =	4 (A)	(D) / (A) =	0.125 (E)	8
Weighted Root Density (G)						
		Root Density as % =	15% (F)	(F) x (E) =	1.88 (G)	9.5
Bank Angle (H)						
		Bank Angle as Degrees =	90 (H)			7
Surface Protection (I)						
		Surface Protection as % =	10% (I)			8.5
Bank Material Adjustment:						
Bedrock (Overall Very Low BEHI)					Bank Material Adjustment	5
Boulders (Overall Low BEHI)						
Cobble (Subtract 10 points if uniform medium to large cobble)						
Gravel or Composite Matrix (Add 5–10 points depending on percentage of bank material that is composed of sand)						
Sand (Add 10 points)						
Silt/Clay (no adjustment)						
Stratification Adjustment						
Add 5–10 points, depending on position of unstable layers in relation to bankfull stage						8.5

Very Low	Low	Moderate	High	Very High	Extreme	Adjective Rating and Total Score
5 – 9.5	10 – 19.5	20 – 29.5	30 – 39.5	40 – 45	46 – 50	48



Attachment 4: NBS Data



NBS Data

Table 1: Near-Bank Stress (NBS) Data

Location	Bank Depth (ft)	Bank-full Depth (ft.)	Bank Depth / Bank-full Depth	NBS Rating	Bank Erosion Rate	Length of Bank	Study Bank Height	Erosion Rate (ft ³ /yr.)
Low	5	0.51	9.80	Extreme (6)	1.3218	735	5	4857.60
Moderate	1	0.51	1.96	High (4)	0.4203	0	1	0.00000
High	2	0.51	3.92	Extreme (6)	1.3218	724	2	1913.96
Very High	4	0.51	7.84	Extreme (6)	1.3218	1503	4	7946.64
Extreme	5	0.51	9.80	Extreme (6)	17.973	538	5	48346.27
Total Erosion Rate								
							ft ³ /yr.	63064.48
							yd ³ /yr.	2335.72
							tons/yr.	3036.43
							tons/yr./ft	0.87

Table 1.5: Converting Values to Near-Bank Stress Rating

NBS Rating	Bank Depth / Bank-full Depth
Very Low	<1.00
Low	1.00 – 1.50
Moderate	1.51 – 1.80
High	1.81 – 2.50
Very High	2.51 – 3.00
Extreme	>3.00

Table 2: Total Nitrogen

Linear Feet of Stream Bank	TN Rate (lbs/ft/yr)	TN (lb/yr)	TN (tons/yr)
3500	0.075	262.5	0.13125

Table 3: Total Phosphorus

Linear Feet of Stream Bank	TP Rate (lbs/ft/yr)	TP (lb/yr)	TP (tons/yr)
3500	0.068	238	0.119